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The Investment Value of Plant

Jack L. Treynor

Price theorists call industries that push output to the point where marginal cost equals price "perfectly competitive." In such industries, there are two relationships between price and output—the *supply curve* resulting from producers' behavior and a *demand curve* describing customers' behavior. There will usually be a unique combination of output and price that satisfies both relationships simultaneously.

It would be a great analytical convenience if output and price could be so neatly determined. Mere convenience is not, however, sufficient reason for assuming that industries actually behave this way, or even that they *ought* to behave this way.

Industries make two kinds of decisions that affect unit volume and price—

(1) decisions about how much to produce, given their current stock of plant capacity—i.e., which of the currently available plant to operate and which to idle ("output" decisions) and

(2) decisions about plant additions that would alter the stock of available capacity ("plant" decisions).

Plant decisions affect price, are visible to competitors and are almost always irreversible. An *output* decision that turns out bad can usually be reversed. Furthermore, producers can "feel" their way to output changes. Thus it wouldn't be surprising if producers made the two kinds of decisions in quite different ways.

Without some assumptions about how an industry makes these two decisions, no meaningful estimate of the investment value of plant is possible. We argue that, absent collusion, perfect competition approximates the way most industries, most of the time, make output decisions. We also argue that any industry that makes its plant decisions this way is unworthy of investor interest.

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A New Tractor

An example will serve to explain why industries can't be perfectly competitive. As textbook writers have long been fond of farming as the ideal, we begin with one based on wheat farmers.

Suppose, for simplicity, there is an unlimited supply of farmland that, with the same variable cost, can produce a bushel of wheat. And suppose that, just as the textbooks assume, wheat farmers ignore the effect of their decision on price when deciding how much to produce. Then they will increase their output up to the point at which the price of the marginal bushel just covers their variable cost.

If every farmer has the same variable cost, then the marginal bushel's variable cost is the industry's average cost. With price equal to marginal cost equal to average cost, the industry is just breaking even on operating cash flow, with nothing left over for mortgage payments or even for payments on tractors.

Now suppose a superior tractor comes along, which lowers the variable cost of producing a bushel of wheat. Initially, of course, most farmers still use their old tractors. The marginal bushel—whose variable cost determines price—is still being produced the old way. Industry price and output remain unchanged. But farmers who buy the new tractor find that, at the old price, they have a positive operating cash flow; this represents the return on their investment in the new tractor.

Because wheat farmers don't consider the effect of their decisions on price, it is just a matter of time before so many farmers buy the new tractor that the marginal bushel is being produced at the new, lower variable cost. Price falls until it equals the new marginal cost, which once again equals average cost. Operating cash flow falls back to zero and, with it, the return on the investments in the new tractors.

What has happened? As long as the new tractors were *scarce*—as long as there weren't enough to go around—they generated a positive cash flow. When there were enough new tractors to produce all the wheat demanded—when they ceased being scarce—their contribution to cash flow went to zero.

As noted, this contribution to cash flow—the so-called *scarcity rent* or *economic rent*—represents the return to the investment in the new tractor. We now see that, although the tractor's *physical* life may last for a generation, its *economic* life is over when it ceases being scarce.

Whether the new tractor justifies the investment depends on the length of the tractor's economic life. That in turn depends on *how fast the wheat farmers buy new tractors*. The new tractor may be a better investment at a price high enough to discourage most farmers from buying it than at a lower price.

The wheat farmers have a maximum price they can justify paying for a tractor at each level of tractor output. This relationship, together with the relation between the tractor manufacturers' marginal cost and output rate, determines tractor price and output. But now the wheat farmers are no longer ignoring the effect

of their decisions on the price of wheat.

The wheat farmers are still making output decisions competitively, but they are not making plant decisions—their tractor purchase decisions—competitively. If they made their plant decisions competitively, most of them would end up bankrupt. No investor in his right mind would be interested in supplying capital to such an industry. We conclude that the industries of interest to securities investors are not usefully described by the economist's ideal of perfect competition.

The High-Cost Producer

Most modern industries are oligopolistic—characterized by having only a few producers. In the U.S., there have rarely been more than three or four manufacturers of aspirin, spark plugs, cornflakes, facial tissue, ketchup, etc.

Suppose that, contrary to the perfectly competitive model, an oligopolistic industry takes price effects into account in setting its output level. By doing so, the industry may be able to make more money by producing less. In the absence of collusion between producers, the decision about how much capacity to withhold from production falls to the high-cost producer. To understand how far short of the perfectly competitive level this industry's output will fall, we need to understand this producer's point of view.

The high-cost producer gains nothing from using marginal plant, because its variable cost equals the industry's price. Indeed, by *not* using this plant, the producer can raise the industry's price slightly, thereby raising the price of every unit it *does* manufacture. But consider the highest-cost capacity the producer is still using. Its variable cost is *almost* as high as the industry price. Furthermore, by shutting it down, the producer can raise the industry price received on its remaining output. Clearly, this argument can be repeated until the rent on the marginal plant is high enough or the remaining output is small enough that further production cuts don't pay.

This point determines the level of *industry* output rational for the high-cost producer. The higher the output of *low*-cost producers, the less *high*-cost producers will choose to produce. Because low-cost producers have bigger unit margins than high-cost producers, they have more to lose from cutting their own output. But they also lose less from increases in their own output. Because increases in their output will be accompanied by decreases in output by high-cost producers, *industry* output will be dampened and price will not fall by as much as it would in a purely competitive system.

These considerations suggest that an industry with a handful of producers (in contrast to an industry comprised of thousands of wheat farmers) will take price into account in its output decisions, hence decide to produce at less than perfectly competitive levels of output. But they also suggest that the critical decision-maker is the high-cost producer. How will it make the output decision? Let:

- q^* = perfectly competitive level of industry output,
- q' = combined output of all but the high-cost producer,
- q = level of *industry* output that is best for the high-cost producer,
- $D(\cdot)$ = industry demand curve (i.e., the price corresponding to output) and
- $S(\cdot)$ = industry marginal cost curve.

By definition, the perfectly competitive level of industry output, q^*, satisfies:

$$D(q^*) = S(q^*).$$

More generally, the level of industry output best for the high-cost producer is that at which its gain from an extra unit of output just offsets the loss from the effect of the production increase on price. The potential gain is the difference between the industry price D(q) and the high-cost producer's marginal cost. But the high-cost producer's marginal cost is the *industry's* marginal cost S(q). So the difference is:

$$D(q) - S(q).$$

The effect on industry price of producing an incremental unit is dD/dq. The loss on the high-cost producer's output $q - q'$ is:

$$\frac{dD}{dq}(q - q').$$

At the level of output best for the high-cost producer, the incremental loss just offsets the incremental gain:

$$D(q) - S(q) + \frac{dD}{dq}(q - q') = 0$$

We can expand D(q) and S(q) in a Taylor series around the perfectly competitive level of industry output q^*:

$$D(q) = D(q^*) + \frac{dD}{dq}(q - q^*),$$

$$S(q) = S(q^*) + \frac{dS}{dq}(q - q^*).$$

Substituting in our equation for the best level, we have:

$$\frac{dD}{dq}(q - q^*) - \frac{dS}{dq}(q - q^*) = \frac{dD}{dq}(q - q') = 0,$$

$$\left(2\frac{dD}{dq} - \frac{dS}{dq}\right)q = \left(\frac{dD}{dq} - \frac{dS}{dq}\right)q^* + \frac{dD}{dq}q',$$

$$q = \frac{(q' + q^*)\frac{dD}{dq} - q^*\frac{dS}{dq}}{2\frac{dD}{dq} - \frac{dS}{dq}},$$

$$\frac{q}{q^*} = \frac{\left(1 + \frac{q'}{q^*}\right)\frac{dD}{dq} - \frac{dS}{dq}}{2\frac{dD}{dq} - \frac{dS}{dq}}.$$

The ratio q/q^* measures how closely the industry approaches the ideal of perfect competition—specifically, the fraction of the ideal output level achieved by the output level best for the high-cost producer. As the output of the high-cost producer $q - q'$ declines, q' approaches q^* and the ratio approaches one.

The worst case for competition is the case where the high-cost producer constitutes the sole producer, a monopolist. Then q' equals zero. The ratio q/q^* ranges from 1/2, when the demand curve's slope is shallow and the cost curve's slope is steep, to 1, when the demand curve's slope is

shallow and the cost curve's slope is steep.

Industries where brand recognition is important will often have three or four dominant firms, with no firm less than 50% bigger than its next smaller competitor (the "PIMS" rule). Consider a three-firm industry in which, as often happens, the smallest firm is also the high-cost firm. Let x be the output of the largest of the three firms, expressed as a fraction of the industry's output. If the smallest firm is as large as possible consistent with the PIMS rule, we have:

$$x + \frac{2}{3}x + \left(\frac{2}{3}\right)^2 x = 1,$$

$$9x + 6x + 4x = 9,$$

$$x = \frac{9}{19}, \frac{2}{3}x = \frac{6}{19}, \left(\frac{2}{3}\right)^2 x = \frac{4}{19}.$$

We have:

$$q' = \frac{9}{19} + \frac{6}{19} = \frac{15}{19},$$

$$\frac{q}{q^*} = \frac{\frac{34}{19}\frac{dD}{dq} - \frac{dS}{dq}}{\frac{38}{19}\frac{dD}{dq} - \frac{dS}{dq}}$$

Industry output will range between about 89% (34/38) and 100% of the perfectly competitive level.

Examples like these suggest that, in the absence of collusion, and given three or more firms, most industries will push their *output* decisions close to the perfectly competitive level. We think this is a useful assumption for investors.

How Plant Additions Affect the Supply Curve

We have noted that, when an industry pushes its output to the point where marginal cost equals the price dictated by demand at that level of output, the industry's marginal cost curve becomes a supply curve. How does the addition of new capacity affect this curve?

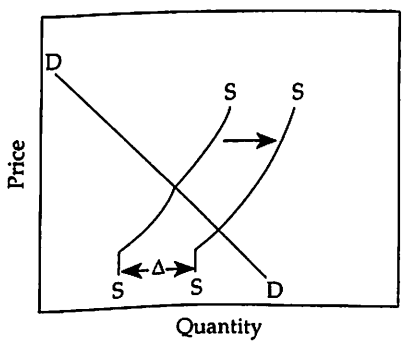
With the passage of time, technology usually either advances or stands still, as what we knew yesterday is a subset of what we know today. Technological improvement of plant manifests itself in reductions in the variable cost of producing a unit of output. In some industries—notably the electric-generating industry and the airline industry—the effort at improvement focuses on fuel. In most industries, however, it focuses on labor cost.

As we have seen, the economic rent enjoyed by a given unit of plant is the difference between its variable cost and the variable cost of the marginal plant. Over time, the identity of the marginal plant changes (as in the case of the wheat farmers). Every time marginal cost—the variable cost of producing one unit on the marginal plant—falls by one dollar, the economic rent (per unit produced) on plant still in production falls by one dollar.

Shifts in demand will change the identity of the marginal plant, hence these rents. But shifts in demand are hard to predict. What is easy to predict (over the time required to build new plant) is the effect of capacity additions. Per unit of capacity, new plant may cost more or less than old plant. But, as noted, because of technological improvements, its variable cost of producing never goes up. This fact has an important practical consequence: New capacity enters the supply curve at the extreme lower left. Instead of changing the *shape* of the supply curve, new capacity merely nudges the curve to the right (see Figure A).

Suppose we know the old supply curve, S(q), specifying the industry's marginal cost—the variable cost of producing a unit of output on the marginal plant—as a function of the industry's output rate. Now the industry adds new capacity in amount Δ. We can derive the new supply curve by observing that, at any given price, the new output will be the output from the old plant plus the output from the new capacity. Because the new capacity will produce output Δ, the price required to elicit a specified output q after the capacity addition is the price required to elicit the difference q − Δ from the old capacity. But this is the price given by the old supply curve.

Figure A. Addition of New Plant



Let the old curve be S(q). Then the new curve is S(q − Δ):

$$S_{new}(q) = S_{old}(q - \Delta).$$

The new supply curve is the old curve, shifted right by the amount Δ. Given the same old demand curve, this shift is likely to change the identity of the marginal plant and, with it, marginal cost. But note that the change in marginal cost doesn't depend on the *efficiency* of the new plant. Its efficiency won't affect the industry's marginal cost until it becomes the marginal plant. In short, its *capacity* affects marginal cost at the beginning of its economic life; its efficiency affects marginal cost at the end.

Now suppose an industry adds capacity at a roughly constant rate λ. Then the capacity Δ added over an interval τ is λτ. Given the supply curve S(q) at the beginning of this interval, the supply curve at the end can be approximated by:

$$S(q - \Delta) = S(q - \lambda\tau).$$

It is sometimes useful to represent the supply curve as a function of both output rate q and the real time t. Then we have:

$$S(q, \tau) = S(q - \lambda\tau, 0)$$

More generally:

$$S(q, t_2) = S(q - \lambda t_2 + \lambda t_1, t_1).$$

Economic Life of Plant

If an industry adds capacity at an average rate λ, when will the plant it is adding now be obsolete? Let the

plant's variable cost of producing one unit of output be c. When it is the marginal plant, industry price will be C. If the industry demand function is D(q), then output q at that time will satisfy:

$$D(q) = c.$$

But when today's new plant is just obsolete, industry output will equal the capacity of all the plant added subsequently. On one hand, none of that plant is yet obsolete; on the other, all the capacity that preceded today's new plant is obsolete.

Let the economic life of today's new plant be t. Then industry output when it is just obsolete is:

$$q = \lambda t.$$

Substituting, we have:

$$D(q) = D(\lambda t) = c.$$

The economic life t of today's new plant depends only on the demand function D(q), the industry's expected rate of capacity addition λ, and the new plant's variable unit cost c. Because demand functions are monotonic, the value of t that satisfies this equation will be unique.

It is often convenient to express economic life in terms of the *inverse* demand function—i.e., the quantity demanded at a given price. We denote this by $Q_D(p)$. This definition implies, of course, that:

$$Q_D[D(q)] = q,$$

$$D[Q_D(p)] = p.$$

Using the inverse demand function, we can write a closed-form expression for economic life t:

$$q = t = Q_D(c),$$

$$t = 1/\lambda\ Q_D(c).$$

What about the economic life of *old* plant? The industry's output level when old plant is just obsolete is obviously the capacity added since that plant was new. Let the capacity added between then and now be Q. Then we have:

$$Q + \lambda t = Q_D(c),$$

$$\lambda t = Q_D(c) - Q,$$

$$t = \frac{Q_D(c) - Q}{\lambda}$$

where c is now the old plant's variable unit cost. If the rate of capacity addition in the future is expected to be roughly what it was in the relevant past, then the remaining life t satisfies:

$$\lambda(\tau + t) = Q_D(c),$$

$$\tau + t = 1/\lambda\ Q_D(c),$$

$$t = 1/\lambda\ Q_D(c) - \tau,$$

where τ is the present age of the old plant.

The Value of Future Economic Rents

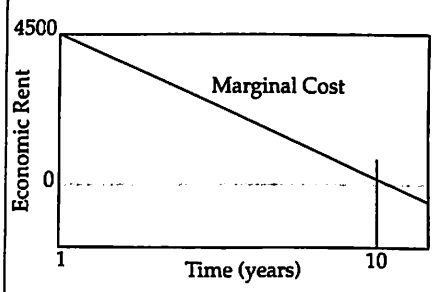
We have observed that, at any point in the plant's economic life, its rent is the difference between the plant's variable unit cost of producing and the industry's marginal cost—i.e., the variable unit cost of producing on the industry's marginal plant. As we have seen, capacity additions to the industry tend to push its marginal cost down until, finally, no difference—no economic rent—remains.

The typical pattern of rents over the life of plant is roughly a right triangle, with a "base" equal to the plant's economic life and an "altitude" equal to its rent when new. The plant's aggregate rent over its life (without present-value adjustments) is the area of this triangle.

The pattern of rents for *old* plant also tends to be a right triangle, but with both the base and altitude diminished. For example, when half a plant's economic life remains, its current rent will tend to equal roughly half its initial rent. Accordingly, its future aggregate rent will tend to be one-quarter its future aggregate rent when new. So a new plant will tend to realize three-quarters of its future aggregate rent in the first half of its economic life. And, because of compounding effects, *more* than three-quarters of the new plant's present value will tend to be generated during the first half of its economic life (see Figure B).

A more sophisticated model of plant value assumes that marginal

Figure B. Economic Rent Over Plant's Lifetime



cost falls exponentially with time (so that the fractional reduction in each year is the same). Assume the fractional reduction is μ per annum and the initial marginal cost is M. Then, if the plant's own variable unit cost is C, its economic life ends T years hence, when:

$$Me^{-\mu T} = C,$$

$$T = \frac{\ln M - \ln C}{\mu}.$$

Its rent at time t is the difference between marginal cost $Me^{\mu t}$ and C, or:

$$Me^{\mu t} - C.$$

Discounted at rate r, the plant's present value is:

$$\int_0^T e^{-rt}(Me^{-\mu t} - C)dt$$

$$= \frac{1}{r+\mu}(M - e^{-rT}C) - \frac{C}{r}(1 - e^{-rT})$$

The second term is the present value of the annuity comprising the plant's own variable cost. The first term is the contribution to the plant's present value of marginal cost.

But we know that

$$e^{-rt} = (e^{-\mu T})^{\frac{r}{\mu}} = \left(\frac{C}{M}\right)^{\frac{r}{\mu}}.$$

Rewriting our present-value expression as:

$$\frac{M}{r+\mu}\left(1 - \frac{C^{\frac{r}{\mu}}}{M^{\frac{r}{\mu}}}\right) - \frac{M}{r}\left(\frac{C}{M} - \frac{C^{\frac{r}{\mu}}}{M^{\frac{r}{\mu}}}\right),$$

we have

$$\frac{M}{r+\mu}\left[1-\left(\frac{C}{M}\right)^{\frac{r+\mu}{r}}\right]$$

$$-\frac{M}{r}\left[\frac{C}{M}-\left(\frac{C}{M}\right)^{\frac{r+\mu}{r}}\right].$$

In using this expression for the value of plant, M is the sum of the plant's variable cost and current rent.

We have calculated the present value of plant with a 20-year economic life, initial rent of $10 million and variable unit cost of $10 million, using the straight-line or triangle method and the exponential decay (in marginal cost, not rent) method, assuming a discount rate of 10%. The present values are $56.7 million and $51.7 million, respectively.

Physical versus Economic Life

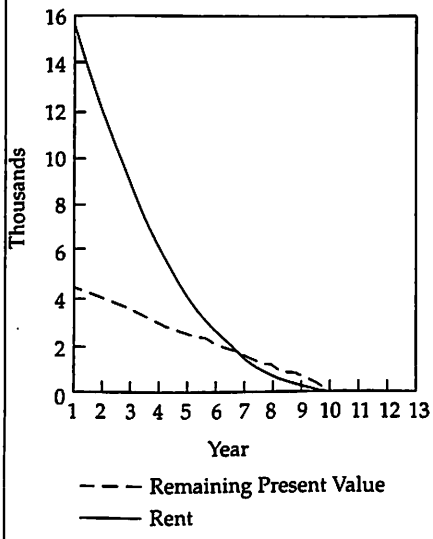
By now, the reader has probably sensed a conflict between the right-triangle model and a more traditional model of the time pattern of rents over the life of plant. In the traditional model, rents continue at roughly the same rate until the plant wears out. The time pattern is rectangular, rather than triangular.

The difference has investment implications. The rectangular model implies that, present-value effects aside, the value of plant is proportional to its remaining life. The triangular model implies that the value of plant varies with the square of its remaining life (see Figure C). In the traditional rectangular model, physical life determines economic life. In the triangular model, however, economic life determines physical life.

Junkyards are full of worn-out plant. Does this mean that physical life determines economic life—that the traditional, rectangular model is the correct model for the time pattern of rents over the life of plant?

Consider plant that is just obsolete, plant whose variable unit cost is just above the industry's marginal cost. Suppose also that its variable unit cost includes a substantial element of maintenance cost, so that suspending maintenance cost would make the obsolete plant competitive once again. It may then behoove its owner to suspend maintenance and keep the otherwise obsolete plant in production.

Figure C. How Economic Rent and Remaining Present Value Decline with Time



But when plant is operated without the necessary maintenance, it wears out. (And the owner forgoes the option of operating the plant in the future, if demand and price improve.) So the reprieve is merely temporary, and the worn-out plant ends up in the junkyard. Economic life has determined physical life, however, rather than the other way around.

Marginal Cost Decays with Time

The value of plant depends on economic rents, hence on the level of the industry's marginal cost, at each point during the plant's life. The right-triangle model illustrates the importance of the rate at which marginal cost is falling: This rate directly affects both economic life and the level of economic rents in the interim. If the reader is already convinced that the faster the industry adds capacity, the steeper the demand curve, the steeper the supply curve, the faster marginal cost will fall, he can skip this section.

At each point, the marginal plant is the oldest still operating. This means that, until a plant is obsolete, the plant governing marginal cost is plant already in the industry's supply curve. If we want to predict future economic rents for a plant, it isn't necessary to know the efficiency of any plant other than what is already in the supply curve.

We have seen that the relevant portion of future supply curves is given by

$$S(q, t) = S(q - \lambda t, o),$$

where t is measured from the present moment, and λ is, as before, the expected rate of capacity addition, and S(q, o) is the current supply curve. The output level q at time t is determined by equality between supply and demand:

$$D(q) = S(q, t) = S(q - \lambda t, o).$$

Price, hence marginal cost, at time t is then determined by D(q).

We ask, how fast will marginal cost, hence economic rents, fall? Differentiate the equation with respect to t:

$$\frac{dD}{dq}\frac{dq}{dt} = \frac{\partial S}{\partial t}\frac{dq}{dt} - \lambda$$

and solve for dq/dt:

$$\frac{dq}{dt} = -\frac{\lambda\dfrac{\partial S}{\partial q}}{\dfrac{dD}{dq} - \dfrac{\partial S}{\partial q}} = \frac{\lambda}{1 - (dD/dq)/(\partial S/\partial q)}$$

Marginal cost falls with time at rate:

$$-\frac{dD}{dq}\frac{dq}{dt} = \frac{\lambda\dfrac{dD}{dq}\dfrac{\partial S}{\partial q}}{\dfrac{dD}{dq} - \dfrac{\partial S}{\partial q}}$$

$$= \frac{\lambda}{[1/(\partial S/\partial q)] - [1/(dD/dq)]}$$

If the demand and supply curves slope steeply, and the expected rate of capacity addition λ is large, then marginal cost will fall rapidly with time, and so will economic rents. The slope of the supply curve is directly observable. The slope of the demand curve can be estimated if its elasticity is known. From the definition of the elasticity h_D we have:

$$h_d = -\frac{q\,dD}{D\,dq},$$

Table 1. Demand Elasticities

Air Travel (coach)	1.07
Apples	1.27
Bar Steel	1.30
Beef	0.65
Butter	0.62
Cabbage	0.25
Chicken	0.65
Copper (long term)	0.90
Cold Rolled Steel	1.49
Corn	0.63
Cream	0.69
Cucumbers	0.70
Eggs	0.43
Hot Rolled Steel	0.54
Lettuce	2.58
Milk	0.49
Onions	0.44
Oranges	0.62
Peaches	1.49
Peanuts	0.38
Peas	2.83
Plate Steel	1.81
Pork	0.45
Potatoes	0.27
Structural Steel	1.99
Tomatoes	2.22
Wool	0.33

Source: W. Adams, *The Structure of American Industry*, 5th ed. (New York: MacMillan, 1977).

$$\frac{dD}{dq} = -\left(\frac{D}{q}\right)h_d.$$

Table 1 lists demand elasticities for some representative products.

Technology and the Supply Curve

So far, we have taken an industry's supply curve as given. But what shapes the supply curve? What makes it steep or gradual, convex or concave?

We have noted that advances in plant technology are manifested in reductions in the variable unit cost of producing. For a given rate of capacity addition, more rapid technological advance—i.e., more rapid reduction in the variable unit cost of producing on new plant—will result in a steeper supply curve. For a given rate of technological advance, more rapid capacity addition will result in a less steep supply curve.

Once plant is built, its efficiency—its variable unit cost of producing—is locked in. Of course, it behooves its builder to avail himself of the best technology available at the time of construction. Points high up correspond to old, high-cost technology; points low down correspond to recent, relatively low-cost technology.

These observations suggest that each point on an industry's supply curve has a variable unit cost of producing fixed by the technology available when the plant was built. The capacity in the supply curve with that cost depends on the rate at which the industry was investing at that time. We can formalize these ideas by introducing a *technology function*, T(c), expressing the time T when new plant technology achieved a unit variable cost of production c, and an investment function, I(t), expressing the cumulative capacity added up to time t. The technology function captures the history of technological progress in the industry; the investment function captures the history of its capacity additions.

How is the supply curve related to the two dimensions of its history captured by the technology function and the investment function? When the industry's product price is p, the unit variable cost of producing on its marginal plant is also p. When we substitute price p for the unit variable cost c in the industry's technology function T(c), it tells us when such plant was built. At that price p, all plant added prior to T(p) is obsolete. Thus the industry's output at time t is the capacity I(t) accumulated up to that time, less the portion of that capacity that is obsolete at price p, or:

$$Q_S(p, t) = I(t) - I[T(p)],$$

where Q_S is the inverse supply function—i.e., the rate of output elicited by product price p at time t.

Earlier we saw that the rate at which an industry's marginal cost, hence its economic rent, falls depends on the slope of its supply curve. What does the slope of the supply curve depend on? Differentiate the new equation with respect to price p:

$$\frac{\partial Q_s}{\partial p} = -\frac{dI}{dt}\frac{dT}{dp}.$$

A steeply sloping supply curve corresponds to a small value for this expression, hence to rapidly changing technology (a small value of dT/dp) and a low rate of investment dI/dt.

WHAT PRACTITIONERS NEED TO KNOW . . .

. . . About Serial Dependence

Mark Kritzman

The first thing one should know about serial dependence is that it has nothing to do with an addiction to Rice Krispies, cornflakes or oatmeal. *Serial dependence* refers to the notion that returns evolve nonrandomly; that is, they are correlated with their prior values.

One variation of serial dependence is called *mean reversion*. With mean reversion, returns revert to an average value or asset prices revert to an equilibrium value. If an asset is priced above its equilibrium value, its price will not change randomly; it will be more inclined to decrease than to increase. Conversely, if an asset is priced below its equilibrium value, it will be more likely to increase than to depreciate further.

Another variation of serial dependence is known as *trending*. In a trending pattern, a positive return is more likely to be followed by another positive return than a reversal, and a negative return is more likely to be succeeded by another negative return than a positive return.

Of course, some returns may conform to nonrandom patterns that are more complex than simple mean reversion or trending. For example, the returns in a series may be correlated not with their immediately prior returns, but with more distant prior returns. Alternatively, returns may be linearly independent of prior values but display serial dependence after some transformation.

The extent to which asset returns evolve nonrandomly has important consequences for financial analysis. First of all, if asset returns are nonrandom, then their variance will depend on the interval used to measure them. Instead of varying proportionately with the time interval, the variance of returns will vary at a varying rate. I will discuss some of the implications of this nonlinearity later.

Second, if investment returns are serially dependent, they are at least partly predictable. This result is of obvious interest because it raises the possibility that we can devise trading rules to generate abnormal profits.

How to Detect Serial Dependence

There are several ways to detect serial dependence. One of the simplest and most intuitive is to perform a *runs test*. In order to perform a runs test, we first compute the average value of the series. Then we designate every value that is above the mean as positive and every value that is below the mean as negative. Next we compute the number of runs in the series.

A run is an uninterrupted sequence of positive or negative values. For example, a sequence of four positive values (++++) would constitute a single run, whereas a sequence of four alternating values (+−+−) would constitute four runs. The expected number of runs in a random sequence is given by the following formula:

$$E(R) = \frac{2(n1)(n2)}{n1 + n2} + 1 \qquad (1)$$

where

n1 = number of positive observations and
n2 = number of negative observations.

A random series of 60 positive observations and 40 negative observations should have 49 runs. Significantly more than 49 runs would indicate that the duration of the series' typical run is shorter than we should expect from a random series. We would conclude, therefore, that the series is characterized by mean reversion. Significantly fewer than 49 runs would indicate that the duration of the series' typical run is longer than we should expect from a random series; the series is characterized by trends.

In order to determine whether or not the actual number of runs differs significantly from the expected number of runs, we must compute the standard deviation of runs. This is given by Equation 2:

$$S = \sqrt{\frac{2(n1)(n2)[2(n1)(n2) - n1 - n2]}{(n1 + n2)^2(n1 + n2 - 1)}} \qquad (2)$$

Once we know the standard deviation of the runs, we can compute a normal deviate by dividing the difference between the observed number of runs and the expected number of runs by the standard deviation. Based on 60 positive values and 40 negative values, the standard deviation of runs equals 4.77. If we observe only 39 runs, we should be about 96% confident that the series is nonrandom; because there are fewer runs than we would expect from a random sequence, we would conclude that the series trends. If we observe 59 runs, we would be equally confident that the series is nonrandom, but this time we would conclude that the series is mean reverting.

A runs test is limited because it deals only with direction. It depends only on whether an observation is

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above or below average and not on the extent to which the observation differs from the average. Statistical procedures that deal only with rank are referred to as *nonparametric procedures.*

We can also measure serial dependence with procedures that rely on the magnitude of the observations instead of just their rank. One obvious procedure is to test for *autocorrelation* by regressing the returns in a series on their prior values. If we regress a series on the immediately prior values, we test for first-degree autocorrelation. If we set the independent variable equal to the values preceding the immediately prior values, we test for second-degree autocorrelation.

A significantly positive correlation coefficient suggests that a series is prone to trends. A significantly negative correlation coefficient suggests that a series is characterized by mean reversion.

Another parametric procedure for measuring serial dependence is called a *variance ratio test.* If a sequence of returns is random and we compute several estimates of the variance based on different return intervals, the estimates should be linearly related to one another. Specifically, the variance estimated from two-day returns should be twice as large as the variance estimated from daily returns, and the variance estimated from quarterly returns should be three times as large as the variance estimated from monthly returns. If you prefer to think in terms of standard deviations, the standard deviation of quarterly returns should exceed the standard deviation of monthly returns by a factor equal to the square root of three.

The variance ratio is computed by dividing the variance of returns estimated from the longer interval by the variance of returns estimated from the shorter interval and then normalizing this value to one by dividing it by the ratio of the longer interval to the shorter interval:

$$VR = \frac{Vl/Vs}{l/s} \tag{3}$$

where

Vl = variance estimated from longer interval returns,
Vs = variance estimated from shorter interval returns,
l = number of periods in longer interval and
s = number of periods in shorter interval.

Suppose, for example, we estimate the variance of annual returns as 4.0% and the variance of monthly returns, using the same measurement period, as 0.4%. Based on these estimates, the variance ratio equals 0.8333 [(4.0%/0.4%)/12].

A variance ratio of less than one suggests that the shorter-interval returns tend toward mean reversion within the duration of the longer interval. By contrast, a variance ratio that exceeds one suggests that the shorter-interval returns are inclined to trend within the duration of the longer interval.

Consider an extreme and obviously unrealistic example. Suppose we observe, each year for many years, the pattern of returns given in Table 1. Just by inspection, it is apparent that the monthly returns trend within a quarter and that the quarterly returns mean revert within a year. This result is confirmed by the variance ratio test. The variance of the monthly returns equals 0.01%, and the variance of the quarterly returns equals 0.09%, which corresponds to a variance ratio of 3.00.

Table 1. Hypothetical Return Series

	Monthly	Quarterly	Annual
January	1.00%		
February	1.00%		
March	1.00%	3.03%	
April	−1.00%		
May	−1.00%		
June	−1.00%	−2.97%	
July	1.00%		
August	1.00%		
September	1.00%	3.03%	
October	−1.00%		
November	−1.00%		
December	−1.00%	−2.97%	−0.06%

Because the annual return is the same every year, the variance of the annual returns equals 0.0%. The variance ratio of annual returns to quarterly returns or to monthly returns thus also equals 0, demonstrating that mean reversion produces a variance ratio that is less then one.

Of course, whether or not a series is significantly nonrandom depends on the magnitude of the variance ratio and the number of observations from which it is estimated. Equation 4 shows how to calculate the normal deviate of a variance ratio that is estimated from overlapping observations:[1]

$$z(q) = \sqrt{n}(VR - 1)[2(2q - 1)(q - 1)/3q]^{1/2} \tag{4}$$

where

n = number of observations used to estimate variance in denominator,
VR = variance ratio and
q = number of periods in interval used to estimate variance in numerator.

The use of overlapping observations helps to preserve a sufficient number of observations for estimating the variance in the numerator as we extend the interval.

The variance in the numerator of the variance ratio in Equation 4 is computed slightly differently from the normal method. Because the variance in the numerator is estimated from overlapping returns, it is computed by squaring the differences, not from the average return of the longer-interval returns, but rather from a quantity equal to the average of the shorter-interval returns multiplied by the number of periods in the longer interval. For example, if monthly returns are used to estimate the variance in the denominator and quarterly

returns are used to estimate the variance in the numerator, then the numerator's variance is estimated as the average of the squared differences from the average monthly return times three.

It is also important to note that Equation 4 depends on the assumption that the nonrandomness is not caused by heteroskedasticity, which is to say it does not arise because the variance changes through time. If heteroskedasticity is present, additional adjustments are required to determine whether or not the series is serially dependent.[2]

Investment Implications

As noted, if returns are serially dependent, variances estimated from longer-interval returns may not be proportional to variances estimated from shorter-interval returns. If returns are positively serially correlated, (i.e., trending), then variance should grow at an increasing rate as the return interval increases. If returns are negatively serially correlated (i.e., mean reverting), then variance should grow at a declining rate as the return interval increases.

This result has important consequences for asset allocation. Suppose we choose an asset mix by maximizing expected utility, which we define as expected return minus risk aversion times variance. If variance is proportional to time, our investment horizon does not affect our choice of asset mix. But if variance increases at an increasing rate with time, we would choose a more conservative asset mix, the longer our horizon. The opposite would hold if variance increased at a decreasing rate with time: We would be inclined to select a more aggressive asset mix over a longer horizon than we would select for a shorter horizon.

Suppose, for example, that a particular asset mix has an expected annual return of 10% and a variance of 4%, estimated from annual returns. If, at the margin, we are willing to sacrifice two units of expected return to reduce variance by one unit (that is, our risk aversion equals 2), this asset mix is expected to yield 0.02 units of utility, given a one-year horizon ($0.10 - 2 \times 0.04$).

Now suppose that the variance ratio of five-year returns to one-year returns equals 1.1. This variance ratio implies that the annualized variance estimated from five-year returns equals 4.4%. The same asset mix is expected to yield only 0.012 annualized units of utility, given a five-year horizon. We must choose a more conservative asset mix to generate the same level of expected utility that we expect from the asset mix given a one-year horizon.

If the variance ratio of five-year returns to one-year returns equals 0.9%, the annualized variance estimated from five-year returns would equal 3.6%; the same asset mix would yield 0.028 units of expected utility. We would thus have to lower the risk of the asset mix in order to generate the same level of expected utility in one year that we could achieve given a five-year horizon. Table 2 summarizes these results.

Table 2. Expected Utility as a Function of Horizon When Returns are Nonrandom

Investment Horizon	Annualized Expected Return	Risk Aversion	Annualized Variance	Expected Utility
1 Year	10.0%	2	4.0%	2.0%
5 Years (VR = 1.1)	10.0%	2	4.4%	1.2%
5 Years (VR = 0.9)	10.0%	2	3.6%	2.8%

Now consider the implications of serial dependence on option pricing. The value of an option is conditioned on five factors—the price of the underlying asset, the striking price, the riskless rate of interest, the time remaining to expiration and the volatility of the underlying asset. If we hold constant all the other factors, the value of an option increases with the volatility of the underlying asset because uncertainty raises the likelihood that the option will end up in the money.

If the returns of the underlying asset are positively serially correlated within a quarter, then the variance of quarterly returns will exceed three times the variance of monthly returns. Therefore, if we estimate the volatility of the underlying asset from monthly or higher-frequency returns, and then extrapolate this estimate according to the Black-Scholes assumption that variance changes linearly with time, we will underestimate the value of the three-month option. If the returns of the underlying asset mean revert, and we extrapolate the variance in accordance with the assumptions of Black-Scholes, we will overestimate the value of the longer-dated option.

We can extrapolate the annualized variance estimated from shorter intervals simply by multiplying it by the appropriate variance ratio. Similarly, we can extrapolate an annualized standard deviation by multiplying it by the square root of the appropriate variance ratio. For example, suppose our estimate of standard deviation is based on daily returns and we wish to estimate the value of an option that expires in three months. If the variance ratio of three-month returns to daily returns equals 1.21, we simply multiply the annualized standard deviation of daily returns by 1.10, the square root of the variance ratio, in order to value the three-month option.

If we believe that the returns of the underlying asset are serially dependent but that the market prices the option according to the Black-Scholes assumption that variance changes linearly with time, we might be able to profit by trading options on the same underlying asset but with different expiration dates. If the asset's returns trend within the horizon of a long-dated option, the long-dated option will be undervalued, on balance, relative to a short-dated option. We should, therefore, purchase the long-dated option and sell the short-dated option. By contrast, if the asset's returns mean revert within the horizon of the long-dated option, it will be

overvalued relative to the short-dated option. We should thus sell the long-dated option and purchase the short-dated option.

If returns are serially dependent, it follows that they are partly predictable. We might therefore be able to devise profitable trading strategies. We might be able to exploit mean reversion with a simple linear investment rule. If the allocations of the assets in our portfolio change according to changes in their relative returns, for example, we might decide to change an asset's allocation by less than the return-induced change, anticipating that the asset return will revert toward its average level.

Suppose we allocate 50% of our portfolio to a risky asset that we believe mean reverts and the balance to a riskless asset that returns 0.5% per month. With changes in the risky asset's return, we will change the asset's allocation by an amount equal to −5 times the percentage change that would occur in a simple buy-and-hold portfolio. Table 3 shows how $100 invested according to this linear investment rule grows over one year compared with a 50/50 buy-and-hold strategy, assuming the risky asset's returns revert back and forth between +6.0% and −4.0%.

Table 3. A Linear Investment Rule to Exploit Mean Reversion

	Linear Investment Rule		Buy/Hold Strategy	
Risky Asset Return	Risky Per Cent	Portfolio Value	Risky Per Cent	Portfolio Value
—	50.00%	100.00	50.00%	100.00
6.0%	43.34	103.25	51.33	103.25
−4.0	48.95	101.75	50.19	101.38
6.0	42.29	105.00	51.52	104.69
−4.0	47.86	103.53	50.37	102.78
6.0	41.20	106.77	51.70	106.14
−4.0	46.73	105.32	50.56	104.21
6.0	40.09	108.56	51.89	107.62
−4.0	45.56	107.14	50.75	105.65
6.0	38.94	110.36	52.08	109.13
−4.0	44.36	108.98	50.93	107.11
6.0	37.77	112.18	52.26	110.65
−4.0	43.12	110.84	51.12	108.60

The linear investment rule generates a 2.24% incremental return relative to the buy-and-hold strategy. Its standard deviation is also less—7.67% compared with 8.85% for the buy-and-hold strategy. Of course, it is highly improbable that any return series would follow such a precise mean-reverting pattern.

Table 4. Variance Ratios, July 1973–June 1993

Monthly Returns	Interval Used to Estimate Variance in Numerator		
	One Year	Two Years	Three Years
S&P 500			
Variance Ratio	0.88	0.46	0.34
Significance	−0.48	−1.54	−1.51
Government Bonds			
Variance Ratio	1.02	1.11	1.05
Significance	0.10	0.31	0.12
British Pound			
Variance Ratio	1.24	1.38	1.43
Significance	0.98	1.07	0.99
Deutschemark			
Variance Ratio	1.22	1.46	1.58
Significance	0.92	1.31	1.31
French Franc			
Variance Ratio	1.41	1.76	2.04
Significance	1.69	2.14	2.38
Japanese Yen			
Variance Ratio	1.37	1.39	1.40
Significance	1.55	1.10	0.92

Evidence of Serial Dependence

The preceding discussion invites the obvious question: *Are* returns serially dependent? Table 4 shows the variance ratios and their significance for stocks, bonds and several currencies. The variance in the denominator is estimated from monthly returns. The significance is the normal deviate estimated by using Equation 4.

According to the variance ratios in Table 4, monthly stock returns mean revert, monthly bond returns are random, and monthly currency returns trend. Only the French franc is significantly nonrandom, based on this measurement period.

The results in Table 4 suggest that we should at least be mindful of how we estimate volatility. It might not always be prudent to assume that variances change linearly with time. These results also suggest that we might be able to profit from trading rules designed to exploit serial dependence, although they do not inspire a great deal of confidence that simple trading rules will generate consistent profits. These results, however, might encourage one to investigate more complex structures of serial dependence.[3]

Footnotes

1. For a derivation of a normal deviate based on overlapping observations, see A. Lo and A. MacKinlay, "Stock Market Prices do not Follow Random Walks: Evidence from a Simple Specification Test," *Review of Financial Studies*, Spring 1988.
2. A procedure for correcting for heteroskedasticity is given by Lo and MacKinlay, *ibid.* Please be aware, however, that it contains a typographical error. The numerator of Equation 19 should include the term "nq" in front of the summation sign.
3. I wish to thank Gita Rao for her helpful comments.

Series F33-55. Gross national expenditure in constant (1971) dollars, by components, 1926 to 1976 (concluded)

(millions of dollars)

Year	Value of physical change in inventories				Exports of goods and services	Imports of goods and services	Residual error of estimate	Adjusting entry	Gross national expenditure in constant (1971) dollars
	Total	Government	Business						
			Non-farm	Farm and grain in commercial channels					
	47	48	49	50	51	52	53	54	55
1976	788	22	743	223	26,225	-32,166	-135	—	119,249
1975	-252	16	-344	76	23,993	-29,684	243	—	113,005
1974	2,642	18	2,729	-105	25,620	-30,538	516	—	111,678
1973	1,346	-16	1,359	3	26,156	-27,824	76	—	107,812
1972	515	15	835	-335	23,655	-24,489	-159	—	100,248
1971	392	-40	406	26	22,181	-22,016	-891	—	94,450
1970	84	-19	228	-125	21,223	-20,588	-341	-68	88,390
1969	1,518	-1	1,043	476	19,462	-20,727	491	285	86,225
1968	771	20	615	136	17,727	-18,284	-6	125	81,864
1967	253	15	225	13	15,770	-16,805	-31	9	77,344
1966	1,385	-8	1,165	228	14,315	-15,989	-215	167	74,844
1965	1,441	-20	1,452	9	12,606	-14,140	-256	212	69,981
1964	655	-66	865	-144	12,058	-12,595	-64	152	65,610
1963	764	-18	481	301	10,631	-11,125	54	260	61,487
1962	756	-3	527	232	9,744	-10,769	175	108	58,475
1961	251	4	629	-382	9,374	-10,559	-196	-132	54,741
1960	523	-52	419	156	8,717	-10,347	-271	209	53,231
1959	468	55	474	-61	8,360	-10,357	-317	129	51,737
1958	-280	24	-278	-26	8,047	-9,386	-239	-60	49,844
1957	249	-25	329	-55	8,075	-10,096	-31	-52	48,718
1956	1,144	-11	930	225	8,002	-10,215	-187	13	47,599
1955	410	-3	194	219	7,442	-8,799	61	-93	43,891
1954	-238	-12	-157	-69	6,917	-7,761	86	-680	40,106
1953	752	-34	568	218	7,185	-8,151	-124	-320	40,605
1952	481	72	100	309	7,260	-7,527	20	-117	38,617
1951	1,025	-27	760	292	6,513	-7,277	333	242	35,450
1950	789	-32	611	210	5,956	-6,469	10	673	33,762
1949	215	28	231	-44	5,997	-5,939	83	359	31,388
1948	109	-40	108	41	6,375	-5,781	211	611	30,231
1947	672	-106	799	-21	6,170	-6,411	39	419	29,498
1946	420	-415	847	-12	6,208	-5,711	-184	-274	28,292
1945	-122	-59	317	-380	7,402	-6,173	-537	-3,599	29,071
1944	-70	17	9	-96	7,600	-7,760	-360	-5,699	29,736
1943	-45	65	78	-188	7,874	-6,553	-263	-4,868	28,604
1942	-21	14	-454	419	5,663	-5,500	-166	-3,654	27,497
1941	245	-11	325	-69	6,329	-5,122	-138	-1,205	23,194
1940	573	17	239	317	4,817	-4,423	-235	114	20,277
1939	604	-4	288	320	4,225	-3,964	-55	863	17,774
1938	154	-4	-55	213	3,836	-3,708	-89	648	16,545
1937	246	-4	317	-67	4,248	-3,971	-177	392	16,410
1936	2	-4	202	-196	4,158	-3,596	-200	148	14,912
1935	152	-4	112	44	3,459	-3,174	-310	432	14,279
1934	81	-4	52	33	3,137	-2,957	-350	389	13,245
1933	-236	-4	-202	-30	2,774	-2,775	-276	241	11,811
1932	-306	-4	-397	95	2,748	-2,921	-277	256	12,654
1931	-253	-4	-164	-85	2,967	-3,403	-391	-33	14,118
1930	221	-4	80	145	3,319	-4,248	-98	427	16,174
1929	311	-4	386	-71	3,817	-4,670	-129	246	16,894
1928	390	-4	294	100	4,055	-4,274	29	604	16,831
1927	533	-4	423	114	3,577	-3,804	50	555	15,423
1926	399	-4	391	12	3,563	-3,443	362	367	14,086

International Price and Quantity Comparisons: Purchasing Power Parities and Real Expenditures, Canada and the United States

by Katharine Kemp*

Of the proportion, which the product of any region bears to the people, an estimate is commonly made according to the pecuniary price of the necessaries of life; a principle of judgment which is never certain, because it supposes what is far from the truth, that the value of money is always the same, and so measures an unknown quantity by an uncertain standard. It is competent enough when the markets of the same country, at different times, and those times not too distant, are to be compared; but of very little use for the purpose of making one nation acquainted with the state of another.

Samuel Johnson
A Journey to the Western Islands of Scotland, 1775

Introduction

This article introduces two new tables showing volume indexes of real[1] Gross Domestic Product (GDP) per capita and its components for Canada compared with the United States and the associated purchasing power parities (PPPs). These international comparisons of real expenditures based on PPPs are considered to be a major addition to the tools available for macroeconomic analysis, as will be explained more fully below. For example, the recent publication by the International Monetary Fund (IMF)[2] of a set of estimates of different countries' output using PPPs has changed the view of the share of world output that comes from the industrialized countries compared with the developing economies. The analysis based on PPPs, rather than a more conventional one based on exchange rates, has

* With appreciation to Philip Smith, John Joisce and Bohdan Schultz (STC)) as well as David Roberts (OECD) for their advice and comments, to Debbie MacDonald, whose assistance in preparing the estimates was invaluable, and to Gylliane Gervais, who edited the text.

1. The terms "real" and "volume" are used in this article, and more generally, in describing international comparisons in which expenditures of different countries are expressed in the same set of prices, through the process of conversion with PPPs; this usage, in a spatial context, is analogous to the conventional use of these terms in time series, in which prices of a base period are used to derive "real" growth rates of expenditures over time. The terminology is more fully explained in the text.

2. World Economic Outlook, IMF, Washington, 1993.

Comparaisons internationales des quantités et des prix: parités de pouvoir d'achat et dépenses réelles, Canada et États-Unis

par Katharine Kemp*

Du rapport entre le produit d'une région quelconque et la population, une estimation est communément faite en fonction du prix monétaire des choses essentielles à la vie; la prémisse de ce jugement n'est jamais certaine, parce qu'elle suppose ce qui est loin d'être vrai, que la valeur de l'argent est toujours la même, et mesure ainsi une quantité inconnue au moyen d'un étalon incertain. Cette estimation est assez fiable lorsqu'il s'agit de comparer des marchés du même pays à différents moments, et encore pas trop éloignés; mais elle est d'une utilité limitée quand il s'agit pour une nation de se familiariser avec l'état d'une autre.

Samuel Johnson
A Journey to the Western Islands of Scotland, 1775

Introduction

Cet article innove en introduisant deux nouveaux tableaux où figurent des indices de volume du Produit intérieur brut (PIB) réel[1] par habitant et de ses agrégats pour le Canada et les États-Unis et les parités de pouvoir d'achat (PPA) connexes. Ces comparaisons internationales des dépenses réelles fondées sur les PPA représentent une addition majeure à la gamme des outils d'analyse macroéconomique, comme on le verra en détail plus loin. À titre d'exemple, la publication récente, par le Fonds monétaire international(FMI),[2] d'un ensemble d'estimations de la production de divers pays calculées au moyen des PPA a donné une toute autre impression de la part de la production mondiale attribuable aux pays industrialisés par rapport aux pays en voie de développement. L'analyse fondée sur les PPA, par opposition à l'analyse plus conventionnelle faisant appel aux taux de

* L'auteur désire remercier Philip Smith, John Joisce et Bohdan Schultz (STC) ainsi que David Roberts (OCDE) pour leurs conseils et commentaires, Debbie MacDonald, dont le concours à la préparation des estimations s'est avéré inestimable, ainsi que Gylliane Gervais qui a édité le texte.

1. Les termes "réel" et "volume" sont employés dans cet article, et de façon plus générale, pour décrire des comparaisons internationales où les dépenses des différents pays sont exprimées dans le même ensemble de prix, grâce à une conversion au moyen des PPA; l'emploi de ces termes, dans un contexte spatial, est analogue à celui qu'on en fait habituellement dans des séries chronologiques, où les prix d'une période de base servent à calculer le taux de croissance "réel" des dépenses dans le temps. La terminologie employée est expliquée plus à fond dans le texte.

2. World Economic Outlook, FMI, Washington, 1993.

significantly changed the relative measures of output of countries. Comparisons based on exchange rates are unlikely to fully take into account the differences in price levels between countries, that is, the goods and services that can be purchased in one country's currency compared with another's. Moreover, services are not generally traded in the way that goods are, so their prices in different countries tend not to be related in a way that parallels the currency exchange rate. If aggregate output is to be properly compared across countries, PPPs become more and more important as the size of the service sector grows. Economic theory would suggest that for internationally traded domestically produced goods and services, PPPs and exchange rates will tend to equalize in the long run. Exchange rates, however, can fluctuate widely in short periods and are affected by expectations and by factors such as deficits, wars, fuel shortages and interest rates. With the calculation of PPPs, actual price level differences can be identified. Such measures are also much more stable over time.

The data presented in this article have been developed and projected from the results of two studies recently published by the Organisation for Economic Co-operation and Development (OECD), ***Purchasing Power Parities and Real Expenditures, EKS Results, Volume 1 (1992)*** *and* ***Purchasing Power Parities and Real Expenditures for Canada and the United States*** (1993). These studies, based on the 1990 round of the Eurostat-OECD Purchasing Power Parity program, provide benchmark data for the first time since similar studies were undertaken in 1985. Multilateral results for all 24 OECD member countries were obtained, from which two summary tables are also included here. This article, however, focuses primarily on the Canada/US bilateral comparison of real expenditures on components of the GDP, which is of particular interest. Some differences in method from the multilateral study allowed the results of the bilateral one to be more directly comparable. The differences in the results for Canada and the United States between the multilateral and bilateral studies will be discussed in the **Results** section. The bilateral study is judged to be more appropriate for analysis between these two countries, because it relates expenditure and price data specifically from the two countries involved, not from all 24 countries as is the case in the multilateral study. Furthermore, the specifications of items to be priced have been more precisely matched between these two closely related and mutually dependent economies, in which tastes and buying habits are similar. The bilateral Canada/United States and other country group studies (e.g., the one for the Nordic countries) have been undertaken with price and expenditure data collected at the same time as the data used in the multilateral studies.

change, a modifié la mesure de la production des pays de façon sensible. Les comparaisons fondées sur les taux de change peuvent difficilement tenir compte des écarts dans le niveau des prix entre pays, c'est-à-dire des biens et services que l'on peut acheter dans la monnaie d'un pays par rapport à celle d'un autre. En outre, les services ne s'échangent pas autant que les biens, de sorte que leurs prix dans les différents pays n'ont pas tendance à être reliés aussi étroitement aux taux de change des devises. Si l'on désire procéder à une comparaison valable de la production totale entre pays, le recours aux PPA devient de plus en plus nécessaire au fur et à mesure que s'accroît la part du secteur des services. La théorie économique donne à entendre que pour des biens et services produits au pays et faisant l'objet d'échanges internationaux, les PPA et les taux de change auront tendance à s'équivaloir à long terme. Les taux de change peuvent fluctuer grandement à brève échéance et sont influencés par des facteurs comme les déficits, les guerres, les pénuries de carburant et les taux d'intérêt. Le calcul des PPA permet de dégager les écarts réels de prix. Ces mesures sont aussi beaucoup plus stables dans le temps.

Les données présentées dans cet article ont été élaborées et projetées à partir des résultats de deux études récentes de l'Organisation de coopération et de développement économiques (OCDE), à savoir ***Parités de pouvoir d'achat et dépenses réelles, résultats EKS, Volume 1*** (1992) *et* ***Parités de pouvoir d'achat et dépenses réelles pour le Canada et les États-Unis*** (1993). Ces études, fondées sur l'exercice 1990 du programme conjoint Eurostat-OCDE sur les parités de pouvoir d'achat, fournissent des données repères pour la première fois depuis les études analogues entreprises en 1985. Des résultats multilatéraux ont été obtenus pour les 24 pays membres de l'OCDE et deux des tableaux sommaires en sont reproduits ici. L'accent est mis toutefois dans cet article sur une comparaison bilatérale Canada-États-Unis des dépenses réelles par agrégat du PIB, qui offre un intérêt particulier. En raison de certaines différences de méthode par rapport à l'étude multilatérale, les résultats de l'étude bilatérale sont plus directement comparables. Les écarts dans les résultats pour le Canada et les États-Unis entre les études multilatérale et bilatérale sont examinés dans la section **Résultats**. On estime que l'étude bilatérale se prête mieux à une analyse comparée des deux pays, car elle met en rapport des données sur les dépenses et les prix spécifiques aux deux pays en cause, plutôt qu'à l'ensemble des 24 pays, comme c'est le cas pour l'étude multilatérale. En outre, on a pu établir une meilleure concordance entre les spécifications des postes de dépense dont il fallait établir le prix dans ces deux pays très proches, à économies interdépendantes et où les goûts et les habitudes de consommation sont semblables. L'étude bilatérale Canada-États-Unis et les autres études de groupes de pays (celle des pays scandinaves par exemple) ont été menées avec des données sur les dépenses et les prix recueillies en même temps que celles employées dans les études multilatérales.

On the pricing side, some items present far greater difficulties for international price comparison than others, and, in general, such spatial comparisons are more difficult than measuring price change over time within a single country. The more different are the countries to be compared in terms of income levels, economic structures, climate and tastes, the more difficult the price comparisons become. In this sense, Canada and the United States are particularly good partners for such comparisons.

This article defines the purchasing power parities, provides some background on the applications, results and development of the PPP program and summarizes the formulas used and their implications. The note concludes with some thoughts for future developments. The results are presented in a few tables and charts at the end of the article and the methods are outlined in **Appendix A**. In the tables, the OECD benchmark studies for 1985 and 1990 are interpolated and extrapolated from 1981 to 1992 for the United States and Canada. The data from the 1985 and 1990 bilateral studies are judged to be more robust than those from the first OECD study (done for the year 1980) and therefore only the later studies have been used as the basis for projecting the results back to 1981. Certain operational aspects of the program, such as item specification and price determination, have a profound bearing on the results; these aspects are covered in more detail in other source material.[3]

From now on, the tables comparing real GDP (through volume indexes) and the purchasing power parities for Canada and the United States will be updated annually; the results will be estimated between benchmark years of the OECD program.

Purchasing Power Parities: What are they?

A purchasing power parity at the most basic level is a ratio of prices for a particular commodity in two countries with the prices expressed in the two national currencies. Such a ratio is calculated by dividing the price of a specific quantity of an item of a specific quality in one country's currency by the price of the same item in the other country, in the currency of the other country. The purchasing power of the different currencies is thus equal (or has parity) in terms of the specific quantity of a particular good or service that can be purchased. The PPP can be described therefore as the rate of currency conversion that equalizes the purchasing power of different currencies. These parities have also been referred to as product-specific cross-currency price indexes. In practice, the ratios are determined for individual items by directly pricing the same good or service in different countries in their own currencies.

3. See for example Dryden, Reut and Slater.

En ce qui concerne les prix, leur comparaison internationale pose de sérieux problèmes pour certains postes et il est habituellement plus difficile de procéder à des comparaisons spatiales que de mesurer l'évolution des prix dans le temps dans un seul pays. Plus les pays à comparer accusent de différences sur le plan des niveaux de revenu, de la structure économique, du climat et des goûts, plus la comparaison des prix est difficile. À cet égard, le Canada et les États-Unis se prêtent particulièrement bien à ce genre de comparaison.

Le présent article définit les parités de pouvoir d'achat, brosse un tableau des applications, des résultats et de l'évolution du programme des PPA, puis résume les formules utilisées et leur incidence. Il conclut en faisant le point sur les orientations futures de la recherche. Les résultats sont présentés à la toute fin de l'article dans quelques tableaux et graphiques, et les méthodes sont résumées à l'**appendice A**. Dans les tableaux, les études repères de l'OCDE visant les années 1985 et 1990 sont interpolées et extrapolées de 1981 à 1992 pour le Canada et les États-Unis. Les résultats des études bilatérales de 1985 et 1990 sont jugés plus fiables que ceux de la première étude de l'OCDE (portant sur l'année 1980) de sorte que seules les études ultérieures ont servi de repères pour projeter les résultats en amont jusqu'en 1981. Certains aspects opérationnels du programme, comme la spécification des postes de dépense et la détermination des prix, ont une profonde incidence sur les résultats; on en trouvera une description détaillée dans d'autres documents de référence.[3]

Désormais, les tableaux comparant le PIB réel (par le biais d'indices de volume) et les parités de pouvoir d'achat pour le Canada et les États-Unis seront mis à jour à chaque année; les résultats seront estimés entre les années repères du programme de l'OCDE.

En quoi consistent les parités de pouvoir d'achat?

Au niveau le plus élémentaire, une parité de pouvoir d'achat est un rapport de prix pour un bien ou un service donné dans deux pays, avec les prix exprimés dans les deux monnaies nationales. Ce rapport est calculé en divisant le prix, exprimé en monnaie du pays, d'une quantité donnée d'un élément d'une qualité donnée par le prix du même élément dans l'autre pays, dans la monnaie de l'autre pays. Le pouvoir d'achat des différentes monnaies est donc égal (d'où la parité) en termes de la quantité spécifique du bien ou service donné qu'on peut acheter. La PPA peut donc être définie comme le taux de change qui égalise le pouvoir d'achat des différentes monnaies. On a déjà décrit ces parités comme des indices de prix spécifiques à un produit pour diverses monnaies. En pratique, les rapports de prix sont établis pour un élément donné en déterminant directement le prix d'un même bien ou service dans différents pays, exprimé dans leur propre monnaie.

3. Voir, par exemple, Dryden, Reut et Slater.

The following example (Text Table 1) demonstrates the calculation for one commodity.

The price of a litre of 2% milk:

In this example, $0.87 US buys the same amount as $1.00 CAN for a US PPP of 0.87 or alternatively, $1.15 CAN is equivalent to $1.00 US for a Canadian PPP of 1.15.

L'exemple suivant (tableau explicatif 1) en montre le calcul pour un produit donné.

Soit le prix d'un litre de lait 2%:

Dans cet exemple, 0,87$ É.-U. permet d'acheter la même quantité que 1,00$ CAN, pour une PPA américaine de 0,87, ou, inversement, 1,15$ CAN équivaut à 1,00$ É.-U., pour une PPA canadienne de 1,15.

Text Table 1: Purchasing Power Parities
Tableau explicatif 1: Parités de pouvoir d'achat

Country	Price (one litre of 2% milk) Prix (un litre de lait 2%)	Price ratio Rapport de prix	Pays
United States	$1.30 US	1.30 / 1.50 = 0. 87	États-Unis
Canada	$1.50 CAN	1.50 / 1.30 = 1.15	Canada

This result can be contrasted with one based on the exchange rate. If the exchange rate were $1.25 CAN to $1.00 US, the milk would be expected to cost 1.25 times $1.30 US = $1.63 CAN, or 8% more than the actual price of $1.50 in Canada.

Ce résultat peut être opposé à celui obtenu à partir du taux de change. Si le taux de change était de 1,25$ CAN pour 1,00$ É.-U., le lait serait censé coûter 1,25 * 1,30$ É.-U. = 1,63$ CAN, soit 8% de plus que le même lait vendu 1,50$ au Canada.

Individual item price ratios of this form are averaged to calculate parities for "basic headings". These are groups of similar, well-defined commodities constituting the most detailed level of commodity classification in the PPP program. In principle, it would be preferable to weight the price ratios within basic headings (to the extent that the detailed categories are reasonably stable over time), but the expenditure data available are not sufficiently detailed. PPPs for larger aggregates, such as the Gross Domestic Product or personal expenditure, are obtained by aggregating parities at the basic heading level to higher levels using as weights expenditures on Gross Domestic Product categories in the appropriate country depending on the formula used. For the PPP program, the published expenditure categories of the Canadian System of National Accounts (CSNA) were further disaggregated to provide weights at more detailed levels.

On établit ensuite la moyenne des rapports de prix des éléments individuels pour calculer les parités des "rubriques élémentaires". Celles-ci sont des groupes de biens et services similaires et bien définis constituant le niveau de classification le plus détaillé du programme de l'OCDE. En théorie, il serait préférable de pondérer les rapports de prix au sein des rubriques élémentaires (dans la mesure où les catégories détaillées sont assez stables dans le temps), mais les données disponibles sur les dépenses ne sont pas assez détaillées. Les PPA des plus grands agrégats comme le Produit intérieur brut ou les dépenses personnelles sont obtenues par l'agrégation des PPA des rubriques élémentaires à un niveau supérieur, en utilisant comme poids les dépenses par catégorie du PIB dans le pays approprié d'après la formule utilisée. Aux fins du programme des PPA, les catégories de dépense publiées du système de comptabilité nationale du Canada (SCNC) ont été désagrégées davantage pour en tirer des poids à un niveau plus détaillé.

The conceptual issues involved in aggregating individual spatial price comparisons from which to calculate real levels of expenditure are analogous to the aggregation issues encountered in constructing price indexes for time series in order to derive constant dollar estimates. The choice of index number formula is based

Les problèmes théoriques que pose l'agrégation de comparaisons de prix individuels dans l'espace aux fins du calcul du niveau réel des dépenses sont semblables aux problèmes d'agrégation que pose la construction d'indices de prix en une série chronologique aux fins de créer des estimations en dollars constants. Il faut prendre deux objectifs

on two considerations: consistency in aggregation of the results in the country whose expenditures are converted, and transitivity or reversibility of the results from one country to another. As both objectives cannot be achieved with the same formula, the purposes for the comparison must be taken into account in selecting the formula to be used.[4] Structural comparisons between countries are more appropriately made with the additively consistent results, while comparisons of specific components should perhaps be done using the transitive formula. Similarly, but to a lesser degree, the choice of reference country is analogous to the choice of base period in a time series. With international comparisons, there are additional factors to be considered as well: volume comparisons are made between economies of entirely different scale or magnitude, unlike time series where the periods of time are most often homogeneous (such as quarters or years); countries can be divided into regions or aggregated into groups and the price weights should be invariant whichever way the aggregation is done. Direct quantitative comparisons between economic situations that have little in common are inherently difficult. A further significant issue alluded to above concerns the identification of prices for commodities of identical quantity and quality in the countries being compared.[5]

The aggregation formulas in bilateral and multilateral comparisons are discussed generally in the **Methods** section, while the formulas actually used for the bilateral comparisons are shown in **Appendix B.**

PPPs are used, in general, to convert expenditures of different countries, expressed in national currencies, to a common currency. (PPPs are of intrinsic interest as well for comparing price levels among countries). The spatial comparisons among countries so derived are expressed in "real", "volume" or "quantity" terms, to use the terminology of time series. The OECD practice in the multilateral studies is to convert all expenditure to average prices of the OECD. In the bilateral studies, the Paasche and Laspeyres formulas use prices of one country or the other as the base; the results are different depending on which country is selected. In practice, therefore, PPPs for the bilateral studies are calculated instead with the Fisher formula[6]; this means that both the PPPs and the resulting volume indexes are reciprocals, whichever country is taken as the base. The Fisher formula is judged to produce the most "neutral" price comparisons between two countries. Real expenditures

4. *See Allen for further discussion on price index theory.*

5. *The forthcoming United Nations volume describing the revised System of National Accounts contains an excellent chapter dealing with the issues mentioned here.*

6. *Fisher formula PPPs are equal to the square root of the product of the Paasche and Laspeyres PPPs at each level of aggregation.*

en considération dans le choix de la formule d'indice: la cohérence dans l'agrégation des résultats pour le pays dont les dépenses sont converties, et la transitivité ou la réversibilité des résultats d'un pays à l'autre. Comme les deux contraintes ne peuvent être respectées au moyen de la même formule, il faut tenir compte des buts visés par la comparaison dans le choix de la formule à utiliser.[4] Les comparaisons structurelles entre pays sont plus appropriées lorsqu'effectuées d'après les résultats additifs alors que les comparaisons d'éléments spécifiques gagneraient peut-être à être établies à partir des résultats obtenus par la formule transitive. De même, mais à un moindre degré, le choix du pays de base est analogue à celui de la période de base dans une série chronologique. Comme il s'agit de comparaisons internationales, il faut aussi tenir compte d'autres facteurs: les comparaisons en volume visent des économies dont la taille varie énormément, contrairement aux séries chronologiques où les périodes sont le plus souvent homogènes (un trimestre ou une année, par exemple); les pays doivent pouvoir être divisés en régions ou regroupés en un bloc sans qu'il s'ensuive une variation des poids des prix, quelle que soit l'agrégation retenue. La comparaison quantitative directe de situations économiques ayant peu en commun est foncièrement difficile. Une autre difficulté non négligeable à laquelle on a déjà fait allusion est celle d'établir les prix de biens ou services identiques en termes de quantité et de qualité dans les divers pays faisant l'objet de la comparaison.[5]

Les formules d'agrégation dans les comparaisons bilatérales et multilatérales sont abordées de façon générale à la section **Méthodes**; les formules actuellement utilisées dans les comparaisons bilatérales figurent à l'**appendice B.**

Les PPA servent, en général, à convertir les dépenses des divers pays, exprimées en monnaie nationale, en une devise commune. (Les PPA revêtent aussi un intérêt intrinsèque pour la comparaison du niveau de prix entre pays). Les comparaisons spatiales entre pays ainsi obtenues sont exprimées en termes "réels", de "volume" ou de "quantité", pour employer la terminologie des séries chronologiques tel que déjà mentionné. Dans les études multilatérales, l'OCDE a pour principe de convertir toutes les dépenses en prix moyens de l'OCDE. Dans les études bilatérales, les formules de Paasche et de Laspeyres emploient comme prix de base ceux d'un pays ou de l'autre; les résultats diffèrent selon le pays choisi. En pratique, dans le cas des études bilatérales, les PPA sont donc calculées plutôt avec la formule de Fisher[6]; ceci signifie qu'à la fois les PPA et les indices de volume qui en résultent sont des réciproques, quel que soit le pays adopté comme base. La formule de Fisher produit, croit-on, les comparaisons de prix les plus "neutres" entre deux pays. Les dépenses réelles obtenues

4. *Voir Allen pour un examen plus poussé de la théorie des indices.*

5. *L'ouvrage à paraître des Nations Unies décrivant le système révisé de comptabilité nationale contient un excellent chapitre sur les questions abordées ici.*

6. *Les PPA de type Fisher sont égales à la racine carrée du produit des PPA de type Paasche et Laspeyres à chaque niveau d'agrégation.*

derived from Fisher formula PPPs, however, are not additively consistent. In contrast, the real expenditures derived from Paasche formula PPPs, while additively consistent, are believed, in general, to overstate the non-reference country's volumes relative to the those of the reference country. Similarly real expenditures derived from Laspeyres PPPs are additively consistent, but tend to understate the non-reference country's volumes relative to those of the reference country.

Such spatial or intercountry comparisons can be thought of as a third dimension for the presentation of the Gross Domestic Product and its components. This is in addition to the traditional current and constant dollar time series or "temporal" estimates. The spatial estimates are at an earlier stage of development and understanding than their time series counterparts; improvements are still required in methods and procedures before they can be used with the same level of confidence as time series, especially when constructing time series of international comparisons.

For the OECD PPP program, direct price comparisons are made for more than 2000 items included in 220 basic headings that make up the 55 categories of expenditure on the Gross Domestic Product shown in the multilateral studies (there are 53 in the bilateral study). Aggregated PPPs for GDP main components and the total GDP are obtained by weighting the parities for the basic headings in accordance with the distribution of each country's expenditures in the comparison year. It should be noted that the tables are presented in the classification and format used by the OECD in its National Accounts publications. The presentation is based on the United Nations System of National Accounts (SNA, 1968), in which the categories are slightly different from those adopted in the Income and Expenditure Accounts of the CSNA.[7] For example, GDP is defined by the OECD to exclude imputed banking service charges.[8]

As exchange rates measure the price of buying another country's currency, the relationship between the PPP and the exchange rate is of interest. The comparative price level, defined as the PPP divided by the exchange rate, illustrates that this relationship is not stable over time. The PPPs tend to change slowly especially if price dispersion is not too great among the

7. As discussed below, the OECD also presents results based on the International Comparison Project (ICP) classification in which the expenditure is allocated to the consumer of the goods and services rather than the purchaser as in the SNA classification.

8. This treatment is in accordance with the 1968 United Nations System of National Accounts, which, in this instance, Canada does not follow. It should be noted, however, that the present Canadian practice is broadly in line with the guidelines of the revised SNA adopted in 1993.

à partir de PPA calculées selon la formule Fisher ne sont pas additives toutefois. Par contraste, on estime en général que les dépenses réelles obtenues à partir des PPA de type Paasche, bien qu'additives, sur-représentent le volume des dépenses de l'autre pays par rapport à celui du pays de base. De même, les dépenses réelles calculées au moyen des PPA Laspeyres sont additives, mais tendent à sous-estimer le volume des dépenses de l'autre pays par rapport à celui du pays de base.

De telles comparaisons spatiales ou entre pays ajoutent en quelque sorte une troisième dimension à la présentation du Produit intérieur brut et de ses agrégats sous forme des séries chronologiques habituelles en dollars courants et constants, ou d'estimations "temporelles". Les estimations spatiales en sont à un stade moins avancé que les séries chronologiques, tant sur le plan de l'élaboration que de la compréhension; il faudra continuer de perfectionner les méthodes et les procédures avant de pouvoir les utiliser avec le même degré de confiance que les séries chronologiques, surtout quand il s'agit d'établir des séries chronologiques de comparaisons internationales.

Aux fins du programme des PPA de l'OCDE, des comparaisons directes de prix sont effectuées pour plus de 2000 postes regroupés en 220 rubriques élémentaires qui forment les 55 catégories des dépenses imputées au Produit intérieur brut figurant dans les études multilatérales (on en retrouve 53 dans l'étude bilatérale). On obtient les PPA agrégées pour les grands agrégats du PIB et le PIB total en pondérant les PPA des rubriques élémentaires en fonction de la répartition des dépenses de chaque pays au cours de l'année de comparaison. Il convient de souligner que les tableaux respectent la nomenclature et le format utilisés par l'OCDE dans ses publications traitant de la comptabilité nationale. Cette présentation est basée sur le système de comptabilité nationale des Nations Unies (SCN de 1968), dont les catégories diffèrent quelque peu de celles utilisées dans les comptes des revenus et dépenses du SCNC.[7] À titre d'exemple, selon la définition de l'OCDE, le PIB exclut les frais de service bancaires imputés.[8]

Comme les taux de change mesurent le prix d'acheter la monnaie d'un autre pays, la relation entre la PPA et le taux de change offre un intérêt certain. Le niveau de prix comparé, défini comme la PPA divisée par le taux de change, montre que cette relation n'est pas stable dans le temps. Les PPA ont tendance à bouger lentement, surtout lorsque la dispersion des prix n'est pas trop grande parmi le groupe de pays comparés,

7. Comme on l'explique ci-après, l'OCDE présente aussi des résultats fondés sur la classification du Projet de comparaisons internationales (PCI) où la dépense est attribuée au consommateur des biens et services plutôt qu'à l'acheteur comme dans la classification du SCN.

8. Ce traitement suit la recommandation du Système de comptabilité nationale des Nations Unies de 1968, que le Canada n'applique pas dans ce cas-ci. Il convient cependant de noter que la pratique canadienne actuelle est à peu près conforme aux lignes directrices du Système de comptabilité nationale révisé, adopté en 1993.

group of countries in the comparison, while exchange rates can fluctuate widely in short periods. Chart 9, which is discussed below, shows the comparative price level and the exchange rate for Canada versus the United States.

Importance of Real International Comparisons

The expenditure data that have been developed as a result of the OECD PPP program have a broad and increasing range of applications.

For example, estimates of real expenditure on GDP per capita (expressed in a common set of prices) provide the best estimate yet available for comparing economic well-being among countries. The GDP and national accounts more generally however are limited to estimates of aggregate economic activity and no attempt has yet been made to measure broader-based welfare concepts (such as distribution of income and the quality of the environment). The bilateral study shows that Canada's real expenditure per capita, expressed in index form with the United States as 100, increased from 91.5% of the United States level in 1985 to 94.6% in 1990 and fell back to 92.3% in 1992 (see Table 1). Through the PPPs, each country's expenditures are converted to a common currency. When these real expenditures are expressed in per capita terms, a comparative ranking of all countries in the comparison can be examined. This is shown in index form for GDP in Table 6 (with the OECD average as 100). This table shows the results of the multilateral comparison from the 1990 benchmark study. Canada ranked fourth, with real expenditure 112% of the OECD average, after the United States (at 125%), Switzerland (122%) and Luxembourg (113%).[9]

The availability of such international volume estimates of GDP and its components allows improved international macroeconomic comparisons. The IMF study referred to above is an important example. The composition of GDP can be compared among countries grouped by region, population size, degree of industrialization or other characteristics. Such "real' distributions are comparable among countries as they are expressed in a common set of prices. These comparisons are analogous to the use of constant price rather than current price estimates in time series to measure real growth. For example, in the Canada/US results for 1990, fixed capital formation represented, in volume terms, 22.8% of GDP in Canada, and 16.1% in the US. It is not surprising that the lower density of the Canadian population would require greater expenditure per capita on hydro-electric dams and highways, for example. The investment share has varied between 21%

9. Purchasing Power Parities and Real Expenditures, OECD, Paris, 1992.

alors que les taux de change peuvent fluctuer énormément en courte période. Le graphique 9, examiné plus à fond ci-après, montre le niveau de prix comparé et le taux de change du Canada par rapport aux États-Unis.

Importance des comparaisons internationales réelles

Les données sur les dépenses élaborées dans le cadre du programme de l'OCDE sur les PPA ont une foule d'emplois, dont le nombre ne cesse de croître.

À titre d'exemple, les estimations des dépenses réelles par habitant imputées au PIB (exprimées dans un même ensemble de prix) constituent le meilleur outil jusqu'à maintenant pour comparer le bien-être économique entre pays. Le PIB et les comptes nationaux plus généralement sont toutefois uniquement des estimations de l'activité économique globale et aucune estimation de mesures de bien-être plus élaborées (comme la répartition du revenu ou la qualité de l'environnement) n'a encore été tentée. L'étude bilatérale montre que les dépenses réelles par habitant du Canada, exprimées sous forme d'un indice égal à 100 pour les États-Unis, sont passées de 91,5% de celles des États-Unis en 1985 à 94,6% en 1990 pour retomber à 92,3% en 1992 (voir le tableau 1). À l'aide des PPA, les dépenses de chaque pays sont converties en une monnaie commune. Lorsque ces dépenses réelles sont exprimées par habitant, il devient possible d'établir le rang de tous les pays dans la comparaison. C'est ce que présente le tableau 6 sous forme d'indice pour le PIB (avec une moyenne de 100 pour l'ensemble des pays de l'OCDE). Ce tableau donne les résultats de la comparaison multilatérale à partir de l'étude de référence de 1990. Le Canada, avec des dépenses réelles équivalant à 112% de la moyenne de l'OCDE, se classe quatrième, derrière les États-Unis (125%), la Suisse (122%) et le Luxembourg (113%).[9]

L'existence de telles estimations "internationales" en volume du PIB et de ses composantes rend les comparaisons macroéconomiques internationales plus valables. L'étude du FMI ci-haut mentionnée en constitue un bon exemple. On peut comparer la composition du PIB selon les pays classés en fonction de diverses caractéristiques: région, population, degré d'industrialisation et ainsi de suite. Ces répartitions en termes "réels" sont comparables dans les divers pays parce qu'elles sont exprimées à l'aide d'un même ensemble de prix. Ces comparaisons sont analogues à l'utilisation d'estimations en prix constants plutôt que courants dans des séries chronologiques pour mesurer la croissance réelle. À titre d'exemple, dans les résultats Canada-États-Unis pour 1990, la formation de capital fixe représentait, en volume, 22,8% du PIB au Canada, contre 16,1% aux États-Unis. Il ne faut guère s'étonner de ce qu'une plus faible densité de population au Canada exige des dépenses par habitant plus élevées au titre des routes et des barrages hydroélectriques par exemple. La

9. Parités de pouvoir d'achat et dépenses réelles, OCDE, Paris, 1992.

and 27% over the period from 1985 to 1990 in Canada while it has declined from 18% to 16% in the US over the same period (see Tables 3 and 4). Private final consumption expenditure in 1990 represented 55% of GDP in Canada versus 67% in the United States. This is based on the National Accounts classification, in which the expenditures are attributed to the purchaser. As a greater proportion of health expenditures is carried out by the government than by households in Canada compared to the United States, the adoption of the SNA classification understates personal expenditure as a percentage of GDP in Canada vis-à-vis the United States.

The PPPs and associated volume comparisons can be very useful in studies of international competitiveness and productivity, growth performance, resource allocation and industrial structure as well as in business cycle investigations. They have an important use in policy studies on such topics as the effects of international trade agreements or the costs of alternative national health care schemes. PPPs have also been used to compare international real income levels.[10]

The phenomenon of cross-border shopping between Canada and the United States is another example of an issue which can be assessed in the light of the comparative price level, defined as the ratio between the exchange rate and the PPP. Prices for specific groups of goods and services can be compared between the two countries more precisely than would be possible otherwise. Such analysis is of interest to both policy-makers and consumers. Chart 10 shows an apparent association between the comparative price level for private final consumption expenditure and the number of same day trips to the United States by Canadian residents between 1981 and 1992.

A further analytical use for the PPPs is to examine the hypotheses of international trade theory. One important hypothesis states that PPPs, defined as the exchange rates which equalize purchasing power among countries, represent the underlying exchange rates to which actual exchange rates tend to converge in the long run. The PPPs shown here, however, do not correspond exactly to those defined in this hypothesis, as they do not refer only to domestically produced tradeable goods.[11]

Real expenditures on GDP, expressed at international prices for a group of countries, also allow the estimation of the share each country represents in the aggregate. This information can be used to determine appropriate contribution levels for member countries in such organizations as the United Nations or the European Economic Community.

10. See, for example, Wolfson and Murphy.

11. Further discussion of this subject can be found in articles such as Houthaker et al., and Officer.

part de l'investissement a varié entre 21% et 27% au Canada de 1985 à 1990, alors qu'elle est tombée de 18% à 16% aux États-Unis pendant la même période (voir tableaux 3 et 4). En 1990, la consommation finale privée représentait 55% du PIB au Canada, contre 67% aux États-Unis. Ce résultat est fondé sur la classification de la comptabilité nationale dans laquelle les dépenses sont attribuées à l'acheteur. Comme une plus grande proportion des dépenses de santé est effectuée par les administrations publiques que par les ménages au Canada comparativement aux États-Unis, l'adoption de la classification des comptes nationaux réduit l'importance de la consommation personnelle en pourcentage du PIB au Canada par rapport aux États-Unis.

Les PPA et les comparaisons en volume qui en découlent sont très utiles aux études internationales sur la productivité et la compétitivité, les résultats de la croissance, l'allocation des ressources, la structure industrielle de même qu'à la recherche sur les cycles économiques. Elles sont très utiles dans des études de politique sur les effets des accords internationaux de commerce ou le coût de divers régimes publics de soins de santé par exemple. Les PPA ont déjà servi aussi à comparer les niveaux de revenu réels à l'échelle internationale.[10]

Le phénomène des achats outre-frontière au Canada et aux États-Unis constitue un autre exemple d'une question pouvant être évaluée à la lumière du niveau de prix comparé, défini comme le rapport entre le taux de change et la PPA. Les prix de groupes de biens et services spécifiques peuvent ainsi être comparés dans les deux pays avec plus de précision que par le passé. Une telle analyse intéresse à la fois les décideurs et les consommateurs. Le graphique 10 montre qu'il semble exister une relation entre le niveau de prix comparé pour la consommation finale privée et le nombre de voyages aller-retour le même jour aux États-Unis effectués par les résidents canadiens entre 1981 et 1992.

Les PPA permettent aussi d'examiner les hypothèses de la théorie du commerce international. L'une de ces hypothèses stipule que les PPA, définies comme les taux de change égalisant le pouvoir d'achat entre pays, représentent les taux de change sous-jacents vers lesquels tendent à converger les véritables taux de change à long terme. Les PPA présentées ici toutefois ne correspondent pas exactement à celles définies dans cette hypothèse, car elles ne portent pas uniquement sur des biens échangeables produits au pays.[11]

Les dépenses réelles imputées au PIB, exprimées en prix internationaux pour un groupe de pays, permettent également d'estimer la part de chaque pays dans l'agrégat. Cette information peut servir, entre autres, à établir le niveau approprié de contribution des pays membres à des organisations comme les Nations Unies ou la Communauté économique européenne.

10. Voir, par exemple, Wolfson et Murphy.

11. Ce sujet est approfondi dans des articles comme ceux de Houthaker et al., et Officer.

The private sector also has practical uses for the information in the estimation of the compensation required for employees posted out of the country and of the differences in costs to be expected in setting up operations or plants in other countries. For such purposes, the ICP classification[12] is also useful. By consistently classifying expenditures by the consumer rather than the purchaser, the ICP classification tends to eliminate the definitional differences in GDP components among countries. (See Text table 2 for an illustration of the differences in the distribution of expenditures which result from the two classifications. The data shown in the table are not compiled annually; they are only available in the benchmark years of the PPP project.)

Les PPA ont aussi leur utilité dans le secteur privé; elles permettent par exemple d'estimer la rémunération à verser aux employés postés à l'étranger et de prévoir les écarts de coûts qu'entraîne l'implantation d'une usine ou la mise en marche d'opérations dans d'autres pays. À de telles fins, la classification du PCI[12] s'avère également utile. En classant systématiquement les dépenses selon le consommateur plutôt que l'acheteur, la classification PCI a tendance à éliminer les différences dans le contenu des composantes du PIB d'un pays à l'autre. (Voir le tableau explicatif 2 pour une illustration des écarts dans la distribution des dépenses qui découlent des deux classifications. Les données dans le tableau ne sont pas compilées à chaque année; elles ne sont disponibles que pour les années de référence du projet des PPA.)

Text Table 2: Comparison of per capita expenditures using the two classifications, Canada, 1990
Tableau explicatif 2: Comparaison des dépenses par habitant selon les deux classifications, Canada, 1990

SNA category	ICP PCI	SNA SCN	Differences SNA-ICP Écarts SCN-PCI	Catégorie du SCN
Private final consumption expenditure[a]	17,435	14,749	-2,686	Consommation finale privée[a]
- medical and health care	1,831	600	-1,231	- dépenses de santé
- education, leisure and culture	2,974	1,680	-1,294	- loisirs, enseignement et culture
- miscellaneous goods and services	2,503	2,342	-161	- autres biens et services
- all other private final consumption expenditure	10,127	10,127	0	- toute autre consommation finale privée
Government final consumption expenditure[b]	2,250	4,936	2,686	Consommation finale des administrations publiques[b]

a. ICP category is Individual consumption by households.
La catégorie du PCI est la consommation individuelle des ménages.

b. ICP category is Collective consumption by government.
La catégorie du PCI est la consommation collective des administrations publiques.

12. *For the ICP, modifications were made to the SNA classification so that comparisons of certain groupings (health, education, recreation) were independent of the degree to which a country's expenditures are made collectively by society or individually by households.*

12. *Aux fins du PCI, des modifications ont été apportées à la classification du SCN de façon à ce que les comparaisons de certains groupes (santé, éducation, loisirs) soient indépendantes du degré auquel les dépenses d'un pays sont effectuées par la collectivité ou par les ménages sur une base individuelle.*

History and Organization of the PPP Program

Pioneering work on international comparisons based on PPPs was begun in the 1950s by Milton Gilbert and Irving Kravis, working for the Organization for European Economic Co-operation (predecessor of the OECD).[13] The main focus of the work then moved to the University of Pennsylvania under the direction of Irving Kravis. There, more extensive studies were carried out for the United Nations Statistical Office (UNSO) with the financial assistance of the World Bank. Beginning in 1967, the UNSO sponsored a series of comparisons based on PPPs, via the International Comparison Project (ICP). Base years were 1970, 1973 and 1975 for an increasing number of countries.[14] Work was also undertaken under the auspices of the Council for Mutual Economic Assistance (COMECON) in the 1960s for countries then belonging to the socialist bloc.

Eurostat, which had been closely associated with the ICP work, published its own comparisons for 1975, for 6 member countries. In 1983, Eurostat published detailed estimates for 1980 referring to ten European Economic Community (EEC) members and two applicants for membership (Spain and Portugal).

In the early 1980s, the OECD became convinced of the need for a benchmark set of PPPs for all major European and non-European member countries. The requirement for such data was influenced by the large fluctuations in exchange rates which led in turn to unstable estimates of real per capita GDP over time. It was also recognized that such "nominal" figures[15] did not allow comparisons of real differences in productivity and living standards. In 1983, the OECD selected a base year of 1980 for the first benchmark study. The United States, Canada, Japan and Norway agreed to take part. Finland and Austria were also added to the group. Estimates were constructed with the help of relative rates of inflation in member countries to establish price comparisons back to the 1980 base year. The 1980 OECD study, covering 18 countries, is therefore considered less robust than the subsequent ones. The number of countries taking part increased to 22 in the 1985 comparison and to the full 24 members for 1990. Canada and the United States participated in all three studies.

13. *Outlined in detail in Ward. See also Gilbert and Kravis.*

14. *See Kravis et al.*

15. *"Nominal expenditures" is used to describe expenditures converted by the use of the exchange rate in the context of International price and quantity studies, as opposed to its meaning of current dollars in discussion of time series.*

Historique et organisation du programme des PPA

Les premiers travaux sur les comparaisons internationales fondées sur les PPA ont été amorcés dans les années 1950 par Milton Gilbert et Irving Kravis, sous l'égide de l'Organisation européenne pour la coopération économique (organisme qui a précédé l'OCDE).[13] Les travaux se sont ensuite poursuivis surtout à l'Université de Pennsylvanie sous la direction d'Irving Kravis. Des études plus poussées ont été réalisées à cet endroit pour le compte du Bureau de statistique des Nations Unies (BSNU), avec un soutien financier de la Banque mondiale. À compter de 1967, le BSNU a parrainé une série de comparaisons basées sur les PPA, dans le cadre du Projet de comparaisons internationales (PCI). Les années de référence en étaient 1970, 1973 et 1975, avec un nombre croissant de pays à l'étude.[14] Des travaux ont aussi été entrepris sous les auspices du Conseil pour l'aide mutuelle économique (COMECON) dans les années 1960 pour des pays faisant alors partie du bloc socialiste.

L'Eurostat, qui avait été associé de près au travail dans le cadre du PCI, a publié ses propres comparaisons pour 1975, visant six pays. En 1983, l'Eurostat publiait des estimations détaillées pour 1980, visant dix pays membres de la Communauté économique européenne (CEE) et deux pays y ayant demandé leur adhésion, l'Espagne et le Portugal.

Au début des années 1980, l'OCDE a compris la nécessité de faire établir un ensemble de PPA repères pour les principaux pays membres européens et non européens. Le besoin de telles données s'est fait sentir en raison des grandes fluctuations des taux de change qui à leur tour rendaient instables les estimations du PIB réel par habitant dans le temps. On en est venu à admettre aussi que ces chiffres "nominaux"[15] ne permettaient pas de comparer les écarts réels dans la productivité et le niveau de vie. En 1983, l'OCDE a choisi 1980 comme année de base pour la première étude de référence. Les États-Unis, le Canada, le Japon et la Norvège ont accepté d'y participer. La Finlande et l'Autriche sont aussi venues s'ajouter au groupe. Des estimations ont été construites au moyen des taux relatifs d'inflation dans les pays membres afin de ramener les comparaisons de prix jusqu'à l'année de base de 1980. L'étude de l'OCDE pour 1980, portant sur 18 pays, est donc considérée moins fiables que les études subséquentes. Le nombre de pays visés a grimpé à 22 dans la comparaison de 1985, puis à l'effectif complet des 24 pays membres en 1990. Le Canada et les États-Unis ont pris part aux trois études.

13. *Voir le compte-rendu dans Ward. Voir aussi Gilbert et Kravis.*

14. *Voir Kravis et al.*

15. *Les "dépenses nominales" décrivent ici les dépenses converties en une monnaie commune au moyen des taux de change dans le contexte d'études internationales sur les prix et les quantités, au lieu de renvoyer au sens usuel de dépenses en dollars courants.*

As mentioned, the OECD bases its comparisons on both the SNA and the ICP classifications. The tables in this document are presented using the SNA classification to be consistent with the other Income and Expenditure Accounts tables.

Methods

A. Purchasing Power Parity Formulas[16]

1. Bilateral Comparisons

For the bilateral Canada/US PPP studies, the formulas used to compile price and volume measures are the relatively straightforward ones: Laspeyres, Paasche and Fisher price indexes. All three are applied with both Canada and the US as the reference country, making six sets of PPPs from which "real" expenditures are derived.

These formulas have advantages and disadvantages. Current expenditures on GDP from the non-reference country are converted to the reference country currency by dividing them by the Paasche PPPs. The components of GDP thus obtained add up to GDP for the country whose expenditures are converted. Different results are obtained depending on the country selected as reference, as well as on the formula adopted. The PPPs calculated with the Fisher formula are reciprocals whichever country is taken as reference, but the real expenditures on components of GDP derived from them do not add up to GDP. The purpose of the analysis to be undertaken must be considered in deciding which formula to use. As indicated earlier, structural comparisons are more appropriately based on the additively consistent volume estimates derived from the Paasche PPPs, while comparisons of particular components are better done with Fisher indexes.

The results shown in this article are based on PPPs calculated with the Fisher formula, except in Table 3 where the real expenditures were derived through Paasche PPPs.

2. Multilateral Comparisons

Multilateral comparisons are required when a number of countries form a group and comparisons are desired which relate all members to each other and to the whole. These comparisons entail further problems such as the need to ensure transitivity. None of the three standard formulas (Paasche, Laspeyres or Fisher) can satisfy this requirement. Two alternative approaches have been adopted for the multilateral comparisons. In one case, average prices within the group (calculated as described in the following paragraph) are used to

16. *See Revised System of National Accounts, forthcoming.*

Comme on l'a déjà vu, l'OCDE fonde ses comparaisons à la fois sur la classification du SCN et sur celle du PCI. Les tableaux dans cet article reprennent la classification du SCN par souci de conformité avec les autres tableaux des comptes des revenus et dépenses.

Méthodes

A. Formules des parités de pouvoir d'achat[16]

1. Comparaisons bilatérales

Pour les études bilatérales Canada/États-Unis sur les PPA, les formules retenues pour calculer les mesures de prix et de volume sont celles, relativement simples, des indices de prix Laspeyres, Paasche et Fisher. Les trois sont appliquées avec tantôt le Canada et tantôt les États-Unis comme pays de base, ce qui donne six ensembles de PPA à partir desquelles sont obtenues les dépenses "réelles".

Ces formules ont chacune des avantages et des inconvénients. Les dépenses courantes imputées au PIB pour le pays qui ne sert pas de base sont converties dans la monnaie du pays de base en les divisant par les PPA de type Paasche. Les composantes du PIB ainsi obtenues s'additionnent au PIB pour le pays dont les dépenses sont converties. On obtient des résultats différents selon le pays de base choisi, ainsi que selon la formule retenue. Les PPA calculées selon la formule de Fisher sont des réciproques, quel que soit le pays de base, mais les dépenses réelles imputées aux composantes du PIB ainsi obtenues ne s'additionnent pas au PIB. Le but de l'analyse envisagée doit être pris en considération dans le choix de la formule à employer. Comme on l'a vu plus haut, les comparaisons structurelles sont plus appropriées à partir d'estimations en volume cohérentes dans l'agrégation, obtenues avec des PPA de type Paasche, alors que les comparaisons de composantes particulières s'effectuent plus aisément à partir d'indices de Fisher.

Les résultats présentés dans cet article se fondent sur des PPA calculées avec la formule Fisher, sauf au tableau 3 où les dépenses réelles ont été obtenues à l'aide de PPA de type Paasche.

2. Comparaisons multilatérales

Les comparaisons multilatérales s'imposent lorsqu'un certain nombre de pays constituent un groupe et qu'on veut établir des comparaisons reliant les membres les uns aux autres et à l'ensemble. Elles entraînent leurs propres exigences, comme le besoin de garantir la transitivité. Aucune des trois formules courantes (Paasche, Laspeyres et Fisher) ne peut répondre à cette exigence. On a eu recours à deux autres approches dans le cas des comparaisons multilatérales. La première fait appel à des prix moyens au sein du groupe (établis de la manière décrite au prochain paragraphe) pour

16. *Voir Système révisé de comptabilité nationale, à paraître.*

calculate multilateral volume indexes. The second method uses the binary (Fisher based) comparisons between all possible countries and transforms them in such a way as to impose transitivity. Each method has its advantages and disadvantages.

The first approach assigns priority to the economic characteristics of the group as a whole. The most common method in this category is the Geary-Khamis (GK) technique, in which the average prices of the group are used to revalue quantities in all countries. The average price for each individual commodity is defined as its total value in the group, expressed in a common currency, divided by its total quantity. The PPPs are used to convert each country's value to the common currency. The use of average prices for the group ensures transitivity in the volume indexes between all pairs of countries. This approach has a disadvantage: if a specific country's price structure diverges greatly from the average for the group, its volume index will be similarly greatly affected by the use of the average prices such that it differs to a large extent from the results that would be obtained through the binary method.[17]

The alternative approach is the EKS formula, named after its independent proposers, Eltetö, Kövecs and Schultz (Szulc). This approach starts from the binary comparisons between all pairs of countries, using the Fisher formula. The EKS formula then consists in minimizing the differences between the Fisher parities (which are not transitive) and a set of transitive indexes close to them. The advantage of this formula is that transitivity is achieved between all countries by using the indirect and direct indexes linking all the countries. The disadvantage is that additive consistency is not achieved. Therefore it is not possible to produce a table in which rows and columns, representing countries and components, sum in each direction.

These advantages and disadvantages are similar to those stemming from the use of fixed price volume indexes and chain volume indexes in a time series. Each formula has its strengths and weaknesses and the purposes to be served must dictate which method is most appropriate. The OECD has decided to publish both sets of data. This is similar to the approach often taken with price indexes in time series.

B. Estimation of Annual PPPs from 1981 to 1992

The estimation of PPPs outside the benchmark years of the OECD program, in order to create time series, cannot usually be satisfactorily achieved through straightforward extrapolation of the benchmark results. Shifting relative prices over time within a country or

17. *This phenomenon is known as the Gershenkron effect.*

calculer des indices de volume multilatéraux. La seconde procède à des comparaisons bilatérales (de type Fisher) entre tous les pays possibles et les transforme de manière à imposer la transitivité. Chaque méthode comporte des avantages et des inconvénients.

La première approche attribue la priorité aux caractéristiques économiques du groupe de pays dans son ensemble. La méthode la plus courante dans cette catégorie est la technique Geary-Khamis (GK), dans laquelle les prix moyens du groupe servent à réévaluer les quantités dans tous les pays. Le prix moyen de chaque bien ou service particulier correspond à la valeur totale du bien ou service dans le groupe, exprimée dans une monnaie commune et divisée par sa quantité totale. Les PPA sont utilisées pour convertir la valeur dans chaque pays en une monnaie commune. Le recours aux prix moyens dans le groupe garantit la transitivité dans les indices de volume pour chaque paire de pays. Cette approche comporte un inconvénient: si la structure des prix dans un pays donné diverge trop de la moyenne du groupe, son indice de volume sera aussi grandement affecté par le recours à des prix moyens de sorte qu'il s'écartera beaucoup des résultats que l'on aurait obtenus au moyen d'une méthode bilatérale.[17]

L'autre approche est la formule EKS, du nom de ses créateurs indépendants, soit Eltetö, Kövecs et Schultz (Szulc). Elle exige que l'on procède d'abord à des comparaisons bilatérales pour chaque paire de pays au moyen de la formule de Fisher. La formule EKS consiste alors à minimiser les écarts entre les parités de Fisher (qui ne sont pas transitives) et un ensemble d'indices transitifs qui en sont proches. Cette formule a l'avantage d'assurer la transitivité entre tous les pays au moyen d'indices directs et indirects reliant tous les pays. Par contre, elle n'a pas la propriété d'assurer la cohérence dans l'agrégation. Il est alors impossible de produire un tableau dans lequel à la fois les lignes et les colonnes, représentant les pays et les composantes, s'additionnent dans les deux dimensions.

Ces avantages et inconvénients sont analogues à ceux qu'entraîne l'utilisation, dans une série chronologique, d'indices de volume à prix fixe et d'indices de volume en chaîne. Chaque formule a ses forces et faiblesses, le choix de la méthode la plus appropriée étant dicté par les objectifs poursuivis. L'OCDE a décidé de publier les deux ensembles de données. Il s'agit là d'une approche semblable à celle adoptée avec les indices de prix dans une série chronologique.

B. Estimation des PPA annuelles de 1981 à 1992

L'estimation des PPA à l'extérieur des années repères du programme de l'OCDE, en vue de créer des séries chronologiques, ne peut être accomplie de manière satisfaisante par une simple extrapolation des résultats pour les années repères. En raison de la variation des prix relatifs avec

17. *Ce phénomène est connu sous le non d'effet Gershenkron.*

between the countries being compared often causes such extrapolated time series to drift away from the benchmark results. Again, analogies can be found with conventional time series, for which a rebasing is undertaken at regular intervals to reduce distortions caused by changing relative prices over time.

Multilateral benchmark results have been updated and published by the OECD using the relative rates of inflation in the countries being compared. The procedures and results are discussed in Hill and Szilagyi, where it is noted that over short periods of time and among countries with little volatility in price structures over the period being extrapolated, the distortions are usually not too serious. Canada and the United States, over the time period under scrutiny, meet these criteria, although the introduction of the Goods and Services Tax (GST) in 1991 in Canada changed the relative price structure within Canada and may therefore make the non-benchmark comparisons less reliable after that year.

The formula of such an extrapolation for any component or aggregate using the Canada/US comparison as an example is as follows:

le temps au sein d'un pays ou entre les pays comparés, les séries extrapolées ont souvent tendance à s'éloigner des résultats repères. Ici aussi, il existe une analogie avec les séries chronologiques courantes, dont la base est changée à intervalles réguliers en vue de réduire les distorsions causées par des prix relatifs variables dans le temps.

Les résultats repères des études multilatérales ont été mis à jour et publiés par l'OCDE à l'aide des taux d'inflation relatifs des pays dans la comparaison. Les méthodes employées et les résultats sont examinés par Hill et Szilagyi, qui concluent que, pour de courtes périodes de temps et entre pays dont la structure des prix est assez stable durant la période faisant l'objet de l'extrapolation, les distorsions ne sont pas très grandes en général. Le Canada et les États-Unis remplissent ces conditions pour la période visée ici, bien que l'introduction de la taxe sur les produits et services (TPS) au Canada en 1991 ait modifié la structure des prix relatifs au Canada, rendant peut-être ainsi les comparaisons à l'extérieur des études repères moins valables après cette date.

La formule d'une telle extrapolation pour une composante ou un agrégat quelconque, avec la comparaison Canada-États-Unis en guise d'exemple, est la suivante:

$$PPP_{86} = PPP_{85} \times \frac{(1 + P_{CAN})}{(1 + P_{US})}$$

where P_{CAN} and P_{US} denote the percentage change in the implicit price index[18] of the appropriate GDP component in each country between 1985 and 1986.

The actual method used to derive the annual PPPs presented in Table 2 is outlined in the following paragraphs.

Expenditures on GDP in current dollars and the corresponding implicit price indexes for both countries are required, in the OECD format, for the period 1981 to 1992. In the case of the estimates in current dollars, the revisions made in both countries after the 1990 benchmark study were not incorporated in order to arrive at the same results as the OECD; this procedure introduces a slight distortion in the results from 1988 to 1990. The IPIs, on the other hand, were calculated to 1990 with the estimates in current and constant dollars most recently supplied to the OECD. From 1990 to 1992, the 53 OECD categories in current dollars and the corresponding IPIs were projected with the most recent

où P_{CAN} et P_{US} représentent la variation en pourcentage de l'indice implicite de prix[18] de la composante donnée du PIB dans chaque pays entre 1985 et 1986.

La méthode employée pour calculer les PPA annuelles figurant au tableau 2 est décrite en termes concrets dans les paragraphes ci-dessous.

Sont d'abord nécessaires les dépenses en dollars courants imputées au PIB ainsi que les indices implicites de prix correspondants de 1981 à 1992 pour les deux pays, dans le format employé par l'OCDE. Dans le cas des estimations en dollars courants, les révisions effectuées dans les deux pays après l'étude repère de 1990 n'ont pas été incorporées afin d'en arriver aux mêmes résultats que l'OCDE; cette façon de procéder introduit une légère distorsion dans les résultats entre 1988 et 1990. Les IIP, en revanche, sont calculés jusqu'à 1990 à l'aide des estimations en dollars courants et constants les plus récentes fournies à l'OCDE. DE 1990 à 1992, les 53 catégories de l'OCDE en dollars courants et les IIP correspondants sont projetés au moyen des estimations

18. *The implicit price indexes (IPIs) are derived by dividing estimates in current dollars by those in constant dollars at any level of the GDP.*

18. *Les indices implicites de prix (IIP) sont obtenus en divisant les estimations en dollars courants par celles en dollars constants pour n'importe quelle agrégation du PIB.*

national estimates for the categories within the main aggregates (personal expenditure, government current expenditure and investment in fixed capital). Categories for which data were not yet available were projected on the growth rate of the next higher level aggregate. For Canada these estimates came from the release of June 21, 1993, while for the United States the data were taken from the ***Survey of Current Business,*** of August, 1993. The population figures needed to calculate expenditure per capita were those published by the OECD, for the US to 1991 with projection to 1992, and for Canada to 1990 with projection to 1992 based on the estimates released on September 16, 1993.

The PPP of each of the 53 components is estimated on an annual basis by applying to the benchmark level a ratio of the percentage change in the IPI in Canada to that in the US. The Fisher form of parities was used in all calculations shown here, except for the percentage distributions of GDP, derived with the Paasche PPP formula. Both sets of PPPs (Fisher and Paasche) were projected with the same growth rates.

Three components representing a very small proportion of GDP required special treatment in the years between the benchmark studies. In line with OECD procedures in the 1990 study, the PPP for net purchases abroad was extrapolated using the growth rate of the IPI for private final consumption; the annual exchange rate (Canadian dollar per US dollar) is used as the PPP for the balance of exports and imports; and the PPP for the change in stocks is projected using the change in a specially constructed IPI for the sum of expenditures on consumer goods and on machinery and equipment.

For purposes of the results presented in this article, the extrapolation of PPPs on the basis of the growth rates of the implicit price indexes (Canada divided by the US) was tested in three ways for the period 1985 to 1990. These are: extrapolating forward from 1985 levels, extrapolating back from the 1990 levels, and the method adopted, namely a weighted average of the PPPs as extrapolated forward and backward for the 1985-1990 period, with the weights shifting each year (see Text Table 3 for the weights used). This procedure allowed a smooth transition from the 1985 to the 1990 study, and yielded a more reasonable time series of volume indexes for most components as well (see Charts 2 and 6 to 8).

The period 1981 to 1985 was extrapolated in the same fashion back from 1985 since the 1980 benchmark results, judged to be more experimental and preliminary, were not incorporated in the estimates. The projections from 1990 to 1992 were also made on the basis of the IPI trends as described. The OECD benchmark levels for 1985 and 1990 have been incorporated in all the tables included in this article. As already indicated, weight shifts among commodities exhibiting different price trends

nationales les plus récentes pour les catégories inférieures aux grands agrégats (dépenses personnelles, dépenses publiques courantes et investissement en capital fixe). Les catégories pour lesquelles les données n'étaient pas encore disponibles ont été projetées sur le taux de croissance de l'agrégat au niveau supérieur. Pour le Canada, ces estimations étaient celles diffusées le 21 juin 1993 et pour les États-Unis, elles ont été tirées du ***Survey of Current Business,*** édition d'août 1993. Les chiffres sur la population nécessaires pour calculer les dépenses par habitant sont ceux publiés par l'OCDE, pour les États-Unis jusqu'à 1991 avec projection de 1992, et pour le Canada, jusqu'à 1990, avec projection jusqu'en 1992 à partir des chiffres diffusés le 16 septembre 1993.

La PPA de chacune 53 composantes est estimée sur une base annuelle en appliquant au niveau repère un ratio de la variation en pourcentage de l'IIP au Canada à celle aux États-Unis. Des parités de type Fisher sont employées dans tous les calculs, sauf pour les répartitions du PIB en pourcentage, établies avec des parités de type Paasche. Les deux ensembles de parités (Fisher et Paasche) ont été projetés à l'aide des mêmes taux de croissance.

Trois composantes représentant une faible proportion du PIB ont dû faire l'objet d'un traitement particulier pour les années entre les études repères. Conformément à la procédure employée par l'OCDE dans son étude de 1990, la PPA des achats nets directs à l'extérieur est extrapolée au moyen du taux de croissance de l'IIP de la consommation finale privée; le taux de change annuel (dollar canadien par dollar É.-U.) sert de PPA pour le solde des exportations et des importations; et la PPA de la variation des stocks est projetée sur la variation d'un IIP particulier calculé pour la somme des dépenses en biens de consommation ainsi qu'en machines et matériel d'équipement.

Aux fins des résultats présentés ici, l'extrapolation des PPA au moyen des taux de croissance des indices implicites de prix (Canada divisé par les États-Unis) s'est faite de trois façons pour la période de 1985 à 1990, à savoir: l'extrapolation en aval à partir des niveaux de 1985, l'extrapolation en amont à partir des niveaux de 1990, et enfin la méthode adoptée, soit une moyenne pondérée des PPA extrapolées en aval et en amont pour la période de 1985 à 1990, avec des poids variant à chaque année (voir le tableau explicatif 3 pour les poids utilisés). Cette procédure a facilité la transition entre l'étude de 1985 et celle de 1990 et a également produit une série chronologique d'indices de volume plus vraisemblable pour la plupart des composantes (voir les graphiques 2 et 6 à 8).

La période allant de 1981 à 1985 a été extrapolée de la même manière, soit en amont à partir de 1985 étant donné que les résultats repères de 1980, jugés plus expérimentaux et préliminaires, n'ont pas été incorporés dans les estimations. Les projections entre 1990 et 1992 sont aussi basées sur la tendance des IIP, tel que décrit ci-haut. Les niveaux repères de l'OCDE pour 1985 et 1990 ont été utilisés dans tous les tableaux insérés dans cet article. Comme on l'a déjà vu, des déplacements de pondération entre biens ou services dont les

between the countries can adversely affect the projections; however, at the level of the main aggregates, such shifts did not seem to result in serious distortions.

mouvements de prix divergent selon les pays peuvent influer de manière défavorable sur les projections; toutefois, au niveau des grands agrégats, ces déplacements de pondération ne semblent pas avoir entraîné de grandes distorsions.

Text Table 3: Weights applied to projected PPP
Tableau explicatif 3: Poids appliqués aux PPA projetées

	1985	1986	1987	1988	1989	1990	
Forward extrapolation	1.00	.80	.60	.40	.20	0.0	Extrapolation en aval
Backward extrapolation	0.0	.20	.40	.60	.80	1.00	Extrapolation en amont

Results

The volume indexes and PPPs extrapolated for the period from 1981 to 1992 on the basis of the 1985 and 1990 bilateral benchmark studies are shown in Tables 1 and 2. The volume indexes and PPPs from the 1990 multilateral study (based on the EKS formula) are presented in Tables 6 and 7. In this article, all tables referring to the bilateral study are presented with the US as the reference country.

Results differ between the multilateral and bilateral comparisons for Canada and the United States. The PPPs for Canada are, in general, lower in the bilateral study (at the level of GDP by about 5 to 6 cents), resulting in higher volume indexes (by about 2-3% at the level of GDP). The volume indexes also exhibit somewhat different trends. Between 1985 and 1990 for instance, the volume index for Canada declines slightly from 90.0 to 89.0 (US=100) in the multilateral study, while it increases from 91.5 to 94.6 in the bilateral study. Volume indexes and PPPs for GDP have been charted from the two studies to illustrate the magnitude of the differences (see Charts 11 and 12).

The use of different formulas in the two studies is one factor which accounts for these differences between the bilateral and the multilateral results. As explained in the previous section, the Laspeyres, Paasche or Fisher formulas employed in the bilateral study cannot be applied directly in the multilateral study. All the country comparisons in the multilateral studies are affected by prices and expenditures in all countries through the use of average prices for the group, while the bilateral comparisons are affected only by the prices and expenditures of the two countries in the study. Furthermore, it is possible to arrive at a closer specification of the items themselves and to determine the prices for each of them more accurately in the case of a bilateral study for two relatively similar economies.

This article, however, is primarily a comparison between Canada and the United States on the basis of the bilateral study. As can be seen in Table 1, volume

Résultats

Les indices de volume et les PPA extrapolés pour la période allant de 1981 à 1992 à partir des études de référence bilatérales de 1985 et 1990 figurent aux tableaux 1 et 2. Les indices de volume et les PPA provenant de l'étude multilatérale de 1990 (basée sur la formule EKS) sont présentés aux tableaux 6 et 7. Dans cet article, les États-Unis servent de pays de base dans tous les tableaux se rapportant à l'étude bilatérale.

Les comparaisons multilatérales et bilatérales pour le Canada et les États-Unis dégagent des résultats différents. Les PPA pour le Canada sont, en général, moins élevées dans l'étude bilatérale (d'environ 5 ou 6 cents au niveau du PIB), ce qui donne des indices de volume plus élevés (d'environ 2% à 3% au niveau du PIB). Les indices de volume affichent aussi des tendances quelque peu divergentes. Entre 1985 et 1990 par exemple, l'indice de volume pour le Canada se replie légèrement de 90,0 à 89,0 (États-Unis = 100) dans l'étude multilatérale, alors qu'il augmente de 91,5 à 94,6 dans l'étude multilatérale. On a tracé la courbe des indices de volume et des PPA pour le PIB provenant des deux études afin d'illustrer l'ampleur de ces écarts (voir graphiques 11 et 12).

L'utilisation de formules différentes est l'un des facteurs responsable de ces écarts entre les résultats bilatéraux et multilatéraux. Comme on l'explique à la section précédente, les formules de Laspeyres, Paasche ou Fisher employées dans l'étude bilatérale ne peuvent s'appliquer directement dans l'étude multilatérale. Les prix et les dépenses dans tous les pays ont une incidence sur toutes les comparaisons entre pays dans les études multilatérales par suite de l'emploi de prix moyens dans le groupe de pays, alors que les résultats bilatéraux ne sont influencés que par les prix et les dépenses dans les deux pays à l'étude. En outre, il est possible d'établir une meilleure correspondance des postes de dépense et de déterminer les prix de ceux-ci avec plus de précision dans le cas d'une étude bilatérale portant sur deux économies assez semblables.

L'objet premier de cet article, toutefois, est une comparaison entre le Canada et les États-Unis à partir de l'étude bilatérale. Comme on peut le voir au tableau 1, les

indexes vary widely across components of GDP. In 1990, construction and purchased transportation services displayed the highest volume indexes vis-à-vis the United States (about 70% to 75% higher, in both cases). Aside from the health category, some food categories, clothing and furniture exhibit the lowest volume indexes. The volume index for health care is very low (28.5) on the basis of the SNA classification, for the reason already identified. (The calculation on an ICP, or consuming agent, basis shown in the OECD publication yields an index for medical and health care of 90.6 for Canada in 1990 compared to 86.0 in 1985). Government final consumption expenditure has a volume index of 111 compared with the US. The divergence would be greater, but the proportionately much higher defence expenditures in the US offset the impact of higher health expenditures in Canada to some extent and raise the proportion of government spending in GDP to a level close to that in Canada.

PPPs on the other hand were relatively higher in Canada for tobacco, alcoholic beverages, household operation and recreational equipment, and lower for fuel and power and civil engineering works. The PPP for tobacco products increased in Canada between 1985 and 1990, which reflects the higher taxes and the drop in the volume index for this item. Other categories showing relative price increases were operation of transport equipment, communication, recreational equipment and repairs, as well as books, magazines and newspapers.

The quality of the detailed estimates is variable and some anomalies are apparent in specific components. Expenditure categories for this study are more detailed than the usually published GDP components, and in some cases information of lower quality had to be used to disaggregate further specific components. This factor, combined with the difficulty of matching comparable items for pricing in some categories, leads to some unevenness in the results at the most detailed level.

Another way of looking at the data is to express the expenditures in real terms as a percentage of GDP, as shown in Tables 3 and 4 for Canada and the United States. For this purpose, PPPs have been calculated with the Paasche formula. The converted expenditures therefore add up to GDP. This is the preferred approach where the aim is a comparative structural analysis of the economies. In this case, the proportions are reasonably consistent over the period, lending some confidence to the combination of benchmark and projection procedures. The use of the SNA classification emphasizes the differences between Canada and the US, as already indicated. The OECD publications present these percentage distributions using both classifications for the two benchmark years.

indices de volume varient énormément d'une composante du PIB à l'autre. En 1990, la construction et les achats de services de transport affichent les indices de volume les plus élevés par rapport aux États-Unis (soit de 70% à 75% plus élevé dans les deux cas). À l'exception de la catégorie de la santé, ce sont certaines catégories de produits alimentaires, l'habillement et les meubles qui font voir les indices de volume les plus faibles. L'indice de volume de la santé est très faible (28,5) sur la base de la classification du SCN, pour la raison sus-mentionnée. (Le calcul sur la base du PCI, ou selon l'agent consommateur, employée dans la publication de l'OCDE donne un indice pour les dépenses de santé de 90,6 au Canada en 1990, contre 86,0 en 1985). La consommation finale des administrations publiques affiche un indice de volume de 111 par rapport aux États-Unis. L'écart serait plus grand, mais les dépenses de défense, proportionnellement bien plus élevées aux États-Unis, viennent en quelque sorte contrebalancer l'effet des dépenses de santé plus élevées au Canada et rehausser la proportion des dépenses publiques dans le PIB à un niveau comparable à celui du Canada.

En revanche, les PPA sont en général plus élevées au Canada pour le tabac, les boissons alcoolisées, les biens ménagers et le matériel de loisirs, et plus basses pour le chauffage et l'éclairage, de même que les ouvrages de génie civil. La PPA pour les produits du tabac augmente au Canada entre 1985 et 1990, ce qui traduit la majoration des taxes et la chute de l'indice de volume pour cet article. Les autres catégories dont le prix relatif augmente sont les dépenses d'utilisation de véhicules personnels, les communications, le matériel de loisirs ainsi que les livres, périodiques et journaux.

La qualité des estimations détaillées est variable et certaines anomalies s'observent dans certaines composantes. Les catégories de dépense employées dans cette étude sont plus détaillées que les composantes du PIB habituellement publiées et il a fallu dans certains cas recourir à de l'information de qualité inférieure pour ventiler davantage certains postes. Ce facteur, conjugué à la difficulté de faire correspondre des éléments comparables aux fins de la collecte des prix dans certaines catégories, entraîne des résultats de qualité inégale au niveau le plus détaillé.

Une autre façon d'examiner les résultats est d'exprimer les dépenses en termes réels en pourcentage du PIB, tel qu'on le montre aux tableaux 3 et 4 pour le Canada et les États-Unis. À cette fin, les PPA ont été calculées au moyen de la formule Paasche. Les dépenses ainsi converties s'additionnent donc au PIB. Cette approche est la plus appropriée lorsque le but visé est une analyse structurelle comparée des économies. Dans ce cas-ci, les proportions sont assez stables durant la période à l'étude, ce qui vient corroborer la justesse d'une approche combinant études repères et projections. Le recours à la classification du SCN fait ressortir les écarts entre le Canada et les États-Unis, comme on l'a déjà vu. Les publications de l'OCDE présentent ces répartitions en pourcentage selon les deux classifications pour les deux années de référence.

The comparative price level shown in Table 5, and illustrated in Chart 9, corresponds to the PPP divided by the exchange rate. This ratio, expressed as an index, gives an indication over time of the average percentage by which the level of Canadian prices is above or below its US counterpart. If the index is 100, the PPP and the exchange rate are equal and price levels are equivalent in the two countries. The index reveals that overall prices in Canada were below the US prices from 1984 to 1987 (by 8% in 1985) and climbed above them in 1988. They remained above until 1992 when they declined to just below 100. The cheaper items in Canada can be identified at different time periods. For example, rents were lower than in the US in 1985, at a comparative price level of 97, which rose to 111 in 1990, a level 11% above that of the US. In both cases, the exchange rate is taken into account.

It is interesting to compare the trend in the comparative price level with that of the number of same-day Canadian travellers to the United States over the same period (see Graph 10). Turning points and direction are very similar in the two series. When prices are higher in Canada (as indicated by a comparative price level above 100), more Canadians cross the border to shop in the US. When the comparative price level in Canada declined relative to the US in 1992, the number of trips also declined. In general, when the comparative price level is below that of the US, it can be stated that the Canadian dollar is undervalued, and prices are higher in the US, while the reverse is true when prices are higher in Canada. That is, more Canadian dollars are required to buy US dollars than would be indicated by the PPP in the years when the price level is lower in Canada.

Le niveau de prix comparé montré au tableau 5, et illustré au graphique 9, correspond à la PPA divisée par le taux de change. Exprimé sous forme d'indice, ce ratio donne une indication dans le temps de combien en moyenne le niveau des prix au Canada est supérieur ou inférieur à celui des États-Unis. Lorsque l'indice égale 100, la PPA et le taux de change sont égaux, et les niveaux de prix sont équivalents dans les deux pays. À la lumière de cet indice, les prix globaux au Canada ont été inférieurs à ceux des États-Unis de 1984 à 1987 (de 8% en 1985) et les ont dépassés en 1988. Ils sont restés supérieurs jusqu'en 1992, lorsqu'ils sont tombés juste sous la barre de 100. Les biens ou services moins chers au Canada peuvent être identifiés à divers moments. Ainsi, les loyers étaient plus bas qu'aux États-Unis en 1985, à un niveau de prix comparé de 97, lequel est passé à 111 en 1990, soit 11% de plus qu'aux États-Unis. Dans les deux cas, le taux de change est pris en compte.

Il est intéressant de comparer l'évolution du niveau de prix comparé à celle du nombre de Canadiens effectuant des voyages aller-retour le même jour aux États-Unis au cours de la même période (voir graphique 10). Les points de retournement et la tendance sont fort semblables dans les deux séries. Lorsque les prix sont plus hauts au Canada (ce que révèle un niveau de prix comparé supérieur à 100), davantage de Canadiens vont faire des achats aux États-Unis. Quand le niveau de prix comparé au Canada par rapport aux États-Unis a diminué en 1992, le nombre de voyages a aussi baissé. En général, lorsque le niveau de prix comparé est inférieur à celui des États-Unis, on peut affirmer que le dollar canadien est sous-évalué et que les prix sont plus élevés aux États-Unis; l'inverse est vrai lorsque les prix sont plus élevés au Canada. Autrement dit, il faut plus de dollars canadiens pour acheter des dollars américains que ne le laisse supposer la PPA durant les années où le niveau de prix est inférieur au Canada.

Conclusion: Thoughts on Future Developments

The PPPs and the associated estimates of real expenditure on GDP constitute a valuable addition to the tools of international macroeconomic analysis, in the increasingly global economy. For a trading nation like Canada, now in the process of entering into more liberalized trade arrangements, it is particularly important to be able to assess and evaluate the international aspects of economic relations with the country's main trading partners. While the PPP work is in a developmental stage compared with the conventional time series estimates of real expenditure, and while improvements will always be possible, the results are nevertheless worthwhile. National accountants have long been accustomed to estimate data series from imperfect sources.[19] Judgments are constantly required as to the validity of particular series and the same kinds of judgments apply to international comparisons.

Developments underway at the OECD include the introduction of a three year "rolling benchmark" approach. National prices are now being collected for one third of the items each year. This approach will spread the price survey work more evenly for statistical agencies and will also smooth out the discontinuities resulting from collecting all prices every five years and projecting the results for five years at a time. It will also be easier to provide the detailed expenditure data on an ongoing basis, when some of the recommendations of the revised SNA are introduced over the next few years.

Further dimensions of the program can also be contemplated. For example, although it would be very expensive, comparable prices could be collected at the producer level, in order to better analyze industry productivity. The relationship between income and expenditure could also be studied, for example in terms of the number of hours of paid work required to buy specific commodities. When appropriate regional price data become available, intra-regional comparisons, as done recently by Eurostat for selected European countries, could also be considered for Canada and the United States. In any event, the liberalization of trade between Canada, the United States and Mexico would very likely increase the interest in PPPs for these three countries.

Canada has made significant contributions to the OECD PPP program through technical and statistical advice, proposing better methods for capturing price differences (especially in construction) and evaluating empirical results. Statistics Canada intends to continue making such contributions in the future.

19. *See Gervais.*

Conclusion: les perspectives d'avenir

Les PPA et les séries sur les dépenses réelles internationales constituent un nouvel outil précieux de l'analyse macroéconomique internationale dans le contexte d'une mondialisation de l'économie. Pour un pays commerçant comme le Canada, présentement en voie de libéraliser son commerce, il est particulièrement important de pouvoir connaître et évaluer les dimensions internationales de ses relations économiques avec ses principaux partenaires commerciaux. Bien que les travaux sur les PPA soient moins avancés que ceux sur les séries chronologiques conventionnelles des dépenses réelles et que des améliorations soient toujours possibles, les résultats sont néanmoins valables. Les responsables de la comptabilité nationale sont depuis longtemps habitués à estimer des séries de données à partir de sources imparfaites.[19] Ils doivent constamment porter un jugement sur la validité de certaines séries, et le même type de jugement s'applique aux comparaisons internationales.

L'adoption d'une approche de «données repères mobiles» échelonnée sur trois ans est l'une des améliorations déjà en cours à l'OCDE. Les prix nationaux sont maintenant recueillis pour le tiers des articles à chaque année. Cela permettra aux bureaux de statistique de mieux étaler la collecte des prix tout en réduisant l'ampleur des solutions de continuité causées par une collecte quinquennale des prix conjuguée à une projection quinquennale des résultats. Il sera aussi plus facile de fournir les données détaillées sur les dépenses sur une base régulière, une fois introduites certaines des recommandations du SCN révisé au cours des prochaines années.

On peut aussi envisager des dimensions additionnelles au programme. À titre d'exemple, bien que ce soit très coûteux, on pourrait recueillir des prix comparables au niveau du producteur afin de mieux analyser la productivité par branche d'activité. On pourrait aussi étudier le rapport entre le revenu et les dépenses, par exemple en termes du nombre d'heures de travail rémunérées requises pour acheter un bien ou un service donné. Une fois construits des indices de prix régionaux appropriés, on pourrait aussi songer à établir des comparaisons intra-régionales pour le Canada et les États-Unis, comme celles effectuées récemment par l'Eurostat pour quelques pays européens. En tout état de cause, la libéralisation du commerce entre le Canada, les États-Unis et le Mexique devrait entraîner un surcroît d'intérêt envers le calcul des PPA pour ces trois pays.

Le Canada a apporté une contribution importante au programme des PPA de l'OCDE par ses conseils d'ordre technique et statistique, proposant de meilleures méthodes pour saisir les écarts de prix (dans le cas de la construction surtout) et évaluer les résultats empiriques. Statistique Canada a bien l'intention de continuer à y contribuer dans l'avenir.

19. *Voir Gervais.*

Appendix A

Table 1

This table provides indexes of "real" expenditure per capita in Canada for the 53 categories of GDP relative to those in the United States from 1981 to 1992. Canadian per capita expenditures in current dollars are converted to US dollars by dividing them by the Fisher PPPs (from Table 2). These converted expenditures are then expressed as a ratio to the US expenditures per capita.

Table 2

The PPPs are calculated with the Fisher formula for the benchmark years and projected for the other years using the growth rates of the IPIs of the 53 expenditure categories in the OECD studies.

Tables 3 and 4

These tables present the shares of the components in GDP (on the basis of the SNA classification) from 1981 to 1992 for the two countries. In the case of Canada, the shares are based on real expenditures converted to US currency through Paasche PPPs.

Table 5

Comparative price levels are calculated as the ratio of PPPs to exchange rates each year for each component.

Tables 6 and 7

These tables are taken from the OECD publication ***Purchasing Power Parities and Real Expenditures, EKS Results, Volume I, 1990.***

Table 8

This table is taken from the OECD publication ***National Accounts, Main Aggregates, Volume I***, 1992 edition.

Appendice A

Tableau 1

Ce tableau présente des indices des dépenses "réelles" par habitant au Canada pour les 53 catégories du PIB par rapport à ceux des États-Unis de 1981 à 1992. Les dépenses en dollars courants par habitant au Canada sont converties en monnaie des É.-U. en les divisant par les PPA de type Fisher (tirées du tableau 2). Les dépenses ainsi converties sont ensuite exprimées comme un ratio par rapport aux dépenses par habitant aux États-Unis.

Tableau 2

Les PPA sont calculées selon la formule Fisher pour les années de référence puis projetées pour les autres années au moyen des taux de croissance des IIP des 53 catégories de dépense employées dans les études de l'OCDE.

Tableaux 3 et 4

Ces tableaux montrent les parts des composantes dans le PIB (selon la classification du SCN) pour les deux pays, de 1981 à 1992. Dans le cas du Canada, les parts sont basées sur des dépenses réelles converties dans la monnaie des États-Unis au moyen de PPA de type Paasche.

Tableau 5

Les niveaux de prix comparés sont calculés comme le ratio des PPA aux taux de change à chaque année pour chaque composante.

Tableaux 6 et 7

Ces tableaux sont tirés de la publication de l'OCDE intitulée ***Parités de pouvoir d'achat et dépenses réelles, résultats EKS, volume I, 1990.***

Tableau 8

Ce tableau est tiré de la publication de l'OCDE intitulée ***Comptes nationaux, principaux agrégats, volume I***, édition de 1992.

Appendix B

Formulas

In the formulas below:

L, P and F = Laspeyres, Paasche and Fisher formulas.
p = price or, as a superscript, denotes a price index.
q = quantity or, as a superscript, denotes a quantity index.
v = value of a particular component (price times quantity)

For bilateral comparisons of real expenditures, Laspeyres volume or quantity indexes for country 2 (Canada in this case) based on country 1(the US in this case) may be defined as follows:

$$L^{q}_{1,2} = \frac{\Sigma v_1 \times \frac{q_2}{q_1}}{\Sigma v_1} = \frac{\Sigma p_1 q_2}{\Sigma p_1 q_1} \qquad [1]$$

As can be seen from the expression used in equation 1, the prices and values of country 1 only are used, and the exchange rate is not necessary.

The same formulation, with prices and values for country 2, can be used to create a Paasche volume index for country 2 based on country 1.

$$P^{q}_{1,2} = \frac{\Sigma v_2}{\Sigma v_2 \times \frac{q_1}{q_2}} = \frac{\Sigma p_2 q_2}{\Sigma p_2 q_1} \qquad [2]$$

Alternatively, given the property of complementarity between Laspeyres quantity and Paasche price indexes, the Laspeyres volume index for country 2 based on country 1 [1], can be derived indirectly, by deflating the values in countries 2 and 1, each expressed in its own currency, with the Paasche price index for country 2 based on country 1. This Paasche price index can be expressed as:

$$P^{p}_{1,2} = \frac{\Sigma v_2}{\Sigma v_2 \times \frac{p_1}{p_2}} = \frac{\Sigma p_2 q_2}{\Sigma p_1 q_2} \qquad [3]$$

where p_1/p_2 are the price ratios (PPPs of Text table 1) of the same products in the two countries.

The spread between Laspeyres and Paasche index levels tends to be much greater in spatial comparisons than in temporal ones, and this is what has led to the use of the Fisher formula. This formula has the advantage of not assigning priority to any country, as the price relatives are invertible regardless of the reference country.

$$F^{p}_{1,2} = \sqrt{p_{1,2}(q_1)\, p_{1,2}(q_2)} \qquad [4]$$

The formulas employed in multilateral studies are presented and discussed in the forthcoming manual on the revised SNA.

Appendice B

Formules

Dans les formules ci-dessous:

L, P et F = formules Laspeyres, Paasche et Fisher.
p = prix, ou en indice supérieur, indice de prix.
q = quantité, ou en indice supérieur, indice de quantité.
v = valeur d'un élément donné (prix multiplié par quantité)

Pour les comparaisons bilatérales des dépenses réelles, les indices de volume ou de quantité Laspeyres pour le pays 2 (le Canada dans ce cas-ci) avec le pays 1 comme base (les États-Unis dans ce cas-ci) peuvent être définis comme suit:

Comme on peut le voir de la façon dont l'équation 1 est présentée, seuls sont utilisés les prix et les valeurs du pays 1, et le taux de change n'entre pas en ligne de compte.

La même formule, avec des prix et des valeurs du pays 2, peut être utilisée pour créer un indice de volume Paasche pour le pays 2 employant le pays 1 comme base.

Ou bien, étant donné le caractère complémentaire des indices Laspeyres de quantité et des indices de prix Paasche, l'indice de volume Laspeyres du pays 2 employant le pays 1 comme base [1] peut être calculé indirectement, en déflatant les valeurs dans les pays 2 et 1, chacune exprimée dans sa propre monnaie, avec l'indice de prix Paasche du pays 2 employant le pays 1 comme base. Cet indice de prix Paasche peut s'exprimer comme suit:

où p_1/p_2 sont les ratios des prix (les PPA du tableau explicatif 1) des mêmes produits dans les deux pays.

L'écart entre les niveaux des indices Laspeyres et Paasche tend à être beaucoup plus grand dans les comparaisons spatiales que temporelles, et c'est ce qui a mené à l'utilisation de la formule de Fisher. Cette formule offre l'avantage de n'assigner la priorité à aucun pays, car les rapports de prix sont inversables quel que soit le pays servant de base.

Les formules employées dans les études multilatérales sont décrites et discutées dans le manuel du SCN révisé qui paraîtra sous peu.

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Table 1. Indexes of real expenditures, Canada, 1981 to 1992

United States = 100

		1981	1982	1983	1984	1985	1986
1	**Private final consumption expenditure**	**80.0**	**78.7**	**76.4**	**75.4**	**76.6**	**77.4**
2	*Food, beverages and tobacco*	89.9	87.9	84.3	83.5	86.2	81.6
3	Food	80.4	77.7	75.3	75.3	80.1	75.4
4	Bread and cereals	75.3	72.8	70.6	70.5	75.1	72.1
5	Meat	69.9	67.6	65.5	65.5	69.7	66.1
6	Fish	119.6	115.7	112.0	112.0	118.5	112.1
7	Milk, cheese and eggs	69.4	67.1	65.0	65.0	69.0	65.5
8	Oils and fats	154.1	149.0	144.3	144.2	154.4	139.1
9	Fruit, vegetables and potatoes	101.0	97.7	94.6	94.6	100.9	94.8
10	Other food	76.1	73.6	71.3	71.2	75.7	69.9
11	Beverages	132.2	133.0	125.0	124.2	115.6	107.0
12	Non-alcoholic beverages	153.0	145.8	143.1	142.8	103.8	91.3
13	Alcoholic beverages	126.0	128.7	118.2	117.6	120.7	111.4
14	Tobacco	95.5	96.6	92.1	91.7	93.7	90.3
15	*Clothing and footwear*	74.4	70.6	67.2	66.2	67.1	67.9
16	Clothing including repairs	76.6	72.7	69.2	68.1	69.0	69.4
17	Footwear including repairs	63.3	60.1	57.2	56.3	56.9	59.7
18	*Gross rent, fuel and power*	82.3	87.2	87.2	86.0	87.3	89.7
19	Gross rent and water charges	86.7	91.3	90.8	89.1	89.7	90.9
20	Fuel and power	66.3	71.8	73.4	73.6	77.1	83.8
21	*Household equipment and operation*	116.2	111.9	110.3	108.6	110.4	111.8
22	Furniture, floor coverings and repairs	63.0	60.7	59.8	58.9	59.7	62.3
23	Household textiles and repairs	116.0	111.6	110.1	108.4	109.6	111.0
24	Household appliances and repairs	104.7	100.8	99.4	97.9	99.5	100.8
25	Other household goods and services	173.5	167.0	164.7	162.2	164.2	163.8
26	*Medical and health care*	25.6	25.4	26.0	26.7	27.0	27.8
27	*Transport and communication*	89.0	83.5	75.6	74.6	78.3	78.0
28	Personal transport equipment	82.8	63.8	66.6	66.5	80.7	70.0
29	Operation of transportation equipment	81.0	83.4	72.2	71.2	68.6	74.1
30	Purchased transport services	164.2	169.1	146.4	144.4	136.6	155.2
31	Communication	86.8	89.4	77.4	76.3	74.1	79.1
32	*Education, recreation and culture*	101.5	100.1	99.4	99.8	99.0	100.6
33	Recreational equipment and repairs	91.0	87.5	85.8	85.8	89.4	84.2
34	Recreational and cultural services	122.6	117.9	115.6	115.7	122.0	117.9
35	Books, magazines and newspapers	84.5	81.2	79.7	79.7	83.3	78.2
36	Education	111.0	114.9	119.4	119.5	100.9	124.0
37	*Miscellaneous goods and services*	80.2	78.0	73.9	72.1	70.6	77.4
38	Restaurants, cafes and hotels	102.1	99.3	91.2	88.3	83.2	95.0
39	Other goods and services	65.4	64.1	62.6	61.4	62.5	66.5
40	*Net purchases abroad*	110.8	94.6	129.1	83.7	64.0	13.6
41	**Government final consumption expenditure**	**113.3**	**114.5**	**109.8**	**105.7**	**104.3**	**102.8**
42	**Gross fixed capital formation**	**122.8**	**124.5**	**115.1**	**103.2**	**106.4**	**113.0**
43	*Construction*	163.2	162.6	151.7	133.7	137.0	140.2
44	Residential buildings	140.0	136.1	117.5	102.4	110.1	117.6
45	Non-residential buildings	134.8	115.6	113.4	104.7	113.9	120.5
46	Civil engineering works	231.1	257.0	270.8	236.5	219.3	218.3
47	*Machinery and equipment*	79.2	80.9	72.6	67.8	71.0	79.6
48	Transport equipment	101.6	79.9	81.4	79.1	79.7	91.9
49	Non-electrical equipment	77.4	85.3	76.0	69.6	72.7	82.6
50	Electrical equipment	46.1	50.8	45.3	41.4	49.4	49.4
51	**Increase in stocks**	**29.1**	**618.7**	**245.1**	**54.0**	**69.5**	**156.3**
52	**Balance of exports and imports**	**-154.2**	**-397.5**	**-174.6**	**-101.8**	**-64.7**	**-23.7**
53	**Gross Domestic Product**	**92.7**	**93.1**	**91.8**	**90.1**	**91.5**	**92.9**

Tableau 1. Indices des dépenses réelles, Canada, 1981 à 1992

États-Unis = 100

1987	1988	1989	1990	1991	1992		
78.1	78.7	79.7	79.2	77.8	76.7	**Consommation finale privée**	1
81.2	80.6	80.0	82.6	81.3	77.9	*Produits alimentaires, boissons et tabac*	2
76.5	75.9	76.0	81.4	79.7	76.6	Produits alimentaires	3
74.8	75.9	77.8	91.7	89.6	86.1	Pain et céréales	4
67.6	67.7	68.3	79.2	77.6	74.5	Viande	5
113.5	112.6	112.6	128.9	126.5	121.5	Poisson	6
66.8	66.7	67.1	78.0	76.1	73.1	Lait, fromage et oeufs	7
135.7	129.7	125.3	140.8	136.8	131.4	Huiles et graisses	8
96.0	95.4	95.4	109.3	107.1	102.9	Fruits, légumes et pommes de terre	9
69.3	67.4	66.1	50.1	49.1	47.1	Autres produits alimentaires	10
102.3	99.5	94.0	89.9	90.5	85.0	Boissons	11
83.1	73.0	66.0	64.9	60.6	58.0	Boissons non alcoolisées	12
109.4	111.1	107.7	102.4	106.8	100.3	Boissons alcoolisées	13
84.2	86.1	85.0	80.5	77.2	68.4	Tabac	14
68.8	67.6	65.9	70.3	63.7	60.6	*Habillement et chaussures*	15
69.9	68.1	65.9	69.8	63.1	60.0	Articles d'habillement y compris réparations	16
62.8	64.0	65.1	73.0	66.5	63.4	Chaussures y compris réparations	17
90.4	93.5	97.0	96.1	98.1	98.1	*Logement, chauffage et éclairage*	18
90.6	93.2	95.8	93.9	96.1	95.9	Logement et charges de distribution d'eau	19
88.8	95.1	103.7	106.9	111.2	111.8	Chauffage et éclairage	20
114.5	114.8	113.0	99.1	91.9	89.6	*Biens et services ménagers*	21
65.6	67.6	68.5	64.5	57.5	53.9	Meubles, revêtements de sol et réparations	22
113.1	112.9	110.5	100.5	96.7	95.8	Textiles ménagers et réparations	23
103.4	103.7	102.1	93.3	82.7	80.6	Appareils électro-ménagers et réparations	24
164.7	162.2	156.8	127.0	119.7	118.1	Autres biens et services ménagers	25
27.6	26.8	26.8	28.5	29.0	29.8	*Dépenses de santé*	26
80.9	82.1	82.4	82.1	78.4	75.5	*Transport et communications*	27
76.1	78.5	77.6	82.0	79.7	76.6	Achats de véhicules personnels	28
74.0	73.9	74.0	71.4	67.9	65.0	Utilisation de véhicules personnels	29
160.6	166.1	171.9	171.9	149.7	143.6	Achats de services de transport	30
78.8	78.5	78.3	75.3	75.0	72.0	Communications	31
98.0	97.5	95.0	94.5	89.8	89.3	*Loisirs, enseignement et culture*	32
79.3	77.2	72.8	71.8	62.1	58.6	Matériel de loisirs	33
115.2	116.4	113.8	115.9	115.2	118.7	Services de loisirs et culture	34
73.5	71.5	67.4	66.5	64.9	65.4	Livres, périodiques et journaux	35
128.3	131.7	136.7	137.6	139.4	141.5	Enseignement	36
78.5	79.2	83.0	76.4	74.8	74.3	*Autres biens et services*	37
93.6	99.1	107.1	94.0	84.8	81.2	Restaurants, cafés et hôtels	38
69.0	66.8	68.4	65.6	67.8	68.6	Autres biens et services	39
126.7	261.8	6,306.5	4,227.0	6,777.4	7,516.9	*Achats nets directs à l'extérieur*	40
102.2	**104.5**	**108.9**	**111.1**	**113.1**	**115.6**	**Consommation finale des administrations**	41
125.2	**133.3**	**141.0**	**134.8**	**143.0**	**132.8**	**Formation brute de capital fixe**	42
158.2	171.7	184.8	176.3	179.5	165.2	*Construction*	43
144.8	157.4	179.2	164.9	157.0	159.8	Immeubles résidentiels	44
135.6	144.6	148.0	163.1	175.0	148.4	Immeubles non résidentiels	45
216.9	244.8	255.9	229.8	250.2	213.7	Ouvrages de génie civil	46
86.0	90.7	93.9	89.9	94.4	89.5	*Machines et matériel d'équipement*	47
108.5	112.8	95.4	118.2	124.5	123.1	Matériel de transport	48
85.7	90.5	100.5	87.7	91.9	86.2	Machines non électriques	49
52.1	55.7	62.4	56.4	59.3	57.0	Machines électriques	50
87.1	**244.2**	**122.3**	**389.0**	**9.3**	**38.7**	**Variation des stocks**	51
-23.5	**-19.7**	**15.0**	**-20.8**	**83.6**	**-2.7**	**Solde des exportations et des importations**	52
94.7	**96.0**	**96.3**	**94.6**	**93.9**	**92.3**	**Produit intérieur brut**	53

Table 2. Purchasing power parities, 1981 to 1992

Canadian dollars per U.S. dollar

		1981	1982	1983	1984	1985	1986
1	**Private final consumption expenditure**	**1.20**	**1.22**	**1.27**	**1.29**	**1.29**	**1.39**
2	*Food, beverages and tobacco*	1.25	1.30	1.37	1.40	1.43	1.47
3	Food	1.26	1.30	1.35	1.37	1.39	1.41
4	Bread and cereals	1.21	1.26	1.30	1.32	1.34	1.34
5	Meat	1.34	1.39	1.44	1.45	1.48	1.49
6	Fish	1.22	1.27	1.31	1.33	1.35	1.37
7	Milk, cheese and eggs	1.43	1.48	1.53	1.55	1.58	1.60
8	Oils and fats	0.95	0.98	1.02	1.03	1.05	1.11
9	Fruit, vegetables and potatoes	1.11	1.14	1.18	1.20	1.22	1.24
10	Other food	1.31	1.36	1.41	1.43	1.45	1.51
11	Beverages	1.10	1.15	1.26	1.32	1.37	1.44
12	Non-alcoholic beverages	0.95	1.02	1.06	1.07	1.10	1.19
13	Alcoholic beverages	1.15	1.21	1.36	1.44	1.50	1.58
14	Tobacco	1.62	1.71	1.78	1.76	1.84	2.02
15	*Clothing and footwear*	1.27	1.30	1.35	1.38	1.39	1.39
16	Clothing including repairs	1.25	1.28	1.33	1.36	1.37	1.38
17	Footwear including repairs	1.37	1.40	1.46	1.49	1.50	1.45
18	*Gross rent, fuel and power*	1.22	1.23	1.27	1.29	1.27	1.25
19	Gross rent and water charges	1.26	1.28	1.33	1.34	1.32	1.29
20	Fuel and power	1.06	1.03	1.05	1.07	1.06	1.06
21	*Household equipment and operation*	1.32	1.35	1.39	1.41	1.43	1.45
22	Furniture, floor coverings and repairs	1.42	1.45	1.50	1.52	1.54	1.52
23	Household textiles and repairs	1.24	1.27	1.31	1.34	1.35	1.38
24	Household appliances and repairs	1.28	1.31	1.35	1.38	1.39	1.41
25	Other household goods and services	1.28	1.31	1.35	1.38	1.39	1.44
26	*Medical and health care*	1.10	1.10	1.13	1.12	1.11	1.10
27	*Transport and communication*	1.03	1.09	1.22	1.25	1.26	1.31
28	Personal transport equipment	1.21	1.25	1.24	1.24	1.24	1.29
29	Operation of transportation equipment	0.99	1.05	1.22	1.27	1.29	1.35
30	Purchased transport services	0.95	1.00	1.16	1.21	1.23	1.25
31	Communication	0.92	0.97	1.13	1.18	1.20	1.26
32	*Education, recreation and culture*	1.13	1.13	1.14	1.15	1.15	1.17
33	Recreational equipment and repairs	1.11	1.12	1.14	1.17	1.19	1.26
34	Recreational and cultural services	1.01	1.01	1.04	1.07	1.08	1.10
35	Books, magazines and newspapers	1.10	1.10	1.12	1.15	1.17	1.24
36	Education	1.26	1.25	1.20	1.19	1.15	1.10
37	*Miscellaneous goods and services*	1.25	1.26	1.31	1.33	1.32	1.31
38	Restaurants, cafes and hotels	1.20	1.22	1.28	1.30	1.30	1.29
39	Other goods and services	1.29	1.30	1.32	1.34	1.33	1.33
40	*Net purchases abroad*	1.18	1.20	1.25	1.27	1.27	1.28
41	**Government final consumption expenditure**	**1.09**	**1.13**	**1.18**	**1.19**	**1.19**	**1.19**
42	**Gross fixed capital formation**	**1.18**	**1.15**	**1.16**	**1.16**	**1.17**	**1.15**
43	*Construction*	1.03	1.04	1.04	1.06	1.08	1.07
44	Residential buildings	1.15	1.18	1.14	1.15	1.17	1.16
45	Non-residential buildings	1.08	1.10	1.12	1.09	1.05	1.06
46	Civil engineering works	0.85	0.83	0.84	0.92	0.98	0.98
47	*Machinery and equipment*	1.47	1.36	1.39	1.36	1.34	1.30
48	Transport equipment	1.21	1.15	1.17	1.22	1.25	1.21
49	Non-electrical equipment	1.62	1.50	1.48	1.43	1.40	1.35
50	Electrical equipment	1.48	1.37	1.35	1.31	1.28	1.22
51	**Increase in stocks**	**1.19**	**1.21**	**1.24**	**1.26**	**1.28**	**1.28**
52	**Balance of exports and imports**	**1.20**	**1.23**	**1.23**	**1.29**	**1.37**	**1.39**
53	**Gross Domestic Product**	**1.20**	**1.21**	**1.24**	**1.25**	**1.24**	**1.23**

Tableau 2. Parités de pouvoir d'achat, 1981 à 1992

dollars canadiens par dollar É.-U.

1987	1988	1989	1990	1991	1992		
1.30	**1.30**	**1.29**	**1.29**	**1.29**	**1.27**	**Consommation finale privée**	1
1.49	1.50	1.49	1.47	1.50	1.47	*Produits alimentaires, boissons et tabac*	2
1.42	1.40	1.36	1.32	1.33	1.31	Produits alimentaires	3
1.31	1.26	1.21	1.14	1.15	1.13	Pain et céréales	4
1.48	1.45	1.41	1.35	1.36	1.34	Viande	5
1.38	1.36	1.33	1.29	1.30	1.28	Poisson	6
1.59	1.56	1.52	1.46	1.47	1.45	Lait, fromage et oeufs	7
1.15	1.18	1.20	1.20	1.21	1.19	Huiles et graisses	8
1.24	1.23	1.20	1.16	1.17	1.15	Fruits, légumes et pommes de terre	9
1.54	1.55	1.55	1.53	1.54	1.52	Autres produits alimentaires	10
1.52	1.62	1.70	1.74	1.69	1.71	Boissons	11
1.32	1.48	1.60	1.69	1.76	1.75	Boissons non alcoolisées	12
1.63	1.68	1.74	1.76	1.65	1.68	Boissons alcoolisées	13
2.12	2.17	2.21	2.34	2.70	2.74	Tabac	14
1.37	1.35	1.34	1.33	1.41	1.39	*Habillement et chaussures*	15
1.37	1.36	1.36	1.36	1.44	1.42	Articles d'habillement y compris réparations	16
1.38	1.31	1.25	1.18	1.26	1.22	Chaussures y compris réparations	17
1.24	1.23	1.23	1.23	1.23	1.21	*Logement, chauffage et éclairage*	18
1.28	1.27	1.28	1.29	1.29	1.26	Logement et charges de distribution d'eau	19
1.05	1.03	0.99	0.95	0.97	0.97	Chauffage et éclairage	20
1.47	1.49	1.52	1.55	1.60	1.58	*Biens et services ménagers*	21
1.50	1.48	1.46	1.45	1.49	1.48	Meubles, revêtements de sol et réparations	22
1.40	1.43	1.46	1.50	1.54	1.53	Textiles ménagers et réparations	23
1.43	1.45	1.47	1.50	1.54	1.53	Appareils électro-ménagers et réparations	24
1.48	1.53	1.59	1.65	1.70	1.68	Autres biens et services ménagers	25
1.09	1.08	1.05	1.02	1.02	0.99	*Dépenses de santé*	26
1.32	1.32	1.34	1.35	1.33	1.31	*Transport et communications*	27
1.28	1.28	1.31	1.34	1.26	1.28	Achats de véhicules personnels	28
1.39	1.40	1.41	1.43	1.40	1.35	Utilisation de véhicules personnels	29
1.24	1.21	1.18	1.15	1.27	1.25	Achats de services de transport	30
1.30	1.32	1.33	1.35	1.35	1.36	Communications	31
1.19	1.20	1.21	1.22	1.24	1.21	*Loisirs, enseignement et culture*	32
1.32	1.39	1.46	1.51	1.60	1.61	Matériel de loisirs	33
1.11	1.13	1.14	1.14	1.14	1.10	Services de loisirs et culture	34
1.30	1.37	1.44	1.49	1.47	1.42	Livres, périodiques et journaux	35
1.04	0.98	0.92	0.86	0.86	0.83	Enseignement	36
1.30	1.28	1.27	1.27	1.29	1.25	*Autres biens et services*	37
1.27	1.25	1.23	1.21	1.27	1.26	Restaurants, cafés et hôtels	38
1.32	1.31	1.31	1.32	1.31	1.26	Autres biens et services	39
1.28	1.28	1.28	1.28	1.29	1.26	*Achats nets directs à l'extérieur*	40
1.19	**1.18**	**1.17**	**1.15**	**1.13**	**1.12**	**Consommation finale des administrations**	41
1.15	**1.15**	**1.15**	**1.15**	**1.10**	**1.09**	**Formation brute de capital fixe**	42
1.09	1.10	1.10	1.10	1.09	1.10	*Construction*	
1.16	1.16	1.14	1.12	1.16	1.16	Immeubles résidentiels	43
1.08	1.10	1.13	1.16	1.12	1.11	Immeubles non résidentiels	44
0.99	1.00	0.99	0.98	0.93	0.92	Ouvrages de génie civil	45
1.28	1.25	1.23	1.23	1.19	1.14	*Machines et matériel d'équipement*	46
1.21	1.25	1.32	1.37	1.32	1.21	Matériel de transport	47
1.32	1.28	1.23	1.21	1.17	1.13	Machines non électriques	48
1.18	1.13	1.08	1.05	1.01	0.96	Machines électriques	49
1.29	**1.29**	**1.28**	**1.29**	**1.30**	**1.27**	**Variation des stocks**	50
1.33	**1.23**	**1.18**	**1.17**	**1.15**	**1.21**	**Solde des exportations et des importations**	51
1.23	**1.24**	**1.23**	**1.23**	**1.21**	**1.19**	**Produit intérieur brut**	52
							53

Table 3. Real expenditures by category, Canada, 1981 to 1992[1]

as a percentage of GDP[2]

		1981	1982	1983	1984	1985	1986
1	**Private final consumption expenditure**	52.4	53.1	53.3	53.3	54.3	54.9
2	*Food, beverages and tobacco*	8.9	8.9	8.6	8.4	8.6	8.0
3	Food	6.2	6.1	5.9	5.8	6.2	5.7
4	Bread and cereals	0.9	0.9	0.8	0.8	0.9	0.8
5	Meat	1.4	1.4	1.4	1.4	1.4	1.3
6	Fish	0.2	0.2	0.2	0.2	0.2	0.2
7	Milk, cheese and eggs	0.9	0.9	0.8	0.8	0.9	0.8
8	Oils and fats	0.2	0.2	0.2	0.2	0.2	0.2
9	Fruit, vegetables and potatoes	1.7	1.7	1.6	1.6	1.7	1.6
10	Other food	0.9	0.9	0.8	0.8	0.9	0.8
11	Beverages	2.0	2.0	1.9	1.8	1.6	1.5
12	Non-alcoholic beverages	0.7	0.7	0.7	0.6	0.5	0.4
13	Alcoholic beverages	1.3	1.3	1.2	1.1	1.1	1.1
14	Tobacco	0.8	0.8	0.8	0.8	0.8	0.8
15	*Clothing and footwear*	3.2	3.1	3.1	3.0	3.1	3.1
16	Clothing including repairs	2.8	2.7	2.7	2.7	2.7	2.7
17	Footwear including repairs	0.4	0.4	0.4	0.4	0.4	0.4
18	*Gross rent, fuel and power*	10.6	11.8	12.1	12.0	12.2	12.5
19	Gross rent and water charges	8.7	9.6	9.8	9.7	10.0	10.2
20	Fuel and power	1.9	2.2	2.3	2.2	2.3	2.3
21	*Household equipment and operation*	4.6	4.3	4.4	4.5	4.5	4.7
22	Furniture, floor coverings and repairs	0.8	0.8	0.8	0.8	0.8	0.9
23	Household textiles and repairs	0.5	0.5	0.5	0.5	0.5	0.5
24	Household appliances and repairs	0.7	0.7	0.7	0.7	0.7	0.7
25	Other household goods and services	2.5	2.4	2.5	2.5	2.5	2.6
26	*Medical and health care*	2.0	2.1	2.3	2.4	2.5	2.6
27	*Transport and communication*	9.3	8.9	8.4	8.5	9.0	8.6
28	Personal transport equipment	2.4	1.9	2.3	2.7	3.4	3.1
29	Operation of transportation equipment	4.4	4.5	3.9	3.7	3.6	3.5
30	Purchased transport services	1.3	1.4	1.2	1.1	1.1	1.1
31	Communication	1.2	1.2	1.0	1.0	1.0	0.9
32	*Education, recreation and culture*	5.9	6.0	6.3	6.4	6.6	6.8
33	Recreational equipment and repairs	2.2	2.2	2.3	2.3	2.5	2.4
34	Recreational and cultural services	1.7	1.7	1.7	1.8	1.9	1.9
35	Books, magazines and newspapers	0.5	0.5	0.5	0.5	0.5	0.5
36	Education	1.5	1.6	1.8	1.8	1.6	1.9
37	*Miscellaneous goods and services*	7.7	7.8	7.8	7.7	7.6	8.6
38	Restaurants, cafes and hotels	4.0	4.0	3.8	3.7	3.5	4.0
39	Other goods and services	3.7	3.8	3.9	4.0	4.1	4.6
40	*Net purchases abroad*	0.1	0.2	0.3	0.3	0.2	0.0
41	**Government final consumption expenditure**	21.8	23.0	22.4	21.8	21.9	21.8
42	**Gross fixed capital formation**	24.5	22.9	21.7	20.6	21.1	22.0
43	*Construction*	18.0	16.8	16.1	14.9	15.1	15.1
44	Residential buildings	5.8	4.7	5.6	5.4	5.6	6.5
45	Non-residential buildings	3.9	3.3	3.0	3.1	3.6	3.6
46	Civil engineering works	8.3	8.8	7.5	6.5	6.0	5.0
47	*Machinery and equipment*	6.5	6.1	5.7	5.8	6.0	6.9
48	Transport equipment	2.0	1.5	1.5	1.6	1.6	1.9
49	Non-electrical equipment	3.9	4.0	3.6	3.6	3.7	4.2
50	Electrical equipment	0.6	0.6	0.5	0.5	0.6	0.8
51	**Increase in stocks**	0.3	-2.5	-0.7	1.0	0.5	0.5
52	**Balance of exports and imports**	1.0	3.5	3.3	3.3	2.2	0.8
53	**Gross Domestic Product**	100.0	100.0	100.0	100.0	100.0	100.0

[1] Real expenditures, expressed in US dollars, converted with PPPs
[2] Figures may not add due to rounding

Tableau 3. Dépenses réelles par catégorie, Canada, 1981 à 1992[1]

en pourcentage du PIB[2]

1987	1988	1989	1990	1991	1992		
54.3	**53.4**	**52.3**	**55.1**	**55.8**	**56.4**	**Consommation finale privée**	1
7.6	7.2	6.9	7.7	7.8	7.6	*Produits alimentaires, boissons et tabac*	2
5.6	5.3	5.1	5.9	5.9	5.9	Produits alimentaires	3
0.8	0.8	0.8	0.9	0.9	0.9	Pain et céréales	4
1.3	1.3	1.3	1.5	1.5	1.5	Viande	5
0.2	0.2	0.2	0.2	0.2	0.2	Poisson	6
0.8	0.8	0.8	0.9	0.9	0.9	Lait, fromage et oeufs	7
0.2	0.2	0.2	0.2	0.2	0.2	Huiles et graisses	8
1.5	1.4	1.3	1.5	1.5	1.5	Fruits, légumes et pommes de terre	9
0.8	0.7	0.7	0.8	0.8	0.8	Autres produits alimentaires	10
1.3	1.2	1.1	1.1	1.2	1.1	Boissons	11
0.3	0.3	0.3	0.3	0.3	0.3	Boissons non alcoolisées	12
1.0	0.9	0.8	0.8	0.9	0.9	Boissons alcoolisées	13
0.7	0.7	0.7	0.7	0.7	0.6	Tabac	14
3.1	3.0	2.8	3.2	3.0	3.0	*Habillement et chaussures*	15
2.7	2.5	2.4	2.7	2.5	2.5	Articles d'habillement y compris réparations	16
0.4	0.4	0.4	0.5	0.5	0.5	Chaussures y compris réparations	17
12.3	12.3	12.3	13.0	13.8	14.2	*Logement, chauffage et éclairage*	18
10.1	10.0	10.0	10.4	11.0	11.3	Logement et charges de distribution d'eau	19
2.2	2.3	2.4	2.6	2.8	2.9	Chauffage et éclairage	20
4.6	4.5	4.2	4.0	3.8	3.8	*Biens et services ménagers*	21
0.9	0.9	0.9	0.8	0.8	0.7	Meubles, revêtements de sol et réparations	22
0.5	0.5	0.4	0.4	0.4	0.4	Textiles ménagers et réparations	23
0.7	0.7	0.6	0.6	0.5	0.6	Appareils électro-ménagers et réparations	24
2.5	2.4	2.3	2.1	2.1	2.1	Autres biens et services ménagers	25
2.6	2.5	2.4	2.5	2.7	2.7	*Dépenses de santé*	26
8.5	8.4	7.9	8.4	8.3	8.2	*Transport et communications*	27
3.1	3.1	2.8	3.2	3.2	3.2	Achats de véhicules personnels	28
3.4	3.3	3.2	3.2	3.2	3.1	Utilisation de véhicules personnels	29
1.1	1.1	1.1	1.2	1.1	1.1	Achats de services de transport	30
0.9	0.9	0.8	0.9	0.9	0.9	Communications	31
6.7	6.8	6.6	7.0	6.9	7.1	*Loisirs, enseignement et culture*	32
2.3	2.2	2.1	2.2	1.9	1.9	Matériel de loisirs	33
1.9	2.0	1.9	2.1	2.1	2.3	Services de loisirs et culture	34
0.5	0.5	0.4	0.5	0.5	0.5	Livres, périodiques et journaux	35
2.0	2.1	2.2	2.3	2.4	2.5	Enseignement	36
8.6	8.6	8.7	9.0	9.1	9.3	*Autres biens et services*	37
4.0	4.1	4.2	4.3	4.0	4.0	Restaurants, cafés et hôtels	38
4.7	4.5	4.5	4.7	5.1	5.3	Autres biens et services	39
0.2	0.2	0.4	0.3	0.5	0.6	*Achats nets directs à l'extérieur*	40
21.0	**20.7**	**20.5**	**22.2**	**23.1**	**23.0**	**Consommation finale des administrations**	41
23.4	**24.9**	**26.9**	**22.8**	**21.6**	**20.8**	**Formation brute de capital fixe**	42
15.7	15.9	16.0	15.6	14.8	14.1	*Construction*	
7.6	7.6	7.8	7.3	6.4	6.8	Immeubles résidentiels	43
3.8	3.8	3.9	4.3	4.3	3.8	Immeubles non résidentiels	44
4.4	4.5	4.4	4.0	4.0	3.5	Ouvrages de génie civil	45
7.6	9.0	10.9	7.1	6.9	6.8	*Machines et matériel d'équipement*	46
2.2	2.4	2.0	2.0	1.9	1.9	Matériel de transport	47
4.4	4.9	5.5	4.4	4.3	4.2	Machines non électriques	48
1.0	1.7	3.5	0.7	0.7	0.7	Machines électriques	49
0.5	**0.6**	**0.6**	**-0.5**	**-0.0**	**-0.3**	**Variation des stocks**	50
0.8	**0.5**	**-0.3**	**0.3**	**-0.5**	**0.0**	**Solde des exportations et des importations**	51
100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**Produit intérieur brut**	52
							53

[1] Dépenses réelles exprimées en dollars É.-U. et converties au moyen des PPP
[2] Les chiffres ayant été arrondis, leur somme peut ne pas correspondre au total

Table 4. Current expenditures by category, United States, 1981 to 1992[1]

as a percentage of GDP[2]

		1981	1982	1983	1984	1985	1986
1	**Private final consumption expenditure**	63.5	65.6	66.4	65.2	66.0	66.5
2	*Food, beverages and tobacco*	9.7	10.0	9.8	9.3	9.2	9.1
3	Food	7.5	7.7	7.5	7.2	7.1	7.1
4	Bread and cereals	1.1	1.2	1.1	1.1	1.1	1.1
5	Meat	2.1	2.1	2.1	2.0	2.0	1.9
6	Fish	0.2	0.2	0.2	0.2	0.2	0.2
7	Milk, cheese and eggs	1.2	1.3	1.2	1.2	1.2	1.2
8	Oils and fats	0.1	0.1	0.1	0.1	0.1	0.1
9	Fruit, vegetables and potatoes	1.6	1.7	1.6	1.5	1.5	1.5
10	Other food	1.1	1.2	1.1	1.1	1.1	1.1
11	Beverages	1.5	1.5	1.4	1.3	1.3	1.3
12	Non-alcoholic beverages	0.4	0.5	0.4	0.4	0.4	0.4
13	Alcoholic beverages	1.0	1.0	1.0	0.9	0.8	0.9
14	Tobacco	0.8	0.8	0.8	0.8	0.8	0.8
15	*Clothing and footwear*	4.3	4.3	4.4	4.3	4.3	4.4
16	Clothing including repairs	3.6	3.6	3.7	3.6	3.6	3.7
17	Footwear including repairs	0.7	0.7	0.7	0.6	0.7	0.7
18	*Gross rent, fuel and power*	12.7	13.3	13.3	12.9	13.0	13.1
19	Gross rent and water charges	9.9	10.4	10.4	10.1	10.4	10.6
20	Fuel and power	2.8	2.9	2.9	2.8	2.7	2.5
21	*Household equipment and operation*	3.9	3.8	3.9	3.8	3.8	3.9
22	Furniture, floor coverings and repairs	1.3	1.3	1.3	1.3	1.3	1.3
23	Household textiles and repairs	0.4	0.4	0.4	0.4	0.4	0.4
24	Household appliances and repairs	0.7	0.6	0.7	0.6	0.6	0.7
25	Other household goods and services	1.5	1.4	1.5	1.4	1.4	1.5
26	*Medical and health care*	8.0	8.7	8.8	8.8	9.0	9.4
27	*Transport and communication*	10.1	10.1	10.4	10.3	10.5	10.2
28	Personal transport equipment	2.8	3.0	3.4	3.7	3.9	4.2
29	Operation of transportation equipment	5.2	5.1	4.9	4.7	4.7	4.3
30	Purchased transport services	0.8	0.8	0.8	0.7	0.7	0.7
31	Communication	1.3	1.3	1.3	1.2	1.2	1.1
32	*Education, recreation and culture*	5.5	5.7	5.9	5.8	6.0	6.2
33	Recreational equipment and repairs	2.3	2.4	2.5	2.5	2.6	2.6
34	Recreational and cultural services	1.3	1.4	1.4	1.4	1.4	1.5
35	Books, magazines and newspapers	0.5	0.6	0.6	0.6	0.6	0.6
36	Education	1.3	1.3	1.4	1.4	1.4	1.4
37	*Miscellaneous goods and services*	9.2	9.6	9.8	9.7	9.8	10.1
38	Restaurants, cafes and hotels	3.9	3.9	4.0	3.9	3.9	3.9
39	Other goods and services	5.4	5.6	5.8	5.8	5.9	6.2
40	*Net purchases abroad*	0.1	0.2	0.3	0.3	0.3	0.2
41	**Government final consumption expenditure**	17.5	18.4	18.4	18.0	18.4	18.7
42	**Gross fixed capital formation**	18.6	17.2	17.2	18.0	18.1	17.8
43	*Construction*	10.4	9.5	9.7	10.0	10.1	10.1
44	Residential buildings	4.0	3.3	4.5	4.8	4.7	5.2
45	Non-residential buildings	2.8	2.8	2.5	2.7	2.9	2.8
46	Civil engineering works	3.5	3.4	2.7	2.5	2.5	2.2
47	*Machinery and Equipment*	8.2	7.7	7.6	8.0	8.0	7.7
48	Transport equipment	2.0	1.9	1.8	1.9	1.9	1.9
49	Non-electrical equipment	5.0	4.7	4.6	4.9	4.9	4.7
50	Electrical equipment	1.2	1.2	1.1	1.2	1.2	1.2
51	**Increase in stocks**	1.1	-0.4	-0.3	1.8	0.6	0.3
52	**Balance of exports and imports**	-0.7	-0.9	-1.8	-3.0	-3.1	-3.3
53	**Gross Domestic Product**	100.0	100.0	100.0	100.0	100.0	100.0

[1] Expressed in US dollars
[2] Figures may not add due to rounding

Tableau 4. Dépenses courantes par catégorie, États-Unis, 1981 à 1992[1]

en pourcentage du PIB[2]

1987	1988	1989	1990	1991	1992		
66.9	**66.8**	**66.7**	**67.4**	**67.9**	**68.2**	**Consommation finale privée**	1
9.0	8.7	8.7	8.8	8.9	8.9	*Produits alimentaires, boissons et tabac*	2
6.9	6.8	6.8	6.8	6.9	6.9	Produits alimentaires	3
1.1	1.0	1.0	1.0	1.0	1.0	Pain et céréales	4
1.9	1.9	1.9	1.8	1.8	1.8	Viande	5
0.1	0.1	0.1	0.1	0.1	0.1	Poisson	6
1.1	1.1	1.1	1.1	1.1	1.1	Lait, fromage et oeufs	7
0.1	0.1	0.1	0.1	0.1	0.1	Huiles et graisses	8
1.5	1.5	1.4	1.4	1.4	1.4	Fruits, légumes et pommes de terre	9
1.1	1.0	1.0	1.4	1.4	1.4	Autres produits alimentaires	10
1.2	1.2	1.2	1.2	1.2	1.2	Boissons	11
0.4	0.4	0.4	0.4	0.4	0.4	Boissons non alcoolisées	12
0.8	0.8	0.8	0.8	0.8	0.8	Boissons alcoolisées	13
0.8	0.8	0.8	0.8	0.8	0.8	Tabac	14
4.3	4.4	4.4	4.4	4.5	4,5	*Habillement et chaussures*	15
3.7	3.7	3.7	3.8	3.8	3.8	Articles d'habillement y compris réparations	16
0.7	0.7	0.7	0.7	0.7	0.7	Chaussures y compris réparations	17
13.1	12.9	12.9	13.0	13.1	13.1	*Logement, chauffage et éclairage*	18
10.7	10.6	10.6	10.7	10.8	10.8	Logement et charges de distribution d'eau	19
2.4	2.3	2.2	2.3	2.3	2.3	Chauffage et éclairage	20
3.8	3.8	3.7	3.8	3.8	3.8	*Biens et services ménagers*	21
1.3	1.3	1.3	1.2	1.2	1.3	Meubles, revêtements de sol et réparations	22
0.4	0.4	0.4	0.4	0.4	0.4	Textiles ménagers et réparations	23
0.7	0.6	0.6	0.6	0.6	0.6	Appareils électro-ménagers et réparations	24
1.5	1.4	1.4	1.5	1.5	1.5	Autres biens et services ménagers	25
9.7	10.0	10.2	9.6	9.7	9.7	*Dépenses de santé*	26
9.9	9.9	9.7	9.8	9.8	9.9	*Transport et communications*	27
3.9	3.9	3.7	3.7	3.8	3.8	Achats de véhicules personnels	28
4.2	4.2	4.2	4.3	4.3	4.3	Utilisation de véhicules personnels	29
0.7	0.6	0.6	0.7	0.7	0.7	Achats de services de transport	30
1.1	1.1	1.1	1.1	1.1	1.1	Communications	31
6.4	6.6	6.7	6.8	6.8	6.8	*Loisirs, enseignement et culture*	32
2.8	2.8	2.8	2.9	2.9	2.9	Matériel de loisirs	33
1.6	1.6	1.6	1.6	1.6	1.6	Services de loisirs et culture	34
0.6	0.7	0.7	0.7	0.7	0.7	Livres, périodiques et journaux	35
1.5	1.5	1.6	1.6	1.6	1.6	Enseignement	36
10.4	10.5	10.4	11.2	11.3	11.4	*Autres biens et services*	37
4.1	4.1	4.0	4.4	4.5	4.5	Restaurants, cafés et hôtels	38
6.3	6.4	6.4	6.8	6.8	6.9	Autres biens et services	39
0.2	0.1	0.0	0.0	0.0	0.0	*Achats nets directs à l'extérieur*	40
18.6	**18.3**	**17.9**	**18.1**	**18.4**	**17.9**	**Consommation finale des administrations**	41
17.3	**17.1**	**16.6**	**16.1**	**14.5**	**14.6**	**Formation brute de capital fixe**	42
9.6	9.1	8.8	8.5	7.7	7.7	*Construction*	43
5.0	4.8	4.4	4.3	3.9	3.9	Immeubles résidentiels	44
2.7	2.6	2.6	2.6	2.3	2.3	Immeubles non résidentiels	45
1.9	1.8	1.7	1.7	1.5	1.5	Ouvrages de génie civil	46
7.7	7.9	7.8	7.6	6.8	6.9	*Machines et matériel d'équipement*	47
1.8	1.9	1.9	1.6	1.4	1.4	Matériel de transport	48
4.7	4.8	4.8	4.9	4.4	4.4	Machines non électriques	49
1.1	1.2	1.2	1.2	1.0	1.0	Machines électriques	50
0.6	**0.2**	**0.5**	**-0.1**	**-0.4**	**-0.6**	**Variation des stocks**	51
-3.4	**-2.4**	**-1.8**	**-1.5**	**-0.6**	**-0.7**	**Solde des exportations et des importations**	52
100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**Produit intérieur brut**	53

[1] Exprimées en dollars É.-U.
[2] Les chiffres ayant été arrondis, leur somme peut ne pas correspondre au total

Table 5. Comparative price levels, Canada, 1981 to 1992

United States = 100

		1981	1982	1983	1984	1985	1986
1	**Private final consumption expenditure**	99.9	98.9	103.2	99.6	94.5	93.6
2	*Food, beverages and tobacco*	103.9	105.1	110.8	107.9	104.7	105.7
3	Food	105.1	105.6	109.4	105.5	101.8	101.7
4	Bread and cereals	101.3	101.8	105.4	101.7	98.1	96.1
5	Meat	111.9	112.4	116.5	112.4	108.4	107.5
6	Fish	102.0	102.5	106.2	102.5	98.8	98.9
7	Milk, cheese and eggs	119.4	120.0	124.3	120.0	115.7	115.0
8	Oils and fats	79.4	79.7	82.6	79.7	76.9	79.9
9	Fruit, vegetables and potatoes	92.2	92.6	96.0	92.6	89.3	89.3
10	Other food	109.6	110.1	114.1	110.1	106.2	108.4
11	Beverages	91.5	93.4	102.4	102.0	100.3	103.5
12	Non-alcoholic beverages	79.4	82.3	85.7	82.3	80.4	85.3
13	Alcoholic beverages	95.7	98.0	110.3	111.5	109.4	113.4
14	Tobacco	135.5	138.5	144.3	135.7	134.7	145.3
15	*Clothing and footwear*	105.7	105.5	109.5	106.3	101.8	100.0
16	Clothing including repairs	104.2	103.9	107.9	104.8	100.3	99.3
17	Footwear including repairs	114.0	113.8	118.2	114.7	109.8	104.4
18	*Gross rent, fuel and power*	102.0	99.8	103.2	99.6	93.0	90.0
19	Gross rent and water charges	105.1	103.7	107.7	103.8	96.6	93.2
20	Fuel and power	88.2	83.5	84.9	82.3	77.6	76.5
21	*Household equipment and operation*	109.9	109.2	112.7	109.3	104.4	104.4
22	Furniture, floor coverings and repairs	118.3	117.6	121.4	117.7	112.8	109.5
23	Household textiles and repairs	103.7	103.1	106.4	103.2	98.6	99.1
24	Household appliances and repairs	106.8	106.1	109.6	106.2	101.4	101.4
25	Other household goods and services	106.8	106.1	109.6	106.2	101.8	103.4
26	*Medical and health care*	91.5	89.0	91.3	86.6	81.3	79.0
27	*Transport and communication*	86.0	88.5	98.8	96.4	92.3	94.2
28	Personal transport equipment	101.0	101.1	100.6	95.5	90.8	92.7
29	Operation of transportation equipment	82.8	84.7	98.6	97.8	94.4	97.4
30	Purchased transport services	79.0	80.8	94.0	93.3	90.1	89.9
31	Communication	77.1	78.8	91.8	91.0	87.9	90.9
32	*Education, recreation and culture*	94.6	91.3	92.3	89.0	84.2	84.3
33	Recreational equipment and repairs	92.9	90.4	92.6	90.6	87.1	90.5
34	Recreational and cultural services	84.3	82.0	84.1	82.3	79.1	79.1
35	Books, magazines and newspapers	91.4	88.9	91.1	89.1	85.7	89.0
36	Education	105.3	100.9	97.6	91.9	84.2	79.4
37	*Miscellaneous goods and services*	104.4	102.5	106.2	102.4	96.4	94.5
38	Restaurants, cafes and hotels	99.9	98.6	103.9	100.6	95.2	92.9
39	Other goods and services	108.0	105.2	107.4	103.6	97.4	95.4
40	*Net purchases abroad*	98.4	97.4	101.6	98.0	93.0	92.4
41	**Government final consumption expenditure**	90.8	91.4	95.6	91.9	87.1	85.3
42	**Gross fixed capital formation**	98.8	93.1	93.9	89.7	85.7	82.8
43	*Construction*	86.1	84.4	84.7	82.0	79.1	77.3
44	Residential buildings	95.7	95.4	92.8	89.2	85.4	83.5
45	Non-residential buildings	89.8	89.3	91.0	84.3	76.9	76.4
46	Civil engineering works	70.7	67.4	68.5	70.7	71.8	70.2
47	*Machinery and equipment*	122.5	110.5	112.7	104.8	98.1	93.5
48	Transport equipment	101.0	93.0	95.3	93.8	91.4	87.2
49	Non-electrical equipment	135.2	121.3	120.2	110.6	102.4	97.4
50	Electrical equipment	123.6	110.9	109.9	101.2	93.7	88.1
51	**Increase in stocks**	99.3	97.8	100.8	97.5	93.7	92.3
52	**Balance of exports and imports**	100.0	100.0	100.0	100.0	100.0	100.0
53	**Gross Domestic Product**	99.9	98.0	100.5	96.5	90.8	88.5

Tableau 5. Niveaux de prix comparés, Canada, 1981 à 1992

États-Unis = 100

1987	1988	1989	1990	1991	1992		
98.0	**105.3**	**109.1**	**110.4**	**113.0**	**104.9**	**Consommation finale privée**	1
112.4	121.5	125.7	126.0	130.6	121.7	*Produits alimentaires, boissons et tabac*	2
106.7	113.5	115.2	113.1	115.8	108.4	Produits alimentaires	3
98.6	102.6	101.8	97.7	100.0	93.6	Pain et céréales	4
111.9	118.0	118.8	115.7	118.5	110.9	Viande	5
103.9	110.7	112.4	110.4	113.2	105.9	Poisson	6
120.0	127.0	128.1	125.1	128.1	119.9	Lait, fromage et oeufs	7
87.1	96.2	101.2	102.4	105.3	98.5	Huiles et graisses	8
93.7	99.7	101.2	99.6	101.8	95.3	Fruits, légumes et pommes de terre	9
116.2	126.3	130.9	131.1	134.2	125.6	Autres produits alimentaires	10
115.0	131.3	143.3	149.1	147.4	141.9	Boissons	11
99.8	120.0	134.8	144.8	153.5	145.2	Boissons non alcoolisées	12
122.9	136.9	146.8	150.8	144.2	138.9	Boissons alcoolisées	13
159.7	175.9	187.0	200.4	236.0	227.0	Tabac	14
103.4	110.0	113.3	114.0	123.1	114.9	*Habillement et chaussures*	15
103.4	110.7	114.9	116.4	125.7	117.7	Articles d'habillement y compris réparations	16
104.1	106.6	105.2	101.1	109.8	100.7	Chaussures y compris réparations	17
93.4	100.0	103.7	105.4	107.5	100.3	*Logement, chauffage et éclairage*	18
96.6	103.6	107.9	110.6	112.3	104.5	Logement et charges de distribution d'eau	19
79.3	83.4	83.9	81.6	84.3	80.0	Chauffage et éclairage	20
110.8	121.1	128.3	132.8	139.3	130.8	*Biens et services ménagers*	21
113.1	120.2	123.7	124.3	130.3	122.3	Meubles, revêtements de sol et réparations	22
105.6	116.1	123.5	128.6	134.8	126.6	Textiles ménagers et réparations	23
107.5	117.4	124.2	128.4	134.8	126.6	Appareils électro-ménagers et réparations	24
111.8	124.4	134.1	141.4	148.3	139.2	Autres biens et services ménagers	25
82.2	87.4	88.8	87.4	88.6	82.2	*Dépenses de santé*	26
99.6	107.6	112.8	115.7	116.1	108.6	*Transport et communications*	27
96.4	104.0	110.7	114.8	110.3	105.6	Achats de véhicules personnels	28
104.7	114.1	119.4	122.4	122.1	112.1	Utilisation de véhicules personnels	29
93.2	98.2	99.4	98.4	110.9	103.6	Achats de services de transport	30
98.0	107.1	112.5	115.4	117.9	112.7	Communications	31
89.6	97.7	102.5	104.6	108.2	100.6	*Loisirs, enseignement et culture*	32
99.8	113.0	123.0	129.4	139.3	133.5	Matériel de loisirs	33
84.0	91.7	96.2	97.7	99.1	90.9	Services de loisirs et culture	34
98.3	111.3	121.3	127.7	128.7	117.7	Livres, périodiques et journaux	35
78.7	79.6	77.5	73.7	75.1	69.1	Enseignement	36
98.0	104.4	107.5	108.8	112.4	103.1	*Autres biens et services*	37
95.8	101.5	103.9	103.7	110.6	104.1	Restaurants, cafés et hôtels	38
99.6	106.7	110.4	113.1	114.7	104.1	Autres biens et services	39
96.7	104.2	108.2	109.7	113.0	104.5	*Achats nets directs à l'extérieur*	40
89.5	**95.9**	**98.5**	**98.4**	**98.8**	**92.4**	**Consommation finale des administrations**	41
86.9	**93.7**	**96.9**	**98.4**	**95.8**	**89.9**	**Formation brute de capital fixe**	42
81.9	89.0	92.7	94.3	95.3	91.0	*Construction*	43
87.7	93.9	96.2	96.0	101.1	96.0	Immeubles résidentiels	44
81.5	89.7	95.5	99.4	97.7	92.3	Immeubles non résidentiels	45
75.0	81.5	83.8	84.0	81.3	76.2	Ouvrages de génie civil	46
96.3	101.9	104.1	105.4	103.5	94.0	*Machines et matériel d'équipement*	47
91.4	101.7	111.5	117.5	115.3	100.4	Matériel de transport	48
99.6	103.8	103.8	103.4	101.8	93.5	Machines non électriques	49
89.1	91.9	91.1	90.0	88.3	79.3	Machines électriques	50
97.1	**104.6**	**108.3**	**110.4**	**113.2**	**105.3**	**Variation des stocks**	51
100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**Solde des exportations et des importations**	52
93.0	**100.4**	**104.2**	**105.4**	**105.9**	**98.7**	**Produit intérieur brut**	53

Table 6. Indexes of real value per head of final expenditure on GDP, OECD countries, 1990
(OECD = 100)

		Belgium Belgique	Denmark Danemark	France France	Germany Allemagne	Greece Grèce	Ireland Irlande	Italy Italie	Luxembourg Luxembourg	Netherlands Pays-bas	Portugal Portugal	Spain Espagne	United King. Royaume-Uni	EEC Total Total CEE
		At international prices												
1	**Private final consumption expenditure**	93	78	98	105	49	56	96	113	88	51	67	96	91
2	*Food, beverages and tobacco*	103	92	113	112	105	75	116	132	97	88	90	87	103
3	Food	108	87	113	99	104	79	120	96	96	94	92	86	102
4	Bread and cereals	100	62	92	90	37	86	101	96	95	96	65	92	88
5	Meat	128	99	132	118	117	96	129	111	73	113	124	94	116
6	Fish	116	46	88	37	102	47	87	46	49	216	157	54	82
7	Milk, cheese and eggs	116	107	132	99	106	74	129	109	147	68	91	80	108
8	Oils and fats	212	115	185	124	195	131	208	177	144	246	153	98	158
9	Fruit, vegetables and potatoes	78	63	89	58	167	62	185	93	94	90	86	77	99
10	Other food	86	112	104	141	56	68	42	63	105	18	34	87	84
11	Beverages	77	120	133	186	89	44	94	117	100	71	76	94	115
12	Non-alcoholic beverages	66	58	86	115	81	64	63	158	77	15	43	134	87
13	Alcoholic beverages	80	148	152	218	92	35	107	97	110	103	92	79	128
14	Tobacco	95	93	84	130	123	93	92	493	95	45	80	88	96
15	*Clothing and footwear*	74	51	62	89	49	47	101	74	71	45	64	79	77
16	Clothing including repairs	74	51	59	90	51	41	95	72	70	39	49	78	73
17	Footwear including repairs	77	50	75	85	34	86	134	80	77	75	165	89	99
18	*Gross rent, fuel and power*	82	133	112	97	41	50	110	131	84	71	61	112	97
19	Gross rent and water charges	74	135	118	95	44	44	126	109	79	96	69	121	103
20	Fuel and power	103	119	88	96	31	60	72	189	93	33	40	80	77
21	*Household equipment and operation*	144	77	110	129	61	53	121	152	106	52	63	93	104
22	Furniture, floor coverings and repairs	146	93	112	186	19	38	128	210	138	51	66	90	116
23	Household textiles and repairs	149	164	61	97	130	38	177	115	100	65	112	98	109
24	Household appliances and repairs	123	74	92	100	41	57	89	109	68	49	49	116	89
25	Other household goods and services	147	52	128	105	88	65	116	133	98	51	55	83	99
26	*Medical and health care*	137	15	146	143	22	20	71	99	119	19	32	24	85
27	Medical and pharmaceutical products	125	37	233	173	68	43	181	94	48	57	118	37	137
28	Medical and health services	138	9	120	139	12	14	44	97	153	9	13	23	72
29	*Transport and communication*	83	79	108	107	45	38	76	157	65	40	72	89	87
30	Personal transport equipment	103	42	83	126	15	30	79	261	60	27	51	97	84
31	Operation of transport equipment	81	79	119	95	27	43	62	97	54	48	83	71	81
32	Purchased transport services	49	136	102	74	248	37	104	29	67	49	91	115	97
33	Communication	46	158	121	108	114	41	76	184	119	33	57	80	90
34	*Education, recreation and culture*	59	95	74	101	29	73	76	56	97	20	41	122	81
35	Recreational equipment and repairs	72	90	70	101	17	27	78	41	120	22	29	104	78
36	Recreational and cultural services	44	94	71	93	49	133	63	45	77	12	30	119	76
37	Books, magazines and newspapers	78	71	135	126	32	102	111	76	112	20	33	109	102
38	Education	0	162	33	85	47	126	55	149	25	42	168	197	93
39	*Miscellaneous goods and services*	84	51	68	77	27	65	90	92	70	57	93	119	84
40	Restaurants, cafes and hotels	92	54	89	61	35	102	106	105	55	83	131	154	99
41	Other goods and services	78	48	51	91	20	34	77	81	83	34	57	90	71
42	*Net purchases abroad*	-387	91	847	11	1,202	-547	692	2,900	-1,296	2,133	2,546	-27	595
43	**Government final consumption expenditure**	95	169	118	78	64	66	98	96	92	75	82	141	102
44	*Collective government services*	79	70	95	78	79	56	78	83	107	55	91	127	92
45	*Individual government services*	114	293	146	76	43	79	124	112	73	99	69	157	114
46	**Gross fixed capital formation**	87	83	99	99	31	49	80	117	82	48	71	67	81
47	*Construction*	87	87	113	101	38	44	85	116	77	57	91		
48	Residential buildings	76	62	113	87	34	46	96	84	78	70	78	60	86
49	Non-residential buildings	99	79	111	110	27	45	100	133	87	24	55	60	83
50	Civil engineering works	93	157	115	120	64	38	44	156	57	79	156	81	89
51	*Machinery and equipment*	83	81	73	100	24	53	71	113	86	33	48	32	88
52	Transport equipment	81	72	66	85	15	42	67	143	90	33	53	72	73
53	Non-electrical equipment	78	86	78	96	30	65	72	94	84	37	48	61	67
54	Electrical equipment	93	71	62	122	19	25	69	126	81	18	35	63	72
55	**Increase in stocks**	91	-88	185	354	43	438	194	835	-75	385	269	108	79
56	**Balance of exports and imports**	6,362	14,127	-79	13,347	-7,262	10,056	46	-1,214	9,704	-5,811	-4,378	-46	175
57	**Gross Domestic Product**	96	98	102	106	43	62	93	113	92	51	69	-4,148	1,899
													93	91

Source: Purchasing Power Parities and Real Expenditures, OECD, 1990

Tableau 6. Indices de valeur réelle par habitant des dépenses finales imputées au PIB, pays de l'OCDE, 1990
(OCDE = 100)

Austria / Autriche	Switzerland / Suisse	Finland / Finlande	Iceland / Islande	Norway / Norvège	Sweden / Suède	Turkey / Turquie	Australia / Australie	N. Zealand / N. Zélande	Japan / Japon	Canada / Canada	United States / États-Unis	OECD Total / Total OCDE		
Aux prix internationaux														
85	**111**	**76**	**87**	**70**	**81**	**25**	**87**	**78**	**90**	**103**	**137**	**100**	**Consommation finale privée**	1
107	136	85	103	86	85	40	104	83	97	88	112	100	*Produits alimentaires, boissons et tabac*	2
105	144	84	104	89	86	45	110	82	96	87	113	100	Produits alimentaires	3
93	85	76	87	61	73	84	86	87	185	67	85	100	Pain et céréales	4
113	99	80	95	73	63	37	137	78	31	95	127	100	Viande	5
32	77	50	154	154	95	9	46	44	357	41	31	100	Poisson	6
109	253	138	153	121	132	31	89	79	39	93	131	100	Lait, fromage et oeufs	7
188	115	101	107	96	113	104	120	120	17	86	61	100	Huiles et graisses	8
115	181	71	53	84	75	68	142	103	96	111	106	100	Fruits, légumes et pommes de terre	9
96	173	75	133	94	101	21	96	63	88	74	147	100	Autres produits alimentaires	10
125	135	87	115	85	82	4	68	84	96	93	107	100	Boissons	11
109	157	47	226	88	41	4	120	50	118	81	132	100	Boissons non alcoolisées	12
131	125	100	74	83	98	4	46	96	85	97	95	100	Boissons alcoolisées	13
98	60	88	77	65	83	62	118	88	109	88	112	100	Tabac	14
103	69	51	74	68	97	35	59	56	113	87	146	100	*Habillement et chaussures*	15
101	61	50	73	67	95	32	58	57	118	91	149	100	Articles d'habillement y compris réparations	16
111	110	60	83	78	106	53	62	54	79	66	129	100	Chaussures y compris réparations	17
97	113	91	106	86	117	58	85	91	83	116	121	100	*Logement, chauffage et éclairage*	18
97	92	82	108	57	113	76	84	89	88	104	109	100	Logement et charges de distribution d'eau	19
90	184	117	91	211	118	24	75	80	54	157	161	100	Chauffage et éclairage	20
104	83	81	112	87	94	32	108	63	92	128	113	100	*Biens et services ménagers*	21
168	116	92	95	142	140	48	77	62	36	81	122	100	Meubles, revêtements de sol et réparations	22
109	132	152	58	150	184	29	145	123	105	96	93	100	Textiles ménagers et réparations	23
101	72	70	65	51	52	24	138	60	114	117	125	100	Appareils électro-ménagers et réparations	24
59	55	66	156	57	67	25	109	53	121	173	105	100	Autres biens et services ménagers	25
44	108	33	17	50	18	10	64	57	134	44	139	100	*Dépenses de santé*	26
38	55	84	25	50	56	22	89	79	67	67	96	100	Médicaments et autres produits pharmaceutiques	27
46	119	21	15	48	10	7	56	51	155	39	147	100	Services de santé	28
98	115	104	110	61	110	9	90	98	76	116	148	100	*Transport et communications*	29
84	110	70	75	46	110	1	60	55	65	130	162	100	Achats de véhicules personnels	30
97	99	99	127	58	84	6	96	104	51	108	171	100	Utilisation de véhicules personnels	31
135	180	186	131	93	182	63	147	112	185	105	59	100	Achats de services de transport	32
87	101	135	118	80	130	26	97	268	85	100	133	100	Communications	33
56	70	78	95	73	86	10	104	71	98	129	145	100	*Loisirs, enseignement et culture*	34
48	65	62	52	74	94	7	59	75	102	111	155	100	Matériel de loisirs	35
89	36	102	164	53	95	10	190	62	135	141	127	100	Services de loisirs et culture	36
54	122	107	86	127	98	19	127	102	82	80	126	100	Livres, periodiques et journaux	37
19	123	45	146	54	12	12	83	34	21	233	170	100	Enseignement	38
88	135	51	45	35	34	8	76	69	68	107	162	100	*Autres biens et services*	39
128	160	79	50	33	38	3	77	88	61	119	142	100	Restaurants, cafés et hôtels	40
54	115	27	43	37	30	12	75	55	75	97	177	100	Autres biens et services	41
4,387	976	-1,407	-2,699	-1,889	-1,093	0	222	-110	-926	-467	-12	100	*Achats nets directs à l'extérieur*	42
112	**92**	**139**	**131**	**136**	**177**	**44**	**105**	**95**	**67**	**125**	**119**	**100**	**Consommation finale des administrations**	43
87	79	87	72	95	101	51	92	90	55	103	146	100	*Services collectifs des administrations*	44
143	109	201	204	187	272	35	120	100	82	153	87	100	*Services individuels des administrations*	45
110	**161**	**135**	**99**	**94**	**98**	**24**	**109**	**69**	**159**	**131**	**107**	**100**	**Formation brute de capital fixe**	46
117	194	159	125	105	87	29	121	68	142	172	101	100	*Construction*	47
89	180	151	103	71	87	20	130	77	116	191	118	100	Immeubles résidentiels	48
165	241	196	139	115	98	20	116	58	152	149	93	100	Immeubles non résidentiels	49
105	151	117	147	160	68	66	110	62	178	166	76	100	Ouvrages de génie civil	50
105	130	112	72	84	116	21	87	72	173	90	118	100	*Machines et matériel d'équipement*	51
79	94	70	130	183	88	9	72	71	231	106	101	100	Matériel de transport	52
111	119	132	51	46	127	29	103	72	127	96	138	100	Machines non électriques	53
118	217	116	45	31	120	16	49	68	261	40	74	100	Machines électriques	54
437	**1,065**	**304**	**-172**	**794**	**-36**	**-7**	**8**	**522**	**266**	**-224**	**-67**	**100**	**Variation des stocks**	55
2,365	**1,684**	**-4,197**	**3,692**	**18,490**	**1,200**	**-130**	**-1,907**	**-909**	**1,664**	**674**	**-3,247**	**100**	**Solde des exportations et des importations**	56
97	**122**	**96**	**97**	**94**	**100**	**27**	**94**	**79**	**103**	**112**	**125**	**100**	**Produit intérieur brut**	57

Source: Parités de Pouvoir D'achat et Dépenses Réelles,OCDE,1990

Table 7. Purchasing power parities for final expenditure on GDP, OECD countries, 1990

national currency per US dollar

		Belgium Belgique	Denmark Danemark	France France	Germany Allemagne	Greece Grèce	Ireland Irlande	Italy Italie	Luxembourg Luxembourg	Netherlands Pays-bas	Portugal Portugal	Spain Espagne	United King. Royaume-Uni	EEC Total Total CEE
		At International prices												
1	**Private final consumption expenditure**	**35.5**	**8.72**	**5.88**	**1.81**	**123**	**0.605**	**1,213**	**32.2**	**1.89**	**92.7**	**99.4**	**0.525**	**0.814**
2	*Food, beverages and tobacco*	34.3	8.74	5.53	1.63	128	0.664	1,191	31.8	1.76	107.0	96.7	0.521	0.776
3	Food	34.6	8.17	5.79	1.66	131	0.590	1,256	34.2	1.78	112.4	103.4	0.476	0.789
4	Bread and cereals	29.8	7.72	5.18	1.48	122	0.507	1,077	29.8	1.51	84.4	104.1	0.381	0.688
5	Meat	40.2	8.49	6.79	1.87	132	0.577	1,454	41.6	2.42	122.4	99.4	0.475	0.875
6	Fish	29.1	7.10	5.47	1.53	138	0.435	1,536	33.7	1.32	96.2	91.3	0.413	0.752
7	Milk, cheese and eggs	34.2	7.83	5.74	1.41	164	0.706	1,395	33.4	1.62	138.9	123.4	0.566	0.827
8	Oils and fats	33.2	8.19	5.37	1.46	143	0.555	1,130	33.5	1.65	113.5	112.4	0.450	0.747
9	Fruit, vegetables and potatoes	38.0	9.56	6.29	1.81	115	0.708	1,031	31.7	1.94	105.3	104.1	0.559	0.778
10	Other food	33.7	8.48	5.22	1.82	163	0.638	1,598	34.7	1.60	153.6	118.6	0.510	0.834
11	Beverages	33.4	9.47	4.51	1.25	123	0.903	790	29.7	1.64	78.5	67.5	0.598	0.649
12	Non-alcoholic beverages	39.2	10.74	4.40	1.46	128	0.826	1,047	29.7	1.76	134.1	104.2	0.484	0.709
13	Alcoholic beverages	31.7	9.16	4.55	1.19	121	0.973	725	30.4	1.62	68.7	59.2	0.666	0.627
14	Tobacco	34.5	12.23	5.02	2.17	115	1.006	1,208	27.5	1.78	105.1	82.2	0.803	0.897
15	*Clothing and footwear*	46.3	9.96	8.32	2.16	163	0.673	1,658	45.3	2.16	145.8	136.0	0.528	1.017
16	Clothing including repairs	46.5	10.04	8.39	2.18	166	0.704	1,677	45.2	2.08	150.9	153.6	0.533	1.034
17	Footwear including repairs	45.6	9.67	8.04	2.10	152	0.564	1,579	45.8	2.53	126.6	91.4	0.512	0.930
18	*Gross rent, fuel and power*	35.1	7.41	5.22	1.98	91	0.382	821	30.0	1.92	45.4	76.2	0.448	0.709
19	Gross rent and water charges	35.2	6.93	4.83	1.99	80	0.290	664	31.1	1.93	28.9	65.4	0.406	0.642
20	Fuel and power	42.2	10.26	7.31	2.15	155	0.812	1,717	35.0	2.11	157.7	131.6	0.666	1.034
21	*Household equipment and operation*	36.6	8.14	6.10	1.70	126	0.651	1,348	37.4	1.86	100.8	107.4	0.529	0.834
22	Furniture, floor coverings and repairs	38.7	7.91	6.12	1.66	129	0.605	1,344	38.7	1.99	119.0	104.5	0.512	0.832
23	Household textiles and repairs	35.0	5.18	8.16	1.79	107	0.912	1,221	35.5	1.51	95.6	90.3	0.512	0.805
24	Household appliances and repairs	37.0	8.18	6.62	1.73	182	0.647	1,249	38.3	2.00	117.6	122.4	0.509	0.842
25	Other household goods and services	36.0	9.89	5.63	1.75	115	0.631	1,442	36.9	1.80	85.2	111.8	0.569	0.845
26	*Medical and health care*	26.1	8.20	4.34	1.78	93	0.578	1,044	28.7	1.70	78.7	77.4	0.399	0.719
27	Medical and pharmaceutical products	31.1	9.84	3.75	2.16	77	0.720	952	31.7	2.63	79.7	68.6	0.533	0.712
28	Medical and health services	25.4	7.40	4.81	1.64	114	0.512	1,178	28.8	1.43	83.8	93.1	0.323	0.725
29	*Transport and communication*	36.5	10.01	6.33	1.87	131	0.778	1,342	30.3	2.03	140.8	107.3	0.685	0.908
30	Personal transport equipment	33.8	12.97	6.26	1.71	300	0.952	1,360	31.4	2.27	237.9	143.5	0.669	0.919
31	Operation of transport equipment	41.0	11.09	7.19	2.06	130	0.719	1,656	37.8	2.29	125.3	113.0	0.721	1.008
32	Purchased transport services	36.1	7.88	6.24	1.93	65	0.674	969	30.4	1.90	81.3	72.7	0.753	0.801
33	Communication	45.7	5.24	4.80	2.24	62	0.833	1,109	18.4	1.27	101.3	73.3	0.697	0.809
34	*Education, recreation and culture*	39.3	8.02	6.63	1.79	139	0.541	1,555	29.8	1.79	109.8	117.1	0.478	0.861
35	Recreational equipment and repairs	45.2	8.04	7.31	1.99	233	0.743	1,616	41.5	1.68	129.3	140.9	0.521	0.938
36	Recreational and cultural services	43.6	8.00	7.06	1.74	78	0.402	1,797	27.6	1.94	115.9	136.5	0.487	0.880
37	Books, magazines and newspapers	37.3	10.41	5.19	1.97	190	0.687	1,463	31.7	2.62	123.4	135.6	0.470	0.870
38	Education	21.2	5.79	6.77	1.22	54	0.317	1,174	11.4	1.37	51.3	50.9	0.383	0.573
39	*Miscellaneous goods and services*	38.3	10.28	6.65	1.76	147	0.701	1,387	35.2	2.07	83.1	112.7	0.599	0.881
40	Restaurants, cafes and hotels	39.3	9.67	6.14	1.63	154	0.677	1,407	35.8	1.99	81.1	122.0	0.569	0.862
41	Other goods and services	36.9	10.89	7.29	1.84	135	0.716	1,351	34.1	2.13	85.2	96.9	0.634	0.898
42	*Net purchases abroad*	72.0	17.66	11.91	3.67	250	1.224	2,458	65.3	3.83	188.2	201.6	1.063	1.533
43	**Government final consumption expenditure**	**31.4**	**7.46**	**5.68**	**1.93**	**108**	**0.572**	**1,288**	**41.9**	**1.76**	**65.5**	**77.1**	**0.437**	**0.757**
44	*Collective government services*	33.5	7.49	6.04	1.97	117	0.563	1,392	43.2	1.81	63.6	81.2	0.442	0.782
45	*Individual government services*	29.5	7.32	5.35	1.91	96	0.579	1,198	40.7	1.72	66.5	72.9	0.433	0.733
46	**Gross fixed capital formation**	**35.8**	**8.02**	**5.85**	**1.93**	**154**	**0.646**	**1,361**	**39.3**	**2.11**	**118.7**	**106.2**	**0.650**	**0.888**
47	*Construction*	33.3	7.89	5.11	1.90	128	0.606	1,199	39.7	2.14	89.1	92.0	0.655	0.818
48	Residential buildings	37.5	9.98	5.35	2.23	145	0.619	1,238	41.8	2.38	82.6	83.0	0.613	0.855
49	Non-residential buildings	31.4	8.36	5.66	1.84	135	0.659	1,170	43.5	2.11	91.9	84.0	0.703	0.845
50	Civil engineering works	29.3	5.26	4.08	1.50	101	0.522	1,215	32.3	1.73	96.6	103.4	0.661	0.722
51	*Machinery and equipment*	39.8	8.29	7.04	2.00	198	0.712	1,612	39.4	2.14	170.0	128.6	0.661	0.990
52	Transport equipment	42.0	10.62	7.43	2.08	253	0.832	1,711	41.6	2.45	202.5	152.1	0.778	1.087
53	Non-electrical equipment	39.9	8.00	6.99	1.97	181	0.718	1,636	41.0	2.12	163.5	120.9	0.661	0.982
54	Electrical equipment	39.4	7.03	7.21	2.09	210	0.569	1,526	35.9	1.99	162.6	135.3	0.589	0.969
55	**Increase in stocks**	**29.2**	**6.95**	**4.96**	**1.43**	**121**	**0.549**	**1,092**	**27.1**	**1.55**	**104.3**	**88.2**	**0.445**	**0.696**
56	**Balance of exports and imports**	**33.3**	**6.17**	**5.43**	**1.61**	**158**	**0.603**	**1,195**	**33.3**	**1.82**	**142.2**	**101.6**	**0.561**	**0.788**
57	**Gross Domestic Product**	**34.7**	**8.27**	**5.82**	**1.84**	**124**	**0.608**	**1,251**	**34.9**	**1.91**	**91.3**	**96.4**	**0.530**	**0.820**

Source: Purchasing Power Parities and Real Expenditures, OECD,1990

Tableau 7. Parités de pouvoir d'achats des dépenses finales imputées au PIB, pays de l'OCDE, 1990

monnaie nationale par dollar É.-U.

Austria	Switzerland	Finland	Iceland	Norway	Sweden	Turkey	Australia	N. Zealand	Japan	Canada	United States	OECD Total		
Autriche	Suisse	Finlande	Islande	Norvège	Suède	Turquie	Australie	N. Zélande	Japon	Canada	États-Unis	Total OCDE		
							Aux prix internationaux							
12.5	**1.96**	**6.04**	**79.9**	**9.39**	**8.35**	**1,404**	**1.27**	**1.45**	**182**	**1.18**	**0.879**	**1.00**	**Consommation finale privée**	1
12.1	2.04	6.87	99.6	11.02	9.80	1,564	1.05	1.43	215	1.23	0.797	1.00	*Produits alimentaires, boissons et tabac*	2
12.2	2.11	6.21	90.6	9.99	9.35	1,606	0.98	1.25	222	1.09	0.782	1.00	Produits alimentaires	3
11.6	1.90	6.73	76.2	9.26	9.76	919	1.14	1.27	207	1.08	0.824	1.00	Pain et céréales	4
13.0	2.88	7.08	105.2	12.90	11.32	1,768	0.81	1.28	287	1.06	0.742	1.00	Viande	5
10.9	1.68	3.75	49.1	7.02	6.91	1,696	0.95	1.00	157	0.92	0.743	1.00	Poisson	6
13.3	2.21	5.34	99.4	10.00	8.27	2,464	1.14	1.36	225	1.28	0.802	1.00	Lait, fromage et oeufs	7
14.1	2.94	9.09	101.0	8.11	11.37	1,983	0.90	1.07	342	1.12	0.940	1.00	Huiles et graisses	8
10.9	1.76	5.87	105.8	9.32	9.29	1,516	0.96	1.28	208	1.06	0.879	1.00	Fruits, légumes et pommes de terre	9
13.8	1.98	6.76	91.2	10.22	9.18	2,034	1.25	1.34	205	1.21	0.795	1.00	Autres produits alimentaires	10
10.6	1.92	10.94	147.1	14.72	12.86	1,983	1.45	2.05	234	1.53	0.848	1.00	Boissons	11
10.2	1.55	7.68	125.5	13.06	12.12	3,638	1.39	1.60	228	1.40	0.778	1.00	Boissons non alcoolisées	12
10.8	2.14	11.97	162.8	15.65	13.15	1,365	1.51	2.19	240	1.59	0.894	1.00	Boissons alcoolisées	13
14.2	1.51	7.08	108.6	15.80	9.70	1,002	1.16	2.14	132	2.04	0.852	1.00	Tabac	14
14.4	2.01	6.53	102.3	9.38	6.98	1,777	1.27	1.47	161	1.18	0.751	1.00	*Habillement et chaussures*	15
14.6	2.03	6.68	107.2	9.61	6.97	1,718	1.21	1.46	165	1.14	0.741	1.00	Articles d'habillement y compris réparations	16
13.7	1.92	5.91	80.5	8.40	7.05	1,992	1.59	1.50	136	1.38	0.814	1.00	Chaussures y compris réparations	17
10.9	1.85	4.71	52.5	7.52	7.39	835	1.42	1.47	205	1.24	1.006	1.00	*Logement, chauffage et éclairage*	18
10.2	2.10	5.06	52.1	9.29	7.70	644	1.55	1.62	205	1.43	1.117	1.00	Logement et charges de distribution d'eau	19
15.4	1.53	4.21	59.1	5.84	7.22	2,032	0.98	1.02	218	0.79	0.759	1.00	Chauffage et éclairage	20
12.5	1.72	5.58	76.1	8.00	7.47	1,828	1.25	1.52	165	1.18	0.870	1.00	*Biens et services ménagers*	21
12.1	1.54	5.28	84.4	6.52	5.97	1,471	1.27	1.55	211	1.25	0.885	1.00	Meubles, revêtements de sol et réparations	22
10.4	1.55	2.95	71.8	6.41	5.44	1,415	1.23	0.91	96	1.70	1.160	1.00	Textiles ménagers et réparations	23
15.5	1.89	5.74	91.6	7.96	7.58	3,377	1.22	1.96	196	1.11	0.746	1.00	Appareils électro-ménagers et réparations	24
12.4	1.93	6.83	69.6	10.33	9.86	1,720	1.30	1.56	152	1.11	0.873	1.00	Autres biens et services ménagers	25
10.1	2.03	5.30	72.7	7.26	7.13	855	1.22	1.25	100	1.11	1.217	1.00	*Dépenses de santé*	26
14.0	2.08	5.05	87.6	6.98	6.14	1,038	1.03	1.44	123	1.43	1.240	1.00	Médicaments et autres produits pharmaceutiques	27
9.2	2.03	5.65	68.3	7.51	8.47	769	1.34	1.21	93	0.99	1.234	1.00	Services de santé	28
14.1	1.80	5.64	63.9	9.83	7.91	1,788	1.33	1.44	159	1.19	0.832	1.00	*Transport et communications*	29
13.3	1.41	7.63	76.9	11.97	7.15	6,967	1.75	1.90	128	1.19	0.875	1.00	Achats de véhicules personnels	30
15.6	2.21	5.70	65.9	8.54	10.76	1,664	1.29	1.43	184	1.21	0.752	1.00	Utilisation de véhicules personnels	31
11.8	1.89	5.03	66.7	9.51	6.37	783	1.07	1.82	150	1.13	1.031	1.00	Achats de services de transport	32
16.4	1.56	2.88	31.5	9.80	4.84	847	1.05	0.56	174	1.29	0.956	1.00	Communications	33
14.9	1.83	6.63	85.9	9.07	8.20	1,826	1.34	1.58	154	1.16	0.891	1.00	*Loisirs, enseignement et culture*	34
16.6	2.09	6.88	104.2	10.66	9.14	3,234	1.66	1.83	135	1.28	0.846	1.00	Matériel de loisirs	35
14.1	1.93	6.23	73.4	9.71	7.51	630	1.08	1.70	173	0.99	0.830	1.00	Services de loisirs et culture	36
14.1	1.76	8.29	131.4	9.02	9.66	1,788	1.30	1.20	178	1.20	0.773	1.00	Livres, periodiques et journaux	37
14.0	1.18	4.60	38.9	3.94	5.74	1,426	1.28	1.11	152	1.02	1.176	1.00	Enseignement	38
13.7	2.24	7.45	109.1	11.71	10.71	1,357	1.38	1.50	227	1.14	0.776	1.00	*Autres biens et services*	39
13.5	2.11	7.35	127.4	11.80	10.49	1,404	1.31	1.35	247	1.00	0.738	1.00	Restaurants, cafés et hôtels	40
13.7	2.37	7.37	87.2	11.52	10.77	1,367	1.45	1.67	209	1.28	0.810	1.00	Autres biens et services	41
25.4	3.97	12.22	161.6	18.99	16.89	2,844	2.58	2.95	368	2.40	1.781	1.00	*Achats nets directs à l'extérieur*	42
12.0	**2.13**	**5.22**	**62.8**	**7.79**	**8.02**	**804**	**1.19**	**1.24**	**149**	**1.27**	**1.048**	**1.00**	**Consommation finale des administrations**	43
12.6	2.20	5.03	61.8	7.91	8.19	852	1.19	1.23	154	1.30	1.018	1.00	*Services collectifs des administrations*	44
11.5	2.08	5.31	62.5	7.66	7.87	746	1.19	1.26	144	1.24	1.106	1.00	*Services individuels des administrations*	45
12.2	**1.83**	**4.95**	**62.9**	**7.45**	**7.94**	**1,540**	**1.13**	**1.48**	**168**	**0.97**	**0.770**	**1.00**	**Formation brute de capital fixe**	46
12.0	1.86	4.76	58.5	6.12	9.00	1,294	1.05	1.36	189	0.90	0.795	1.00	*Construction*	47
13.9	1.90	5.13	59.5	6.83	9.41	1,868	0.97	1.36	192	0.90	0.789	1.00	Immeubles résidentiels	48
12.1	1.93	4.90	60.4	5.88	9.35	1,258	1.20	1.49	162	0.96	0.815	1.00	Immeubles non résidentiels	49
9.1	1.71	3.97	54.3	5.42	7.93	805	1.01	1.24	211	0.84	0.815	1.00	Ouvrages de génie civil	50
12.7	1.78	5.24	70.4	9.65	6.93	1,900	1.27	1.65	149	1.10	0.759	1.00	*Machines et matériel d'équipement*	51
16.5	2.11	7.54	86.3	13.25	9.40	4,542	1.30	1.78	114	1.24	0.800	1.00	Matériel de transport	52
11.6	1.86	5.03	66.0	8.01	6.51	1,496	1.29	1.67	182	1.10	0.722	1.00	Machines non électriques	53
12.6	1.37	3.78	63.9	6.91	6.08	1,843	1.23	1.51	126	1.04	0.933	1.00	Machines électriques	54
10.1	**1.45**	**4.87**	**67.6**	**7.75**	**6.36**	**1,517**	**0.96**	**1.21**	**135**	**0.91**	**0.611**	**1.00**	**Variation des stocks**	55
11.3	**1.38**	**3.83**	**58.3**	**6.26**	**5.92**	**2,613**	**1.28**	**1.68**	**145**	**1.17**	**1.000**	**1.00**	**Solde des exportations et des importations**	56
12.4	**1.94**	**5.62**	**72.7**	**8.57**	**8.22**	**1,313**	**1.22**	**1.42**	**172**	**1.15**	**0.880**	**1.00**	**Produit intérieur brut**	57

Source: Parités de Pouvoir D'achat et Dépenses Réelles, OCDE, 1990

Table 8. Purchasing power parities for GDP, OECD countries, 1981 to 1991
national currency per US dollar

	1981	1982	1983	1984	1985	1986
Canada	1.280	1.310	1.320	1.300	1.290	1.280
United States	1.000	1.000	1.000	1.000	1.000	1.000
Japan	246.000	236.000	230.000	225.000	220.000	218.000
Australia	1.040	1.090	1.130	1.150	1.180	1.230
New Zealand	0.990	1.030	1.070	1.100	1.210	1.390
Austria	14.700	14.700	14.700	14.800	14.700	14.900
Belgium	38.600	39.000	39.500	39.800	40.700	41.200
Denmark	8.530	8.870	9.180	9.280	9.350	9.520
Finland	5.120	5.230	5.460	5.690	5.770	5.880
France	5.710	6.020	6.340	6.510	6.650	6.820
Germany	2.340	2.300	2.290	2.240	2.210	2.220
Greece	45.500	53.600	61.300	70.600	80.200	91.800
Iceland	10.300	14.900	25.400	31.000	39.200	47.500
Ireland	0.601	0.652	0.693	0.706	0.717	0.743
Italy	894.000	987.000	1,092.000	1,166.000	1,225.000	1,286.000
Luxembourg	38.400	40.000	41.100	41.100	40.800	41.300
Netherlands	2.640	2.640	2.580	2.520	2.470	2.420
Norway	8.750	9.080	9.260	9.430	9.550	9.170
Portugal	33.800	38.400	46.000	54.900	64.400	75.600
Spain	72.000	77.200	82.800	87.900	92.100	99.600
Sweden	6.980	7.110	7.520	7.750	7.970	8.290
Switzerland	2.250	2.270	2.250	2.210	2.200	2.220
Turkey	78.300	94.400	117.000	167.000	232.000	298.000
United Kingdom	0.524	0.531	0.537	0.538	0.548	0.552

Source: National Accounts, Main Aggregates, Volume 1, OECD, 1960-1991

Tableau 8. Parités de pouvoir d'achat du PIB, pays de l'OCDE, 1981 à 1991

monnaie nationale par dollar É.-U.

1987	1988	1989	1990	1991	
1.300	1.310	1.320	1.300	1.290	Canada
1.000	1.000	1.000	1.000	1.000	États-Unis
212.000	205.000	199.000	195.000	191.000	Japon
1.290	1.350	1.390	1.390	1.360	Australie
1.510	1.580	1.620	1.610	1.580	Nouvelle-Zélande
14.800	14.500	14.200	14.000	14.200	Autriche
40.600	40.000	40.100	39.500	39.100	Belgique
9.660	9.610	9.590	9.390	9.170	Danemark
6.000	6.180	6.310	6.380	6.280	Finlande
6.810	6.760	6.690	6.610	6.510	France
2.190	2.140	2.110	2.090	2.090	Allemagne
101.600	113.000	121.900	140.800	161.100	Grèce
55.000	65.300	75.300	82.600	85.400	Islande
0.737	0.730	0.731	0.690	0.666	Irlande
1,321.000	1,357.000	1,379.000	1,421.000	1,462.000	Italie
39.600	39.600	40.200	39.700	39.500	Luxembourg
2.330	2.270	2.200	2.160	2.180	Pays-Bas
9.520	9.570	9.700	9.730	9.530	Norvège
81.500	87.500	94.600	103.700	109.900	Portugal
102.100	103.900	106.400	109.500	110.300	Espagne
8.430	8.640	8.920	9.340	9.940	Suède
2.210	2.180	2.170	2.200	2.230	Suisse
399.000	639.000	1,005.000	1,491.000	2,237.000	Turquie
0.562	0.577	0.591	0.602	0.635	Royaume-Uni

Source: Comptes nationaux, principaux agrégats, volume 1, OCDE, 1960-1991

Chart 1 / Graphique 1
Alternative projection methods - Purchasing power parity for Canada - Gross Domestic Product
Diverses méthodes de projection - Parité de pouvoir d'achat pour le Canada - Produit intérieur brut

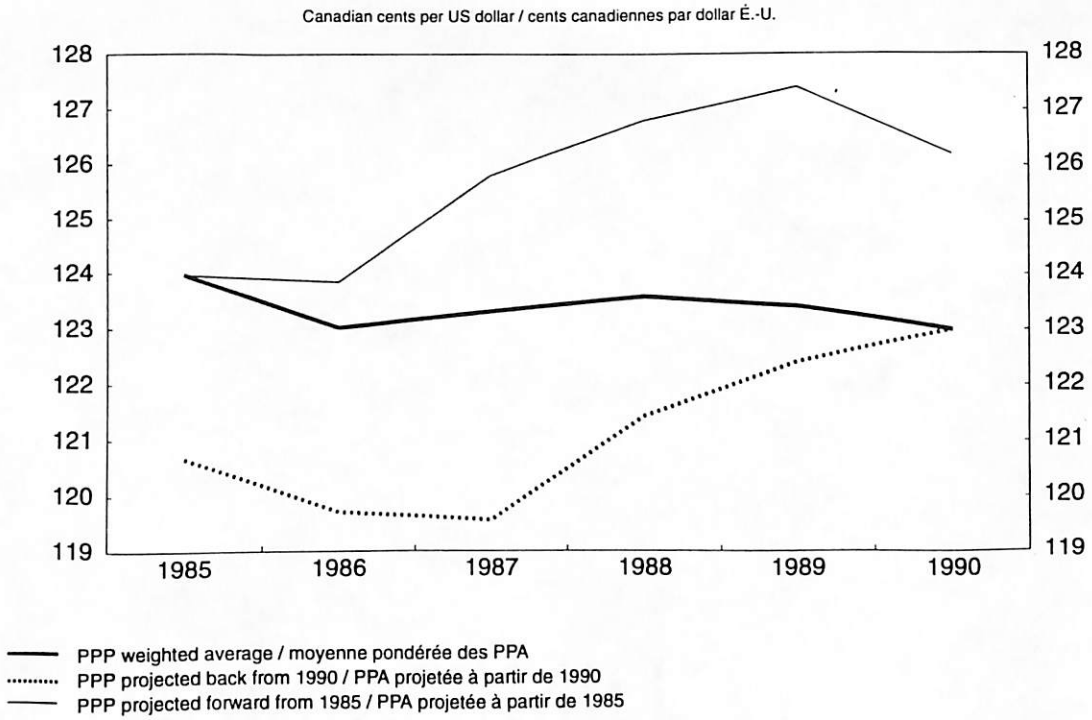


Chart 2 / Graphique 2
Alternative projection methods - Volume index for Canada - Gross Domestic Product
Diverses méthodes de projection - Indice de volume pour le Canada - Produit intérieur brut

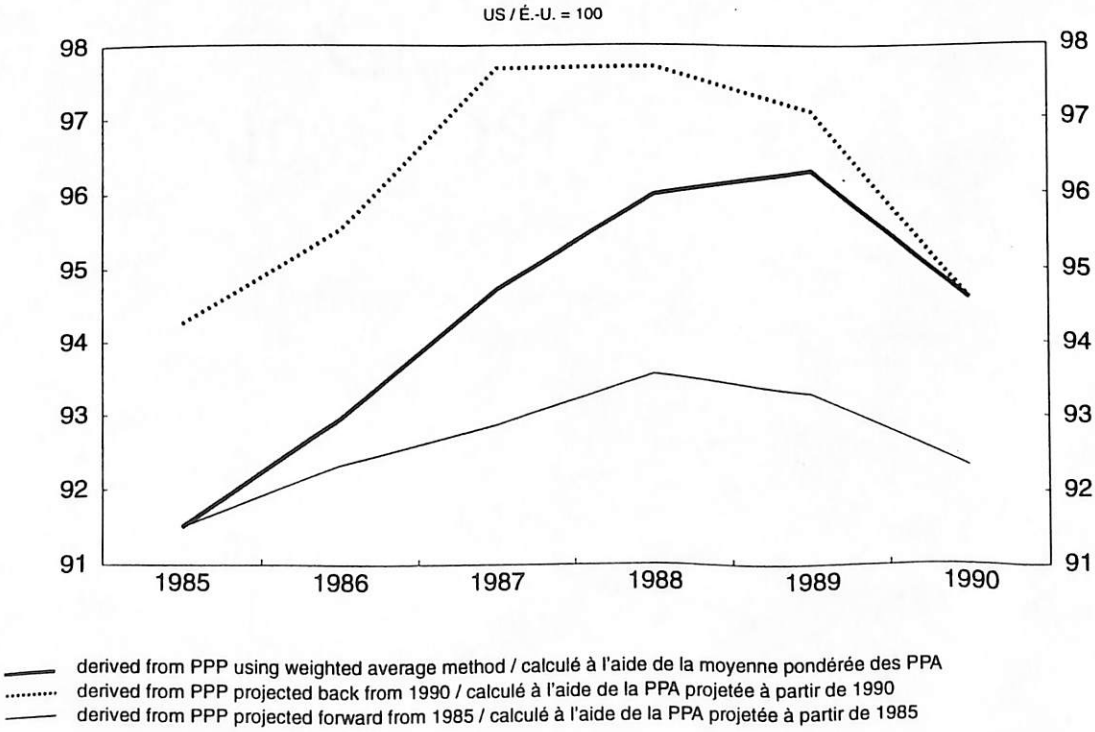


Chart 3 / Graphique 3
Alternative projection methods - Purchasing power parity for Canada - Private final consumption expenditure
Diverses méthodes de projection - Parité de pouvoir d'achat pour le Canada - Consommation finale privée

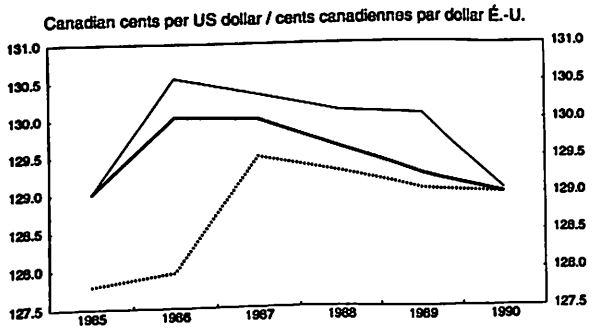


Chart 4 / Graphique 4
Alternative projection methods - Purchasing power parity for Canada - Government final consumption expenditure
Diverses méthodes de projection - Parité de pouvoir d'achat pour le Canada - Consommation finale des administrations publiques

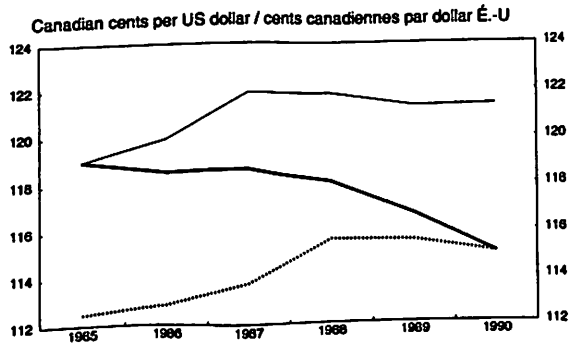
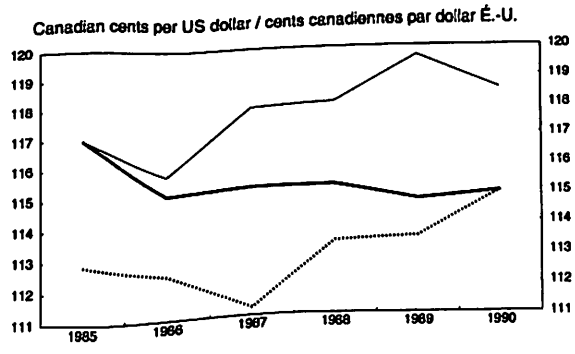


Chart 5 / Graphique 5
Alternative projection methods - Purchasing power parity for Canada - Gross fixed capital formation
Diverses méthodes de projection - Parité de pouvoir d'achat pour le Canada - Formation brute de capital fixe



PPP weighted average / moyenne pondérée des PPA
PPP projected back from 1990 / PPA projetée à partir de 1990
PPP projected forward from 1985 / PPA projetée à partir de 1985

Chart 6 / Graphique 6
Alternative projection methods - Volume index for Canada - Private final consumption expenditure
Diverses méthodes de projection - Indice de volume pour le Canada - Consommation finale privée

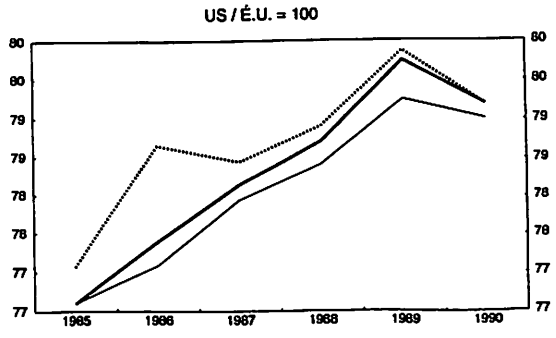


Chart 7 / Graphique 7
Alternative projection methods - Volume index for Canada - Government final consumption
Diverses méthodes de projection - Indice de volume pour le Canada - Consommation finale des administrations publiques

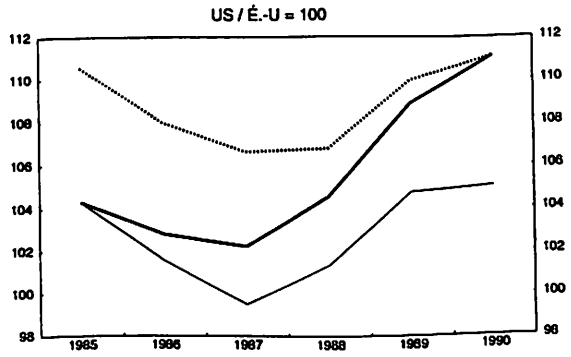
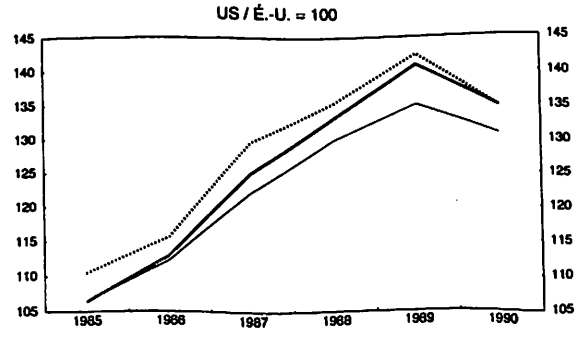


Chart 8 / Graphique 8
Alternative projection methods - Volume index for Canada - Gross fixed capital formation
Diverses méthodes de projection - Indice de volume pour le Canada - Formation brute de capital fixe



derived from PPP using weighted average method / calculé à l'aide de la moyenne pondérée des PPA
derived from PPP projected back from 1990 / calculé à l'aide de la PPA projetée à partir de 1990
derived from PPP projected forward from 1985 / calculé à l'aide de la PPA projetée à partir de 1985

Chart 9 / Graphique 9
Comparative price level (Canada v. United States) - Gross Domestic Product
Niveau de prix comparé (Canada vs États-Unis) - Produit intérieur brut

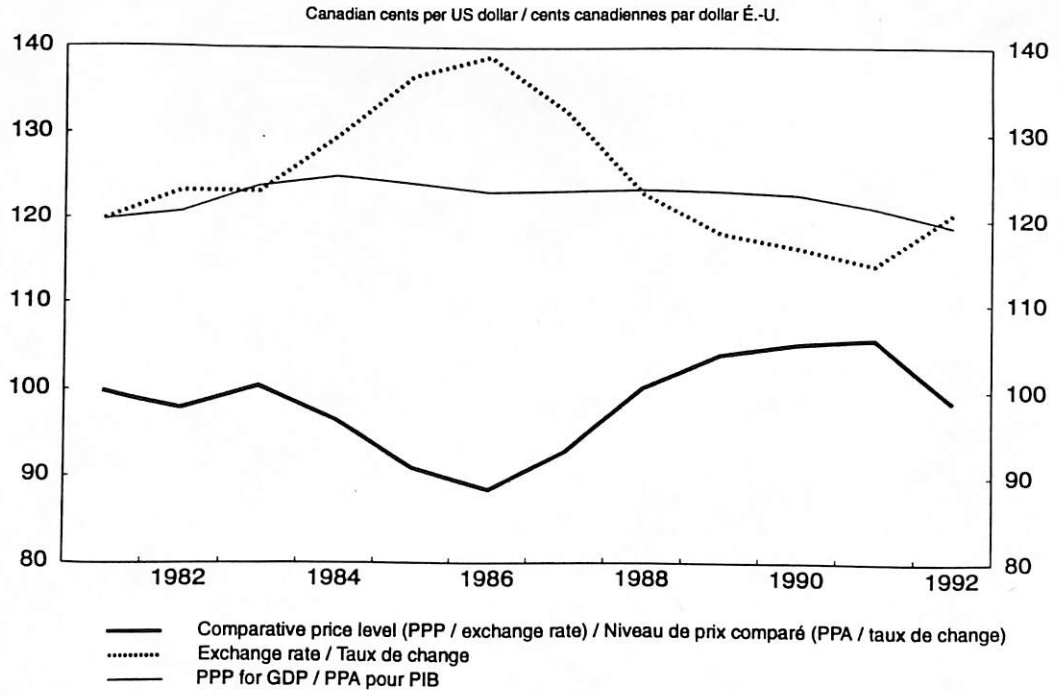


Chart 10 / Graphique 10
Comparative price level (Canada v. United States) for personal expenditure, and number of same day trips to the US by Canadian travellers
Niveau de prix comparé (Canada vs États-Unis) pour les dépenses personnelles, et nombre de voyages aller-retour le même jour des résidents canadiens aux É.-U.

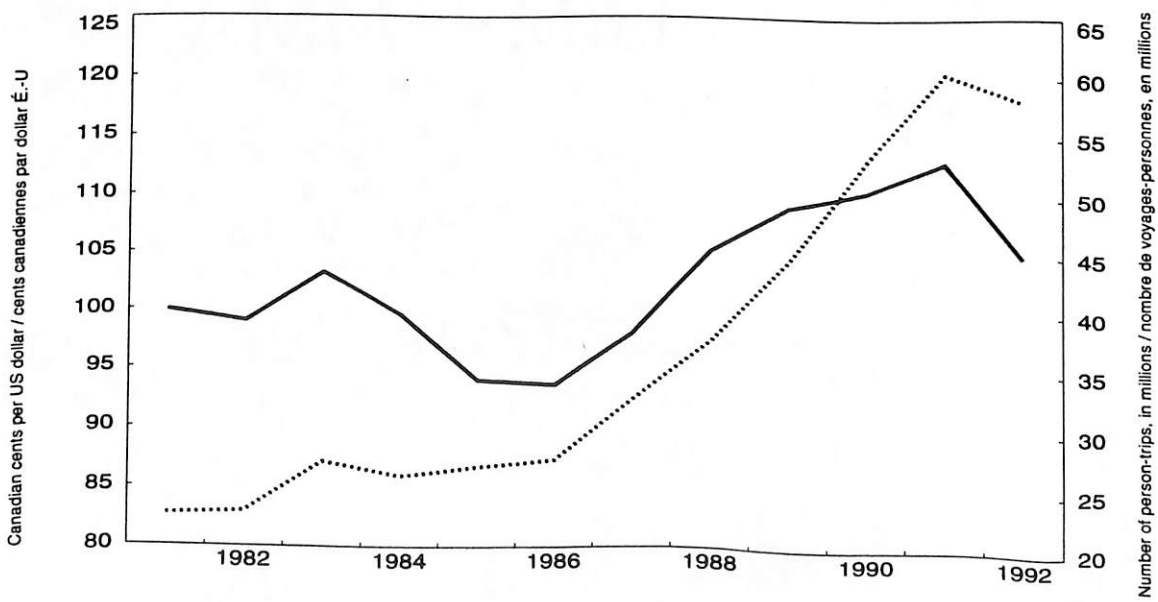


Chart 11 / Graphique 11
Purchasing power parity for Canada - Gross Domestic Product
Parité de pouvoir d'achat pour le Canada - Produit interieur brut

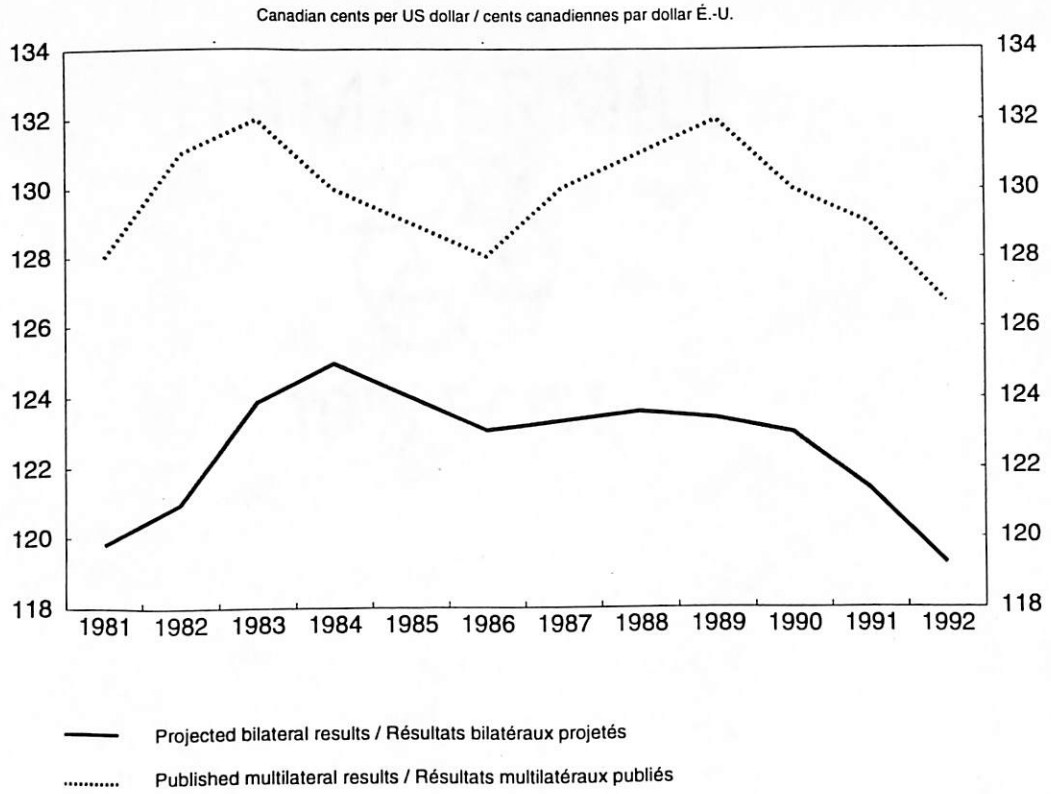
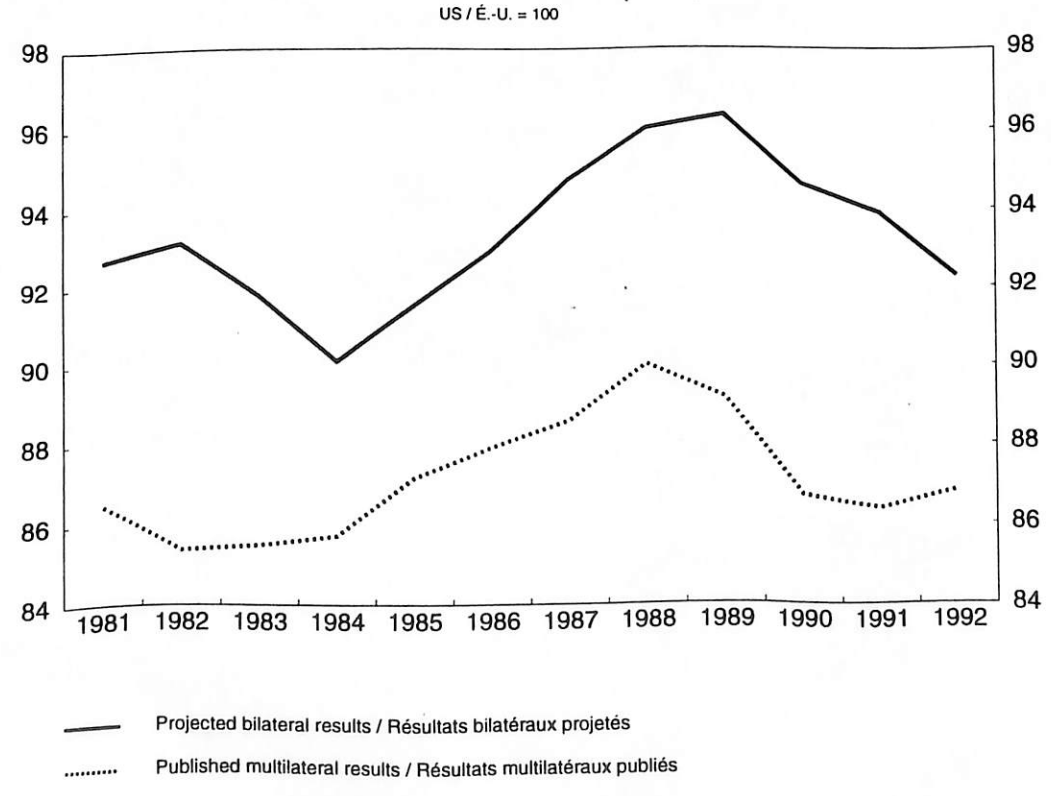


Chart 12 / Graphique 12
Volume index for Canada - Gross Domestic Product
Indice de volume pour le Canada - Produit intérieur brut



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Financial markets

Marchés financiers

Table

Tableau

10.1 Interest rates — Taux d'intérêts

Year / Année	Bank Rate / Taux d'escompte	Prime rate / Taux privilégié	90-day Treasury bills (Annual average) / Bons du trésor à 90 jours (moyenne annuelle)	Treasury bills (end of year) / Bons du trésor (fin de l'année)	90-day commercial paper / Papier commercial à 90 jours	Conventional mortgage rate / Taux des prêts hypothécaires ordinaires		Long-term Canada bond rate (over 10 years) / Taux des obligations à long terme (plus que 10 ans)
						1-year / 1 an	5-year / 5 ans	
B	14006	14020	14001	14007	14017	14050	14051	14013
1956	3.15	5.04	2.90	2.93	3.73			3.63
1957	4.02	5.58	3.78	3.76	5.26			4.11
1958	2.50	5.27	2.29	2.25	3.16			4.11
1959	5.13	5.65	4.81	4.81	5.18			5.07
1960	3.54	5.75	3.32	3.20	4.00			5.19
1961	3.06	5.60	2.83	2.81	3.37			5.05
1962	4.48	5.71	4.01	4.05	4.38			5.11
1963	3.88	5.75	3.57	3.56	4.01			5.09
1964	4.04	5.75	3.74	3.75	4.20			5.18
1965	4.29	5.77	3.97	3.98	5.02			5.21
1966	5.17	6.00	5.00	5.00	6.27			5.69
1967	4.98	5.92	4.59	4.64	5.85			5.94
1968	6.79	6.92	6.25	6.27	6.82			6.75
1969	7.46	7.96	7.15	7.19	7.85			7.58
1970	7.13	8.17	6.12	5.99	7.34			7.91
1971	5.19	6.48	3.62	3.56	4.51			6.95
1972	4.75	6.00	3.55	3.56	5.10			7.23
1973	6.13	7.65	5.39	5.47	7.45		9.56	7.56
1974	8.50	10.75	7.78	7.82	10.51		11.23	8.90
1975	8.50	9.42	7.37	7.40	7.94		11.33	9.04
1976	9.29	10.04	8.89	8.87	9.17		11.75	9.18
1977	7.71	8.50	7.35	7.33	7.48		10.29	8.70
1978	8.98	9.69	8.58	8.68	8.83		10.54	9.27
1979	12.10	12.90	11.57	11.69	12.07		12.19	10.21
1980	12.89	14.25	12.68	12.79	13.15	13.98	14.52	12.48
1981	17.93	19.29	17.78	17.72	18.33	18.13	18.38	15.22
1982	13.96	15.81	13.83	13.66	14.15	16.85	18.04	14.26
1983	9.55	11.17	9.32	9.31	9.45	10.98	13.23	11.79
1984	11.31	12.06	11.10	11.06	11.19	12.00	13.58	12.75
1985	9.65	10.58	9.46	9.43	9.56	10.31	12.13	11.04
1986	9.21	10.52	8.99	8.97	9.16	10.15	11.21	9.52
1987	8.40	9.52	8.17	8.15	8.39	9.85	11.17	9.95
1988	9.69	10.83	9.42	9.48	9.66	10.83	11.65	10.22
1989	12.29	13.33	12.02	12.05	12.21	12.85	12.06	9.92
1990	13.05	14.06	12.81	12.81	13.03	13.40	13.35	10.85
1991	9.03	9.94	8.83	8.73	8.90	10.08	11.13	9.76
1992	6.78	7.48	6.51	6.59	6.73	7.87	9.51	8.77

Source: Bank of Canada.
Source: Banque du Canada.

Catalogue 11-210

CANADIAN ECONOMIC OBSERVER

L'OBSERVATEUR ÉCONOMIQUE CANADIEN

HISTORICAL STATISTICAL SUPPLEMENT 1992/93

SUPPLÉMENT STATISTIQUE HISTORIQUE 1992/93

Annual data up to 1992

Données annuelles jusqu'en 1992

Statistics Canada
Statistique Canada
Canada

Data: Canada

	1926-1976	1976-1981	1981-
Comp. Profits Before Taxes (Mill-$)	HS F3	NIEA, T1, p.2	NIEA, T1, p.2
Const $ BUS Gross Fixed Cap. Formation (1971-$)	HS 44-43		
ΔINV (1971-$)	HS 49-50		

	1926-1976	1946-1990
Industry Gross K-stock (1971 prices)	HS F183/188	Stat Canada (1986-$)
" Net " (")		"
" Gross K-stock (Hist. Cost)		" (Current-$)

Price-Indexes	1926-1976 (1971=100)	1976-1981 (1981=100)	1981-1986 (1986=100)
Implicit GDP/GNP Deflator	HS 172-173	NIEA, T7, p.8	NIEA, T7, p.8
WPI (w + w/o Gold)	HS, K33-34		
Implicit Price Index of Gross K BUS Gross Fixed Cap. Form	HS, 160, 164, 168	NIEA, T7, p.8(2)	NIEA, T7, p.8 (2)
	HS, 178-181		

Stock Market

To Anwar from Toichiro
July 14, 1992

論　説

The Sraffian System and Theories of Distribution and Effective Demand : Some Applications

Toichiro Asada

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<ARTICLE>

The Sraffian System and Theories of Distribution and Effective Demand : Some Applications*

Toichiro Asada

Contents

I. Introduction

Without doubt, Piero Sraffa's slender book *Production of Commodities by Means of Commodities* (1960) had a great influence on the

subsequent researches on the theories of capital and income distribution. In particular, Sraffa's theory of the 'standard commodity', which was proposed as a solution of the Ricardian puzzle in search for the 'invariant measure of value', offered an effective bridge between the highly aggregated Macroeconomic analysis and the disaggregated analysis of the economic interdependency. Although Sraffa's book is exclusively concerned with the static model, Goodwin (1983) suggested recently that Sraffian idea of the standard commodity displays its real ability when it is applied to the dynamic models. According to Goodwin, we can simplify the analysis of the complicated interdependent dynamics if we pay attention to the role of the standard commodity as an aggregator of the disaggregated dynamical system.

In this paper, we shall apply, following Goodwin (1983)'s suggestion, but probably more systematically than Goodwin (1983), the Sraffian idea to the analyses of the income distribution and the effective demand.

In section II, we formulate a general multisectoral model of production in an open economy with differential profit rates under the static setting, and reconsider the Sraffian proposition in our analytical framework.

In section III, we apply the Sraffian idea to a particular disaggregated dynamic model, i.e., the model of the wage-price spiral in an open economy. Mathematically, the original Sraffian standard commodity is defined as the right-Frobenius vector of the input coefficient matrix, but we shall show that we must re-define the matrix and we must apply the notion of the standard commodity to the newly defined matrix in order to use it as an aggregator

of the particular dynamic system.

In section III, the dynamics of the price system is investigated and the hypothetical quantity system (the 'standard commodity') is used as an aggregator. On the other hand, we shall consider in section IV the 'dual' of the price system, the dynamics of the quantity system. In this section, we take up a multisectoral version of the Keynesian multiplier process, and propose the notion of the 'standard price', the dual notion of the standard commodity, as an aggregator of the disaggregated quantity dynamics. Section V is devoted to some concluding remarks. Finally, in the appendix we shall treat some Marxian themes which are not considered in the text.

II. The Basic Model

II-1. A One Sector Model of Production in an Open Economy

First of all, let us consider the very simple linear one sector model in a capitalist economy. Contrary to usual formulation, however, we shall introduce the international trade and the government explicitly into the picture keeping the structure of the model as simple as possible.

The price equation of such an economy may be formulated as

$$p = r(pa+qm)+(pa^{\ominus}+qm^{\ominus})+w\ell \qquad (1)$$

where the meanings of the symbols are as follows.

p = price level of the domestic product. q = price level of the imported mean of production in terms of the domestic currency. r = pre tax rate of profit. w = pre tax money wage rate. a = capital input coefficient of the domestic mean of production ($a>0$). m

=capital input coefficient of the imported mean of production ($m>0$). $a^{\ominus}\equiv\delta a$=depreciation coefficient of the domestic mean of production ($0\leqq\delta\leqq1$). $m^{\ominus}\equiv d\,m$=depreciation coefficient of the imported mean of production ($0\leqq d\leqq1$). ℓ=labor input coefficient ($\ell>0$).

We can rewrite eq. (1) as

$$p=rp(a+\pi m)+p(a^{\ominus}+\pi m^{\ominus})+w\ell \tag{2}$$

where $\pi\equiv q/p$ is considered to be the *reciprocal* of the terms of trade if the domestic product is exportable. From this equation, we can easily derive the following relationship.

$$r=\{1/(a+\pi m)\}\{1-(a^{\ominus}+\pi m^{\ominus})-\omega\ell\} \tag{3}$$

where $\omega\equiv w/p$ is the real wage rate in terms of the domestic product. Eq. (3) expresses the pre tax wage-profit trade-off so that the potential conflict over income distribution between capital and labor in this simple economy[1].

Now, the share of pre tax wage in net national income is expressed as

$$\omega^{*}\equiv w\ell x/\{px-p(a^{\ominus}+\pi m^{\ominus})x\}\equiv\omega\ell/\{1-(a^{\ominus}+\pi m^{\ominus})\} \tag{4}$$

where x is the level of the domestic output.

From the equations (3) and (4) we have the following simple wage share-profit trade-off equation.

$$r=R(1-\omega^{*}) \tag{5}$$

where $R\equiv\{1-(a^{\ominus}+\pi m^{\ominus})\}/(a+\pi m)$ is the (pre tax) maximum rate of profit which is conditional not only on the technological parameters but also on the (reciprocal of the) terms of trade (π). We can easily see that $\partial R/\partial\pi<0$.

From eq. (5) we can derive the 'pre tax distribution frontier' as in Fig. 1. It is apparent that the position of the frontier is affected

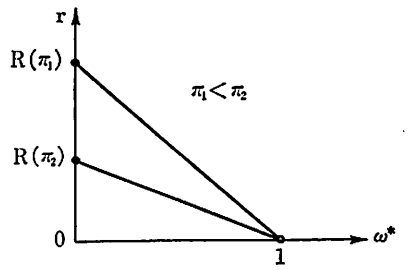

Fig. 1. Pre tax distribution frontier

by the terms of trade ($1/\pi$). Namely, the improvement (the deterioration) of the terms of trade causes the upward (downward) shift of the pre tax distribution frontier[2].

Now, let us superimpose the effects of the taxation by the government on the above analysis. After tax rate of profit ($\tilde{r}$), after tax real wage rate ($\tilde{\omega}$) and after tax wage share ($\tilde{\omega}^{*}$) are defined as follows respectivey.

$$\tilde{r}\equiv(1-\tau_r)r \tag{6}$$

$$\tilde{\omega}\equiv(1-\tau_w)\omega \tag{7}$$

$$\tilde{\omega}^{*}\equiv(1-\tau_w)\omega^{*} \tag{8}$$

where τ_r is the average tax rate on profit income and τ_w is the average tax rate on wage income ($0\leqq\tau_r<1$ and $0\leqq\tau_w<1$)[3]. Substituting these relationships into the equations (3) and (5), we have

$$\tilde{r}=\{(1-\tau_r)/(a+\pi m)\}\{1-(a^{\ominus}+\pi m^{\ominus})-\tilde{\omega}\ell/(1-\tau_w)\} \tag{3}'$$

and

$$\tilde{r}=(1-\tau_r)R(\pi)\{1-\tilde{\omega}^{*}/(1-\tau_w)\} \tag{5}'$$

where $R(\pi)\equiv\{1-(a^{\ominus}+\pi m^{\ominus})\}/(a+\pi m)>0$. From eq. (5)′ the after tax distribution frontier is derived (see Fig. 2)[4]. It is apparent from this figure that the increase (the decrease) of the tax rates

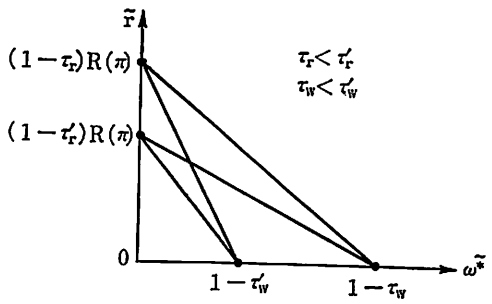

Fig. 2. After tax distribution frontier

will induce the downward (upward) shift of the after tax distribution frontier.

II-2. A General Multisectoral Model of Production in an Open Economy

The one sector model of production presented in section II-1 will turn out to be a powerful analytical tool for the analysis of the conflict over income distribution in an open capitalist economy for its simplicity and tractability if we can bridge a gap between the simple one sector world and the complex interdependent real world. It is well known that Sraffa (1960)'s ingeneous device of the so called 'standard commodity' provides such a bridge in case of the closed economy without government. In section II-3, we shall apply Sraffa's idea to the open economy with government. For this purpose, let us formulate the general multisectoral model of production in an open economy in this section. Although we abstract from the problems of the joint production and the choice of techniques, the results of the following analyses can be extended

to the particular types of the joint production system (see Schefold (1978)).

The symbols which are used frequently throughout this paper are as follows.

a_{ij} =quantity of i'th domestic capital good which is used to produce a unit of j'th domestic good (i, j=1, 2, ……, n).

m_{hj} =quantity of h'th imported capital good which is used to produce a unit of j'th domestic good (h=1, 2, ……, s).

δ_{ij} =depreciation rate of i'th domestic capital good fixed in j'th domestic industry ($0 \leqq \delta_{ij} \leqq 1$).

d_{hj} =depreciation rate of h'th imported capital good fixed in j'th domestic industry ($0 \leqq d_{hj} \leqq 1$).

ℓ_j =quantity of direct labor input which is used to produce a unit of j'th domestic good.

p_j =price of j'th domestic good in terms of domestic currency.

q_h =price of h'th imported good in terms of domestic currency.

w =pre tax money wage rate in terms of domestic currency.

r_j =pre tax rate of profit in j'th domestic industry.

τ_w =average tax rate on wage income ($0 \leqq \tau_w < 1$).

τ_r =average tax rate on profit income ($0 \leqq \tau_r < 1$).

$$A \equiv \begin{pmatrix} a_{11} & a_{12} \cdots a_{1n} \\ a_{21} & a_{22} \cdots a_{2n} \\ \vdots & \vdots \\ a_{n1} & a_{n2} \cdots a_{nn} \end{pmatrix} \geq 0 \text{ (5)}. \qquad A^{\Theta} \equiv \begin{pmatrix} \delta_{11}a_{11} & \delta_{12}a_{12} \cdots \delta_{1n}a_{1n} \\ \delta_{21}a_{21} & \delta_{22}a_{22} \cdots \delta_{2n}a_{2n} \\ \vdots & \vdots \\ \delta_{n1}a_{n1} & \delta_{n2}a_{n2} \cdots \delta_{nn}a_{nn} \end{pmatrix} \geq 0.$$

$$M \equiv \begin{pmatrix} m_{11} & m_{12} \cdots m_{1n} \\ m_{21} & m_{22} \cdots m_{2n} \\ \vdots & \vdots \\ m_{s1} & m_{s2} \cdots m_{sn} \end{pmatrix} \geq 0. \qquad M^{\Theta} \equiv \begin{pmatrix} d_{11}m_{11} & d_{12}m_{12} \cdots d_{1n}m_{1n} \\ d_{21}m_{21} & d_{22}m_{22} \cdots d_{2n}m_{2n} \\ \vdots & \vdots \\ d_{s1}m_{s1} & d_{s2}m_{s2} \cdots d_{sn}m_{sn} \end{pmatrix} \geq 0.$$

$\ell \equiv [\ell_1, \ \ell_2, \ \cdots\cdots, \ \ell_n] > 0$.　　$q \equiv [q_1, \ q_2, \ \cdots\cdots, \ q_s] > 0$.

$p \equiv [p_1, \ p_2, \ \cdots\cdots, \ p_n]$.

Now, let us assume as follows.

Assumption 1. The matrices A, $A^{\ominus}$, M, $M^{\ominus}$ and the vector ℓ are technologically determined so that they are constant.

Assumption 2. The matrix $A^{\ominus}$ is indecomposable(6).

Assumption 3. Each row of the matrix M is semipositive. In other words, each imported capital good is used in at least one domestic industry.

Assumption 4. Wages are paid out of current revenue rather than out of capital.

Then, the price system in our model can be expressed as follows.

$$p=(pA+qM)[\hat{r}]+pA^{\ominus}+qM^{\ominus}+w\ell \tag{9}$$

where $[\hat{r}]$ is the diagonal matrix of the pre tax profit rates, i. e., (7)

$$[\hat{r}] \equiv \begin{pmatrix} r_1 & & & 0 \\ & r_2 & & \\ & & \ddots & \\ 0 & & & r_n \end{pmatrix} \tag{10}$$

Now, the *reciprocal* of the terms of trade in terms of h'th import good is defined as

$$\pi_h \equiv q_h/(pf) \tag{11}$$

where $f=[f_1, \ f_2, \ \cdots f_n]' \geq 0$ is the unit vector of the export goods(8).

Then, we can rerwite eq. (9) as follows.

$$p=pC(\pi)[\hat{r}]+pC^{\ominus}(\pi)+w\ell \tag{12}$$

; $C(\pi) \equiv A+f\pi M$, $C^{\ominus}(\pi) \equiv A^{\ominus}+f\pi M^{\ominus}$

where $\pi \equiv [\pi_1, \ \pi_2, \ \cdots\cdots, \ \pi_s]$.

Eq. (12) is an expression of the production system in an open economy in the 'closed' form(9). Henceforth, we treat the vector π as the positive parameter, but, it must be noted that π depends on the rate of foreign exchange as well as the price levels in the foreign country (see the footnote (2)).

Next, the pre tax real wage rate (ω) in terms of the commodity basket which the workers actually consume can be expressed as

$$\omega \equiv w/(pb^d+\tilde{q}b^f) \ ; \ \tilde{q} \equiv [q_1, \ q_2, \ \cdots\cdots, \ q_z] \tag{13}$$

where $b^d \equiv [b_1^d, \ b_2^d, \ \cdots\cdots, \ b_n^d]' \geq 0$ is the unit basket of the domestically produced wage goods and $b^f \equiv [b_1^f, \ b_2^f, \ \cdots\cdots, \ b_z^f]' \geqq 0$ is the unit basket of the imported wage goods. Substituting eq. (11) into eq. (13), we have

$$\omega = w/p(b^d+f\tilde{\pi}b^f) \tag{14}$$

where $\tilde{\pi} \equiv [\pi_1, \ \pi_2, \ \cdots\cdots, \ \pi_z]$.

Substituting eq. (14) into eq. (12), we obtain the following expression.

$$p[I-G(\hat{r}, \ \omega \ ; \ \pi, \tilde{\pi})]=0 \tag{15}$$

where

$$\begin{aligned} G(\hat{r}, \ \omega ; \pi, \ \tilde{\pi}) &\equiv C(\pi)[\hat{r}]+C^{\ominus}(\pi)+\omega(b^d+f\tilde{\pi}b^f)\ell \\ &\equiv (A+f\pi M)[\hat{r}]+(A^{\ominus}+f\pi M^{\ominus}) \\ &\quad +\omega(b^d+f\tilde{\pi}b^f)\ell. \end{aligned} \tag{16}$$

We shall confine the analysis to the case where all of r_is and ω are nonnegative. In this case, it follows from *Assumption 2* that G becomes to be an indecomposable nonnegative matrix. Then, eq, (15) implies that the relationship between the pre tax profit rates

and the pre tax real wage rate is constrained by the following equation.

$$\lambda_G(r_1, \cdots\cdots, r_n, \omega : \pi, \bar{\pi}) = 1 \qquad (17)$$

where $\lambda_G(\cdot)$ is the Frobenius root of the matrix G. Furthermore, the price vector of the domestic products (p) is expressed as the left-Frobenius vector of the matrix G[10].

To assure the existence of the economically meaningful solutions, we must assume that

Assumption 5. The matrix $C^{\ominus}(\pi)=A^{\ominus}+f\pi M^{\ominus}$ is productive, i. e.,

$$\left\{x \in R^n_{++} \mid x > C^{\ominus}(\pi)x\right\} \neq \phi.$$

Under this assumption, we have $0<\lambda_G(0, \cdots\cdots, 0, 0 ; \pi, \bar{\pi}) = \lambda_C{}^{\ominus}<1$, where $\lambda_C{}^{\ominus}$ is the Frobenius root of the matrix $C^{\ominus}$. Moreover, λ_G is the strictly increasing continuous function of r_is and ω because of the Perron-Frobenius theorem, and $\lambda_G>1$ for sufficiently large r_i or ω. Therefore, we can determine the 'maximum pre tax rate of profit' in the i'th industry (r_i^{max}) and 'maximum pre tax real wage rate' (ω_{max}) *uniquely* as follows.

$$r_i^{max} \equiv \{r_i > 0 \mid \lambda_G(0, \cdots\cdots, r_i, \cdots\cdots, 0, 0 ; \pi, \bar{\pi}) = 1\}$$
$$(i = 1, 2, \cdots\cdots, n) \qquad (18)$$

$$\omega_{max} \equiv \{\omega > 0 \mid \lambda_G(0, \cdots\cdots, 0, \omega ; \pi, \bar{\pi}) = 1\} \qquad (19)$$

Then, eq. (17) defines the $(n+1)$ dimensional 'pre tax wage-profit surface' for given π and $\bar{\pi}$ in the domain $0 \leqq r_i \leqq r_i^{max}$ ($i = 1, 2, \cdots\cdots, n$) and $0 \leqq \omega \leqq \omega_{max}$, in which the locus of any combination of two variables becomes a strictly decreasing continuous function for

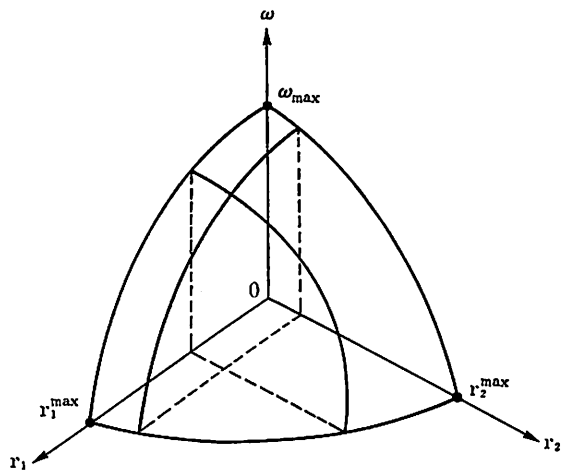

Fig. 3. Pre tax wage-profit surface in a two sector economy ; An example

given values of the remaining $(n-1)$ variables[11]. An example of the pre tax wage-profit surface in case of the two sector economy is illustrated in Fig. 3.

By the way, the graph of the usual pre tax wage-profit curve with equal rate of profit is the monotonically decreasing continuous curve charactalized as

$$\Omega \equiv \{(r, \omega) \in R^2_+ \mid \lambda_G(r, \cdots\cdots, r, \omega ; \pi, \bar{\pi}) = 1\} \qquad (20)$$

, which is expressed as the projection of $\Delta_1 \cap \Delta_2$ to the arbitrary $r_i - \omega$ plane, where Δ_1 is the graph of the pre tax wage-profit surface and Δ_2 is the graph of the hyperplane characterized by $r_1=r_2=\cdots\cdots=r_n$ (see Fig. 4).

Note that the 'maximum pre tax equal rate of profit' (R) which is characterized as

$$R \equiv \{r > 0 \mid \lambda_G(r, \cdots\cdots, r, 0 ; \pi, \bar{\pi}) = 1\} \qquad (21)$$

is less than any of r_i^{max}, i. e.,

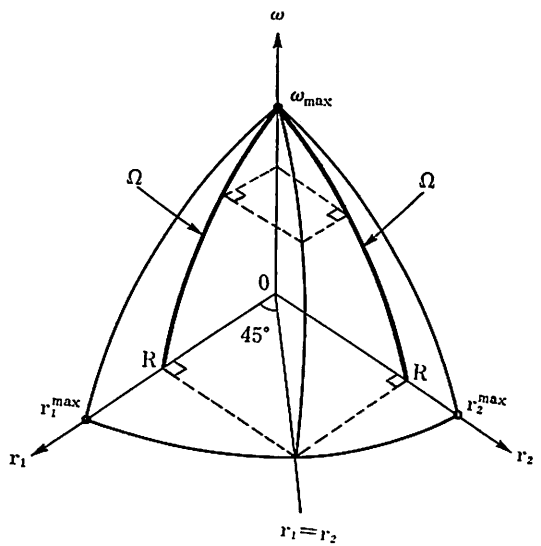

Fig. 4.

$$0<R<\min\{r_1^{max},\ r_2^{max},\ \cdots\cdots,\ r_n^{max}\}. \tag{22}$$

Now, we can show, roughly speaking, that the inprovement (the deterioration) of the terms of trade causes the upward (downward) shift of the pre tax wage-profit surface. More accurately, we have the following

Theorem 1.

(1) Suppose that $r_i>0$ for all i and that an *arbitrary* element of the vector π is increased (decreased). Then,

(i) ω must decrease (increase) if all the rates of profit are constant, and

(ii) r_i must decrease (increase) if ω and all the rates of

profit other than r_i are constant.

(2) Suppose that $\omega>0$ and that an element π_k of the vector $\bar{\pi}$ such that $b_k^i>0$ is increased (decreased). Then, the above statements (i) and (ii) follow.

(Proof.)

We shall only prove the proposition (1). In a similar way, the proposition (2) can be easily proved.

Suppose, without loss of generality, that $\Delta\pi_k>0$, $\Delta\pi_q=0$ $(q\neq k)$, $f_i>0$ and $m_{kj}>0$[12]. Then, we have

$$\Delta C=f(\Delta\pi)M$$

$$=\begin{pmatrix} f_1 \\ f_2 \\ \vdots \\ f_n \end{pmatrix}\underbrace{\begin{bmatrix}0, & \cdots\cdots, & \Delta\pi_k, & 0, & \cdots\cdots, & 0\end{bmatrix}}_{s}\begin{pmatrix} m_{11} & m_{12}\cdots\cdots m_{1n} \\ m_{21} & m_{22}\cdots\cdots m_{2n} \\ \vdots & \vdots \\ m_{s1} & m_{s2}\cdots\cdots m_{sn} \end{pmatrix}$$

$$=\underbrace{\begin{pmatrix} 0\cdots\cdots 0 & f_1\Delta\pi_k & 0\cdots\cdots 0 \\ 0\cdots\cdots 0 & f_2\Delta\pi_k & 0\cdots\cdots 0 \\ \vdots & \vdots & \vdots \\ 0\cdots\cdots 0 & f_n\Delta\pi_k & 0\cdots\cdots 0 \end{pmatrix}}_{s}\begin{pmatrix} m_{11}\cdots\cdots m_{1j}\cdots\cdots m_{1n} \\ \vdots \\ m_{k1}\cdots\cdots m_{kj}\cdots\cdots m_{kn} \\ \vdots \\ m_{s1}\cdots\cdots m_{sj}\cdots\cdots m_{sn} \end{pmatrix}$$

$$=\begin{pmatrix} f_1\Delta\pi_k m_{k1}\cdots\cdots f_1\Delta\pi_k m_{kj}\cdots\cdots f_1\Delta\pi_k m_{kn} \\ f_2\Delta\pi_k m_{k1}\cdots\cdots f_2\Delta\pi_k m_{kj}\cdots\cdots f_2\Delta\pi_k m_{kn} \\ \vdots \\ f_i\Delta\pi_k m_{k1}\cdots\cdots f_i\Delta\pi_k m_{kj}\cdots\cdots fi\Delta\pi_k m_{kn} \\ \vdots \\ f_n\Delta\pi_k m_{k1}\cdots\cdots f_n\Delta\pi_k m_{kj}\cdots\cdots f_n\Delta\pi_k m_{kn} \end{pmatrix}.$$

Since $f_i\Delta\pi_k m_{kj}>0$ by assumption, we have $\Delta C\geq 0$. If $r_i>0$ for all $i\in\{1, 2, \cdots\cdots, n\}$, the diagonal elements of the matrix

$[\hat{r}]$are positive so that we have $\Delta G=\Delta C[\hat{r}]\geq 0$ for given r_is. In this case, it follows from the Perron-Frobenius theorem that λ_G must *increase* for given r_is and ω. Therefore, at least one of the values of r_is or ω must *decrease* to restore the equality of eq. (17). It is obvious that the converse is true in the case of $\Delta\pi_E<0$.

(q. e. d.)[13]

Now, let us introduce the effects of the taxation into the model. The after tax rate of profit ($\tilde{r}_i$), the after tax money wage rate ($\tilde{w}$) and the after tax real wage rate ($\tilde{\omega}$) are defined as follows.

$$\tilde{r}_i\equiv(1-\tau_r)r_i \quad (i=1,\ 2,\ \cdots\cdots,\ n) \tag{23}$$

$$\tilde{w}\equiv(1-\tau_w)w \tag{24}$$

$$\tilde{\omega}\equiv(1-\tau_w)\omega \tag{25}$$

Substituting these relationships into the equations (12), (15) and (16), we have the following modified equations.

$$p=pC(\pi)[\hat{r}]\frac{1}{1-\tau_r}+pC^{\Theta}(\pi)+\frac{\tilde{w}}{1-\tau_w}\ell \tag{12}'$$

$$p[I-G(\hat{r},\ \tilde{\omega}\ ;\ \pi,\ \tilde{\pi},\ \tau_r,\ \tau_w)]=0 \tag{15}'$$

$$\begin{aligned}&G(\hat{r},\ \tilde{\omega}\ ;\ \pi,\ \tilde{\pi},\ \tau_r,\ \tau_w)\\ &\equiv C(\pi)[\hat{r}]\frac{1}{1-\tau_r}+C^{\Theta}(\pi)+\frac{\tilde{\omega}}{1-\tau_w}(b^d+f\tilde{\pi}b')\ell\\ &\equiv(A+f\pi M)[\hat{r}]\frac{1}{1-\tau_r}+(A^{\Theta}+f\pi M^{\Theta})+\frac{\tilde{\omega}}{1-\tau_w}(b^d+f\tilde{\pi}b')\ell\end{aligned} \tag{16}'$$

where

$$[\hat{r}]\equiv\begin{bmatrix}\tilde{r}_1 & & & \\ & \tilde{r}_2 & & 0 \\ & & \ddots & \\ 0 & & & \tilde{r}_n\end{bmatrix}. \tag{26}$$

In this case, eq. (17) is also modified as

$$\lambda_G(\tilde{r}_1,\ \cdots\cdots,\ \tilde{r}_n,\ \tilde{\omega}\ ;\ \pi,\ \tilde{\pi},\ \tau_r,\ \tau_w)=1 \tag{17}'$$

which defines the after tax wage-profit surface. We can easily see that the increase (the decrease) of τ_r or τ_w causes the downward (upward) shift of the after tax wage-profit surface.

II-3. Standard System in an Open Economy

In the previous section, we managed to analyze the wage-profit trade off in an open economy under the multisectoral setting at the cost of the lucidity of the simple one sector model. However, an application of Sraffa (1960)'s idea of the 'standard commodity' to the present model will be helpful to restore the analytical lucidity. For this purpose, let us consider the Sraffian notion of the 'standard system' in the context of an open economy.

The 'standard system' is defined as an activity vector $x^*=[x_1^*,\ x_2^*,\ \cdots\cdots,\ x_n^*]'>0$ such that it assures "a uniform rate of surplus throughout economic system" (Pasinetti(1977) p. 96). In the context of the present model, we may say that a standard system exists if there exist a $(n\times 1)$ vector $x^*>0$ and a scalar $R>0$ which satisfy the following equation.

$$[I-C^{\Theta}(\pi)]x^*=RC(\pi)x^* \tag{27}$$

or equivalently,

$$[(1/R)I-[I-C^{\Theta}(\pi)]^{-1}C(\pi)]x^*=0 \tag{27}'$$

where R is the 'uniform rate of surplus' which is called the 'standard ratio'. *Assumption 5* implies that $[I-C^{\Theta}(\pi)]^{-1}=\sum_{t=0}^{\infty}\{C^{\Theta}(\pi)\}^t>0$, so that the matrix $[I-C^{\Theta}(\pi)]^{-1}C(\pi)$ becomes to be indecomposable from *Assumption 2*[14].

Therefore, the Perron-Frobenius theorem assures that the stan-

dard system exists, and x^* is determined uniquely up to scalar multiplication. Moreover, it is easily shown that the 'standard ratio' R coincides with the 'maximum pre tax equal rate of profit' which was defined in the previous section, and it is a continuous *decreasing* function of each element of the vector π, i. e.,

$$R=R(\pi)\equiv R(\underset{\ominus}{\pi_1}, \underset{\ominus}{\pi_2}, \cdots\cdots, \underset{\ominus}{\pi_s}). \tag{28}$$

Now, Sraffian 'standard national income' (Y*) in the present context is defined as

$$Y^*\equiv p[I-C^{\ominus}(\pi)]x^*. \tag{29}$$

Moreover, following Sraffa (1960), let us normalize the level of the activity vector x^* so as to satisfy the following condition.

$$\ell x^*=1 \tag{30}$$

Sraffa (1960) proved, in the context of the model of the closed economy with equal rate of profit, that the lucidity of the simple one sector model is restored if the real wage rate is measured in terms of the (hypothetical) standard national income rather than in terms of the basket of the wage goods which the workers actually consume. Now, we shall confirm this Sraffian proposition in our framework of the model of an open economy with differential rates of profit.

First, let us define the pre tax real wage rate in terms of the standard national income (ω^*) as follows[15].

$$\omega^*\equiv w/(p[I-C^{\ominus}(\pi)]x^*) \tag{31}$$

Second, let ud define the 'average pre tax rate of profit' (r^*) as follows by using the standard activity vector (x^*) as weights.

$$r^*\equiv(px^*-pC^{\ominus}(\pi)x^*-w\ell x^*)/(pC(\pi)x^*) \tag{32}$$

Then, we have the following 'Sraffian equation' in our model.

Theorem 2.

$$r^*=R(\pi)(1-\omega^*) \tag{33}$$

(Proof.)

From the equations (12) and (30) we have

$$p[I-C^{\ominus}(\pi)]x^*-w=pC(\pi)[\hat{r}]x^*, \tag{34}$$

which implies from eq. (31) that

$$1-\omega^*=(pC(\pi)[\hat{r}]x^*)/(p[I-C^{\ominus}(\pi)x^*). \tag{35}$$

On the other hand, from eq. (27) we have

$$p[I-C^{\ominus}(\pi)]x^*=RpC(\pi)x^* \tag{36}$$

and it follows from eq. (12) and eq. (32) that

$$r^*=(pC(\pi)[\hat{r}]x^*)/(pC(\pi)x^*). \tag{37}$$

Substituting eq. (36) and eq. (37) into eq. (35), we obtain

$$1-\omega^*=r^*/R \tag{38}$$

which is the desired equation.

(q. e. d.)

Now, we can define the after tax real wage rate in terms of the standard national income ($\tilde{\omega}^*$) and the after tax average rate of profit ($\tilde{r}^*$) as follows.

$$\tilde{\omega}^*=(1-\tau_w)\omega^* \tag{39}$$

$$\tilde{r}^*\equiv(1-\tau_r)r^* \tag{40}$$

Substituting these relationships into eq. (33), we obtain

$$\tilde{r}^*=(1-\tau_r)R(\pi)\{1-\tilde{\omega}^*/(1-\tau_w)\}. \tag{33}'$$

Note that eq. (33) and eq. (33)′ are exactly coincide with eq. (5) and eq. (5)′ in a one sector model respectively. In other words,

Sraffian standard commodity is a powerful 'aggregator' which assures that the simple one sector model is a correct 'surrogate' of the highly complex and interrelated real economic world.

III. An Application to Dynamic Analysis

III-1. Conflict over Income Distribution and the Wage-Price Spiral in an Open Economy

Goodwin (1983) suggested that Sraffa's device displays its real ability when it is applied to the dynamic model, i.e., it serves as a powerful aggregator of the disaggregated dynamical system. In this section, we shall apply Goodwin's idea to a particular type of the dynamic model, namely, a model of the wage-price spiral in an open economy. For this purpose, first, we shall consider a dynamic version of the simple one sector model.

The lagged mark-up process in a one sector setting may be formulated as follows by 'dynamizing' the model of the section II-1.

$$p_t=\left\{\frac{\tilde{r}}{1-\tau_r}(a+\pi m)+(a^{\ominus}+\pi m^{\ominus})\right\}p_{t-1}+w_t\ell \tag{41a}$$

$$w_t=\frac{\tilde{\omega}}{1-\tau_w}p_{t-1} \tag{41b}$$

where $\tilde{r}$ is the 'required' after tax rate of profit or the 'mark-up' which is set by the capitalists, and $\tilde{\omega}$ is the 'required' after tax real wage rate which is demanded by the workers. Eq. (41a) says that the capitalists set the price of the domestic good in the period t so as to satisfy their requiment on the basis of the production cost in the previous period. (It is assumed, however, that there is no time lag between the wage payment and the pricing.) Eq. (41b)

implies that the workers require the money wage rate in the period t which satisfies their requirement on the basis of the price in the previous period, and their demand is accepted by the capitalists. (For simplicity, it is assumed in this model that the workers consume only the domestic good.)

Substituting eq. (41b) into eq. (41a), we have the following very simple difference equation.

$$p_t=\lambda(\tilde{r},\ \tilde{\omega}\ ;\ \pi,\ \tau_r,\ \tau_w)p_{t-1} \tag{42}$$

where

$$\lambda(\tilde{r},\ \tilde{\omega}\ ;\ \pi,\ \tau_r,\ \tau_w)\equiv\frac{\tilde{r}}{1-\tau_r}(a+\pi m)+(a^{\ominus}+\pi m^{\ominus})+\frac{\tilde{\omega}}{1-\tau_w}\ell$$

$$;\ \partial\lambda/\partial\tilde{r}>0,\ \partial\lambda/\partial\tilde{\omega}>0,\ \partial\lambda/\partial\pi>0,\ \partial\lambda/\partial\tau_r>0,\ \partial\lambda/\partial\tau_w>0. \tag{43}$$

From eq. (41b) and eq. (42) the rates of price inflation and money wage inflation are expressed as follows.

$$\Delta p/p\equiv(p_t-p_{t-1})/p_{t-1}=\lambda-1 \tag{44a}$$

$$\Delta w/w\equiv(w_t-w_{t-1})/w_{t-1}=(p_{t-1}-p_{t-2})/p_{t-2}=\lambda-1 \tag{44b}$$

The locus of $\tilde{r}$ and $\tilde{\omega}$ which satisfies $\lambda=1$ coincides with the locus defined by eq. (3)′ in section II-1, which is nothing but the 'after tax wage-profit frontier'. We can see from eq. (44a) and (44b) that the rate of inflation becomes to be positive ($\lambda>1$) if and only if the combination of $\tilde{r}$ and $\tilde{\omega}$ is 'above' the after-tax wage-profit frontier. In other words, the wage-price spiral occurs if and only if the requirements of the capitalists and the workers are inconsistent each other compared with the existing technological and economic conditions. On the other hand, we can define the 'realized' after tax rate of profit ($\tilde{r}_t^{**}$) and the 'realized' after tax real wage rate ($\tilde{\omega}_t^{**}$) as follows.

Sraffian standard commodity is a powerful 'aggregator' which assures that the simple one sector model is a correct 'surrogate' of the highly complex and interrelated real economic world.

III. An Application to Dynamic Analysis

III-1. Conflict over Income Distribution and the Wage-Price Spiral in an Open Economy

Goodwin (1983) suggested that Sraffa's device displays its real ability when it is applied to the dynamic model, i.e., it serves as a powerful aggregator of the disaggregated dynamical system. In this section, we shall apply Goodwin's idea to a particular type of the dynamic model, namely, a model of the wage-price spiral in an open economy. For this purpose, first, we shall consider a dynamic version of the simple one sector model.

The lagged mark-up process in a one sector setting may be formulated as follows by 'dynamizing' the model of the section II-1.

$$p_t=\left\{\frac{\tilde{r}}{1-\tau_r}(a+\pi m)+(a^{\ominus}+\pi m^{\ominus})\right\}p_{t-1}+w_t\ell \tag{41a}$$

$$w_t=\frac{\tilde{\omega}}{1-\tau_w}p_{t-1} \tag{41b}$$

where $\tilde{r}$ is the 'required' after tax rate of profit or the 'mark-up' which is set by the capitalists, and $\tilde{\omega}$ is the 'required' after tax real wage rate which is demanded by the workers. Eq. (41a) says that the capitalists set the price of the domestic good in the period t so as to satisfy their requiment on the basis of the production cost in the previous period. (It is assumed, however, that there is no time lag between the wage payment and the pricing.) Eq. (41b)

implies that the workers require the money wage rate in the period t which satisfies their requirement on the basis of the price in the previous period, and their demand is accepted by the capitalists. (For simplicity, it is assumed in this model that the workers consume only the domestic good.)

Substituting eq. (41b) into eq. (41a), we have the following very simple difference equation.

$$p_t=\lambda(\tilde{r},\ \tilde{\omega}\ ;\ \pi,\ \tau_r,\ \tau_w)p_{t-1} \tag{42}$$

where

$$\lambda(\tilde{r},\ \tilde{\omega}\ ;\ \pi,\ \tau_r,\ \tau_w)\equiv\frac{\tilde{r}}{1-\tau_r}(a+\pi m)+(a^{\ominus}+\pi m^{\ominus})+\frac{\tilde{\omega}}{1-\tau_w}\ell$$

$$;\ \partial\lambda/\partial\tilde{r}>0,\ \partial\lambda/\partial\tilde{\omega}>0,\ \partial\lambda/\partial\pi>0,\ \partial\lambda/\partial\tau_r>0,\ \partial\lambda/\partial\tau_w>0. \tag{43}$$

From eq. (41b) and eq. (42) the rates of price inflation and money wage inflation are expressed as follows.

$$\Delta p/p\equiv(p_t-p_{t-1})/p_{t-1}=\lambda-1 \tag{44a}$$

$$\Delta w/w\equiv(w_t-w_{t-1})/w_{t-1}=(p_{t-1}-p_{t-2})/p_{t-2}=\lambda-1 \tag{44b}$$

The locus of $\tilde{r}$ and $\tilde{\omega}$ which satisfies $\lambda=1$ coincides with the locus defined by eq. (3)′ in section II-1, which is nothing but the 'after tax wage-profit frontier'. We can see from eq. (44a) and (44b) that the rate of inflation becomes to be positive ($\lambda>1$) if and only if the combination of $\tilde{r}$ and $\tilde{\omega}$ is 'above' the after-tax wage-profit frontier. In other words, the wage-price spiral occurs if and only if the requirements of the capitalists and the workers are inconsistent each other compared with the existing technological and economic conditions. On the other hand, we can define the 'realized' after tax rate of profit ($\tilde{r}_t^{**}$) and the 'realized' after tax real wage rate ($\tilde{\omega}_t^{**}$) as follows.

$$\tilde{r}_t^{**} \equiv \frac{(1-\tau_r)\{p_t-(a^{\ominus}+\pi m^{\ominus})p_t-w_t\ell\}}{p_t(a+\pi m)} \tag{45}$$

$$\tilde{\omega}_t^{**} \equiv (1-\tau_w)w_t/p_t \tag{46}$$

Substituting eq. (41b) and the relationship $p_t=\lambda p_{t-1}$ into eq. (41a) and eq. (45), we have

$$\tilde{r}_t^{**}=\frac{(1-\tau_r)\left\{1-(a^{\ominus}+\pi m^{\ominus})-\frac{1}{1-\tau_w}\frac{\tilde{\omega}}{\lambda}\ell\right\}}{(a+\pi m)}$$

$$<\frac{(1-\tau_r)\left\{1-(a^{\ominus}+\pi m^{\ominus})\frac{1}{\lambda}-\frac{1}{1-\tau_w}\frac{\tilde{\omega}}{\lambda}\ell\right\}}{(a+\pi m)\frac{1}{\lambda}}$$

$$=\tilde{r} \quad (\text{if } \lambda>1) \tag{47}$$

Next, substituting $p_t=\lambda p_{t-1}$ into eq. (41b) and comparing with eq. (46), we obtain

$$\tilde{\omega}_t^{**}=\tilde{\omega}/\lambda<\tilde{\omega} \quad (\text{if } \lambda>1). \tag{48}$$

It is easily seen that the combination of $\tilde{r}_t^{**}$ and $\tilde{\omega}_t^{**}$ is necessarily on the after tax wage-profit frontier (see Fig. 5). In other words,

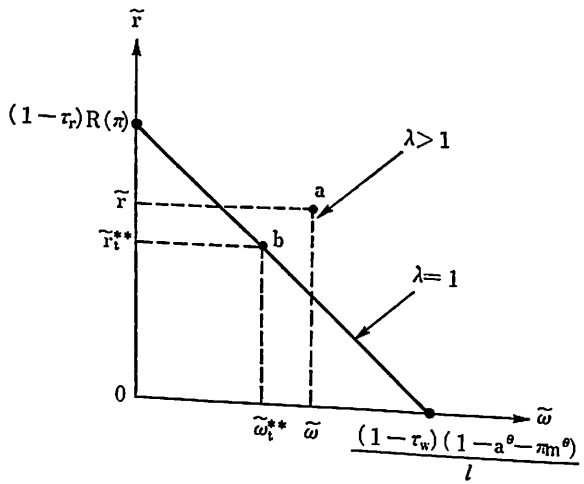

Fig. 5.

neither of the requiments of both classes is satisfied in the process of the wage-price spiral. It is also easily proved that (i) if $\tilde{r}$ is given, the larger $\tilde{\omega}$, the smaller is $\tilde{r}_t^{**}$ so that the larger is $\tilde{\omega}_t^{**}$, (ii) if $\tilde{\omega}$ is given, the larger $\tilde{r}$, the smaller is $\tilde{\omega}_t^{**}$ so that the larger is $\tilde{r}_t^{**}$, and (iii) the increase (decrease) of the tax rates or the deterioration (improvement) of the terms of trade causes the downward (upward) shift of the after tax wage-profit frontier so that it accelerates (decrlerates) inflation and lowers (raises) $\tilde{r}_t^{**}$ and $\tilde{\omega}_t^{**}$.

Now, let us reconsider the problem in a multisectoral setting. The multisectoral counterparts of eq. (41a) and eq. (41b) may be written as follows[16].

$$p(t)=p(t-1)\,[C(\pi)\,[\hat{\tilde{r}}]\frac{1}{1-\tau_r}+C^{\ominus}(\pi)]+w(t)\ell \tag{41a)'}$$

$$w(t)=p(t-1)(b^d+f\tilde{\pi}\,b')\frac{\tilde{\omega}}{1-\tau_w} \tag{41b)'}$$

where $p(t)\equiv[p_1(t),\ p_2(t),\ \cdots\cdots,\ p_n(t)]$, and other symbols are the same as those which are defined in section II-2.

Substituting eq. (41b)′ into eq. (41a)′ gives

$$p(t)=p(t-1)G(\hat{\tilde{r}},\ \tilde{\omega}\ ;\ \pi,\ \tilde{\pi},\ \tau_r,\ \tau_w) \tag{49}$$

where the matrix $G(\cdot)$ is defined by eq. (16)′.

It is easy to write the formal solution of eq. (49), i. e.,

$$p(t)=p(0)G^t. \tag{50}$$

The assumptions of section II-2 implies that G is an indecomposable nonnegative matrix[17]. Furthermore, in tshis section, we shall assume that

Assumption 6. The matrix G is primitive, i. e., there is *no* permutation matrix P which transforms G into

$$P^{-1}GP=\begin{bmatrix} 0 & 0\cdots\cdots 0 & G_{1k} \\ G_{21} & 0\cdots\cdots 0 & \\ 0 & G_{32} & \ddots \\ \vdots & \ddots & \vdots \\ 0\cdots\cdots & 0\ G_{k,k-1} & 0 \end{bmatrix}$$

where G_{ij} is the nonnegative submatrix which is not necessarily square.

Note that a *sufficient* condition of the primitivity of the matrix G is that at least one diagonal element of G is positive, which is a reasonable condition.

It is well known that under *Assumption 6*, there exists $\lim_{t\to\infty}(G/\lambda_G)^t=B>0$, where λ_G is the Frobenius root of the matrix G[13]. Then, it follows that

$$\lim_{t\to\infty}(p(t)/\lambda_G^t)=\lim_{t\to\infty}p(0)\ (G/\lambda_G)^t=p(0)\ B>0. \tag{51}$$

Therefore, from eq. (41b)′ and eq. (51) we have

$$\lim_{t\to\infty}(w(t)/\lambda_G^t)=\lim_{t\to\infty}\left(\frac{p(t-1)}{\lambda_G^{t-1}}\right)(b^d+f\bar{\pi}b^f)\frac{\tilde{\omega}}{(1-\tau_w)\lambda_G}$$

$$=p(0)\ B(b^d+f\bar{\pi}b^f)\frac{\tilde{\omega}}{(1-\tau_w)\lambda_G}>0. \tag{52}$$

The equations (51) and (52) imply that

$$\lim_{t\to\infty}\frac{p_i(t)-p_i(t-1)}{p_i(t-1)}=\lim_{t\to\infty}\frac{w(t)-w(t-1)}{w(t-1)}=\lambda_G-1$$

$$(i=1,\ 2,\ \cdots\cdots,\ n). \tag{53}$$

In other words, the relative prices and the real wage rate converge to the definite values ultimately.

Now, it is evident that the wage-price inflation occurs if and only if

$$\lambda_G(\bar{r}_1,\ \cdots\cdots,\ \bar{r}_n,\ \tilde{\omega}\ ;\ \pi,\ \bar{\pi},\ \tau_r,\ \tau_w)>1. \tag{54}$$

In other words, wage-price inflation occurs if and only if the combination of the required after tax profit rates and the required after tax real wage rate is 'above' the after tax wage-profit surface so that the distributive requirements of the economic agents are inconsistent each other.

The 'realized' after tax rate of profit in the j'th industry ($\tilde{r}_j^{**}(t)$) and the 'realized' after tax real wage rate ($\tilde{\omega}^{**}(t)$) can be defined as follows.

$$r_j^{**}(t)\equiv\frac{(1-\tau_r)\{p(t)I^{(j)}-p(t)C^{\Theta}(\pi)^{(j)}-w(t)\ell_j\}}{p(t)C(\pi)^{(j)}} \tag{55}$$

$$\tilde{\omega}^{**}(t)\equiv\frac{(1-\tau_w)\,w(t)}{p(t)(b^d+f\bar{\pi}b^f)} \tag{56}$$

where $X^{(j)}$ is the j'th column of the matrix X. It is easily seen that the combination ($\tilde{r}_1^{**}$, $\tilde{r}_2^{**}$, ……, $\tilde{r}_n^{**}$, $\tilde{\omega}^{**}$) lies on the after tax wage-profit surface. Then, we can prove the following two theorems concerning the 'comparative dynamics'.

Theorem 3.

Suppose that $\lambda_G>1$. Then, it follows that $\lim_{t\to\infty}\tilde{r}_j^{**}(t)<\tilde{r}_j$ for all $j\in\{1,\ 2,\ \cdots\cdots,\ n\}$ and $\lim_{t\to\infty}\tilde{\omega}^{**}(t)<\tilde{\omega}$.

(Proof.)

(i) From the equations (41a)′, (41b)′, (51), (52), (55) and (56), we have the following relationships since $\tilde{r}_j$ is invariant through the dynamical adjustment process.

$$\lim_{t\to\infty}\tilde{r}_j^{**}(t)$$

$$=\lim_{t\to\infty}\frac{(1-\tau_r)\left\{p(t)/\lambda_G^t\right\}\left[I^{(j)}-C^{\Theta}(\pi)^{(j)}-(b^d+f\tilde{\pi}b^f)\frac{\tilde{\omega}\ell_j}{(1-\tau_w)\lambda_G}\right]}{\left\{p(t)/\lambda_G^t\right\}C(\pi)^{(j)}}$$

$$=\frac{(1-\tau_r)\{p(0)B\}\left[I^{(j)}-C^{\Theta}(\pi)^{(j)}-(b^d+f\tilde{\pi}b^f)\frac{\tilde{\omega}\ell^j}{(1-\tau_w)\lambda_G}\right]}{\{p(0)B\}C(\pi)^{(j)}}$$

$(j=1,\ 2,\ \cdots\cdots,\ n)$ (57)

$$\tilde{r}_j=\frac{(1-\tau_r)\left[p(t)I^{(j)}-p(t-1)C^{\Theta}(\pi)^{(j)}-p(t-1)(b^d+f\tilde{\pi}b^f)\frac{\tilde{\omega}\ell^j}{(1-\tau_w)}\right]}{p(t-1)C(\pi)^{(j)}}$$

$$=\lim_{t\to\infty}\frac{(1-\tau_r)\left[\left\{p(t)/\lambda_G^t\right\}I^{(j)}-\left\{p(t-1)/\lambda_G^{t-1}\right\}\left\{C^{\Theta}(\pi)^{(j)}\frac{1}{\lambda_G}\right.\right.}{\left\{p(t-1)/\lambda_G^{t-1}\right\}C(\pi)^{(j)}\frac{1}{\lambda_G}}$$

$$\left.\left.+(b^d+f\tilde{\pi}b^f)\frac{\tilde{\omega}\ell_j}{(1-\tau_w)\lambda_G}\right]\right.$$

$$=\frac{(1-\tau_r)\{p(0)B\}\left[I^{(j)}-C^{\Theta}(\pi)^{(j)}\frac{1}{\lambda_G}+(b^d+f\tilde{\pi}b^f)\frac{\tilde{\omega}\ell_j}{(1-\tau_w)\lambda_G}\right]}{\{p(0)B\}C(\pi)^{(j)}\frac{1}{\lambda_G}}$$

$(j=1,\ 2,\ \cdots\cdots,\ n)$ (58)

Comparing the right hand sides of the equations (57) and (58), we have $\lim_{t\to\infty}\tilde{r}_j^{**}(t)<\tilde{r}_j$ if $\lambda_G>1$.

(ii) Substituting eq. (41b)′ and eq. (51) into eq. (56), we have

$$\lim_{t\to\infty}\tilde{\omega}^{**}(t)=\lim_{t\to\infty}\frac{p(t-1)(b^d+f\tilde{\pi}b^f)}{p(t)(b^d+f\tilde{\pi}b^f)}\cdot\tilde{\omega}$$

$$=\lim_{t\to\infty}\frac{\left\{p(t-1)/\lambda_G^{t-1}\right\}(b^d+f\tilde{\pi}b^f)}{\left\{p(t)/\lambda_G^t\right\}(b^d+f\tilde{\pi}b^f)}\cdot\frac{\tilde{\omega}}{\lambda_G}$$

$$=\frac{\{p(0)B\}(b^d+f\tilde{\pi}b^f)}{\{p(0)B\}(b^d+f\tilde{\pi}b^f)}\cdot\frac{\tilde{\omega}}{\lambda_G}$$

$$=\frac{\tilde{\omega}}{\lambda_G}<\tilde{\omega}\qquad(\text{if }\lambda_G>1).$$ (59)

(q. e. d.)

Theorem 4.

(i) Suppose that one of the following conditions (a)～(c) is satisfied.

(a) An arbitrary $\tilde{r}_j$ is increased (decreased).

(b) An arbitrary element of the vector π or an element π_k of the vector $\tilde{\pi}$ such that $b_k^f>0$ is increased (decreased).

(c) τ_r or τ_w is increased (decreased).

Then, other things being equal, λ_G increases (decreases) and $\lim_{t\to\infty}\tilde{\omega}_{**}(t)$ decreases (increases).

(ii) Suppose that $\tilde{\omega}$ is increased (decreased). Then, other things being equal, λ_G increases (decreases) and $\lim_{t\to\infty}\tilde{\omega}^{**}(t)$ increases (decreases).

(Proof.)

(i) This proposition directly follows from the Perron-Frobenius theorem and eq. (59).

(ii) Suppose that $\tilde{\omega}$ is increased. Then, λ_G must increase because of the Perron-Frobenius theorem. By the way, λ_G must satisfy the following 'characteristic equation'.

$$|\lambda_G I-G|\equiv|\lambda_G I-(H_1+H_2\tilde{\omega})|$$
$$\equiv\lambda_G^n\left|I-\left(H_1\frac{1}{\lambda_G}+H_2\frac{\tilde{\omega}}{\lambda_G}\right)\right|=0$$ (60)

where $H_1\equiv C(\pi)\left[\hat{f}\right]\frac{1}{1-\tau_r}+C^{\Theta}(\pi)\geq 0$ and $H_2\equiv(b^d+f\tilde{\pi}b^f)\ell\frac{1}{1-\tau_w}\geq 0$. Therefore, λ_G must vary so as to satisfy $\lambda_J=1$, where λ_J is the Frobenius root of the indecomposable nonnegative matrix $J\equiv H_1\frac{1}{\lambda_G}+H_2\frac{\tilde{\omega}}{\lambda_G}$. Suppose that $(\tilde{\omega}/\lambda_G)$ is not increased when λ_G is increased. In this case, λ_J must decrease in view of the Perron-Frobenius theorem so that λ_J must

become to be less than 1, which contradicts eq. (60). Therefore, $\tilde{\omega}/\lambda_G=\lim_{t\to\infty}\tilde{\omega}^{**}(t)$ must increase when $\tilde{\omega}$ is increased. The argument in the case where $\tilde{\omega}$ is decreased is quite symmetrical.

(q. e. d.)

It is somewhat difficult to obtain the clear results concerning the comparative dynamics for $\lim_{t\to\infty}\tilde{r}_j^{**}(t)$ in the general case, but, we can obtain the definite results under an additional special assumption.

Theorem 5.

Assume that the matrices $C(\pi)$ and $C^{\Theta}(\pi)$ satisfy the relationship $C^{\Theta}(\pi)=C(\pi)\,[\hat{\delta}]$, where $[\hat{\delta}]\equiv\begin{pmatrix}\delta_1 & & & 0\\ & \delta_2 & & \\ & & \ddots & \\ 0 & & & \delta_n\end{pmatrix}$ (19). Then, we have the following propositions.

(i) Suppose that an arbitrary $\tilde{r}_j$ is increased (decreased).

Then, other things being equal, $\lim_{t\to\infty}r_j^{**}(t)$ increases (decreases) and all of $\lim_{t\to\infty}r_i^{**}(t)$ such that $i\neq j$ decreases (increases).

(ii) Suppose that either of the following conditions (a) or (b) is satisfied.

(a) An arbitrary element of the vector π or an element π_k of the vector $\tilde{\pi}$ such that $b_k^f>0$ is increased (decreased).

(b) τ_r or τ_w is increased (decreased).

Then, other things being equal, $\lim_{t\to\infty}r_j^{**}(t)$ decreases (increases) for all $j\in\{1, 2, \cdots\cdots, n\}$.

(Proof.)

(i) In this case, the equations (57) and (58) can be written as follows respectively.

$$\lim_{t\to\infty}\tilde{r}_j^{**}(t)=\frac{(1-\tau_r)\{p(0)B\}\left[I^{(j)}-(b^d+f\tilde{\pi}b')\frac{\tilde{\omega}\ell_j}{(1-\tau_w)\lambda_G}\right]}{\{p(0)B\}\,C(\pi)^{(j)}}-(1-\tau_r)\delta_j\quad(j=1, 2, \cdots\cdots, n)\qquad(57)'$$

$$\tilde{r}_j=\frac{(1-\tau_r)\{p(0)B\}\left[I^{(j)}-(b^d+f\tilde{\pi}b')\frac{\tilde{\omega}\ell_j}{(1-\tau_w)\lambda_G}\right]}{\{p(0)B\}C(\pi)^{(j)}\frac{1}{\lambda_G}}-(1-\tau_r)\delta_j\qquad(j=1, 2, \cdots\cdots, n)\qquad(58)$$

From these equations we have

$$\lim_{t\to\infty}r_j^{**}(t)=(\tilde{r}_j/\lambda_G)+(1-\tau_r)\delta_j(1/\lambda_G-1)\quad(j=1, 2, \cdots\cdots, n).\qquad(61)$$

Suppose that an arbitrary $\tilde{r}_j$ is increased (decreased). Then, λ_G increases (decreases) so that $\lim_{t\to\infty}\tilde{r}_i^{**}(t)$ such that $i\neq j$ must decrease (increase) in view of eq. (61). In this case, $\lim_{t\to\infty}\tilde{\omega}^{**}(t)$ also decreases (increases) from *Theorem 4* (i). Therefore, $\lim_{t\to\infty}\tilde{r}_j^{**}(t)$ must increase (decrease) in view of the characteristics of the after tax wage-profit surface.

(ii) It is obvious from the Perron-Frobenius theorem and eq. (61).

(q. e. d.)

Now, let us consider the aggregation of the disaggregated dyna-

mical system (49). For this purpose, let us take up the right-Frobenius vector $x^{**}\equiv[x_1^{**},\ x_2^{**},\ \cdots\cdots,\ x_n^{**}]'>0$ of the indecomposable nonnegative matrix G. Namely,

$$[\lambda_G I-G]x^{**}=0\,. \tag{62}$$

The vector x^{**} may be considered to be the 'standard commodity' which is applied to the matrix G. Let us normalize x^{**} so as to satisfy the following condition.

$$\sum_{i=1}^{n} x_i^{**}=1 \tag{63}$$

Multiplying x^{**} from the right of eq. (49) and substituting eq. (62), we have

$$p(t)x^{**}=p(t-1)Gx^{**}=\lambda_G p(t-1)x^{**} \tag{64}$$

or equivalently,

$$\bar{p}_t=\lambda_G(r_1,\ \cdots\cdots,\ \tilde{r}_n,\ \tilde{\omega}\ ;\ \pi,\ \tilde{\pi},\ \tau_r,\ \tau_w)\bar{p}_{t-1} \tag{65}$$

where $\bar{p}_t\equiv p(t)\,x^{**}\equiv\sum_{i=1}^{n}p_i(t)\,x_i^{**}$ is the 'average' price level with the weight x^{**}. Note that the condition for the occurence of the wage-price inflation in this aggregated system is the same as that of the disaggregated system (49), i. e., $\lambda_G>1$. This fact assures that the simple one sector dynamic model (eq. (42)) is the correct 'surrogate' of the more complex disaggregated dynamic system (eq. (49)).

III-2. A Complication of the Model

In this section, we shall introduce a particular type of complication by considering the fact that the workers' response to the price change is apt to lag behind the capitalists' response. Now, let us replace eq. (41b)′ with the following equation.

$$w(t)=p(t-\theta)\ (b^d+f\tilde{\pi}b')\ \frac{\tilde{\omega}}{1-\tau_w} \tag{41b)''}$$

where θ is an integer such that $\theta\geqq 2$. Substituting eq. (41b)″ into eq. (41a)′, we have the following new dynamical system.

$$p(t)=p(t-1)G_1(\hat{r}\ ;\ \pi,\ \tau_r)+p(t-\theta)G_2(\tilde{\omega}\ ;\ \tilde{r},\ \tau_w) \tag{66}$$

where $G_1(\hat{r}\ :\ \pi,\ \tau_r)\equiv C(\pi)\,[\hat{r}]\frac{1}{1-\tau_r}+C^{\ominus}(\pi)\geq 0$ and $G_2(\tilde{\omega}\ ;\ \tilde{\pi},\ \tau_w)\equiv(b^d+f\tilde{\pi}b')\,\ell\frac{\tilde{\omega}}{1-\tau_w}\geq 0$. Needless to say, from the definition we have

$$G(\hat{r},\ \tilde{\omega}\ ;\ \pi,\ \tilde{\pi},\ \tau_r,\ \tau_w)\equiv G_1(\hat{r}\ :\ \pi,\ \tau_r)+G_2(\tilde{\omega}\ ;\ \tilde{\pi},\ \tau_w). \tag{67}$$

Now, we can transform eq. (66) into the following equivalent form by resorting to the usual procedure[20].

$$z(t)=z(t-1)H(\hat{r},\ \tilde{\omega}\ ;\ \pi,\ \tilde{\pi},\ \tau_r,\ \tau_w) \tag{68}$$

where

$$z(t)\equiv[p(t),\ p(t-1),\ \cdots\cdots,\ p(t-\theta+1)] \tag{69}$$

and

$$H(\hat{r},\ \tilde{\omega}\ ;\ \pi,\ \tilde{\pi},\ \tau_r,\ \tau_w)\equiv\begin{bmatrix} G_1(\hat{r}\ ;\ \pi,\ \tau_r) & I & 0 & \cdots & 0 \\ 0 & 0 & I & & 0 \\ \vdots & \vdots & & \ddots & \vdots \\ 0 & 0 & & & I \\ G_2(\tilde{\omega}\ ;\ \tilde{\pi},\ \tau_w) & 0 & \cdots & & 0 \end{bmatrix}\begin{matrix}\\ \\ \\ \\ \}\theta n\end{matrix}\,. \tag{70}$$

$$\underbrace{\qquad\qquad\qquad\qquad}_{\theta n}$$

Then, the characteristic equation of the dynamical system (68) is expresse as

$$\Delta(\lambda)\equiv\begin{vmatrix} \lambda I-G_1 & -I & 0 & \cdots & 0 \\ 0 & \lambda I & -I & & 0 \\ \vdots & 0 & & \ddots & \vdots \\ 0 & \vdots & & & -I \\ -G_2 & 0 & \cdots & 0 & \lambda I \end{vmatrix}=0\,. \tag{71}$$

The matrix H is a nonnegative matrix so that we can apply the Perron-Frobenius theorem. Namely, eq. (71) has at least one nonnegative eigenvalue and the largest nonnegative eigenvalue (the Frobenius root) λ_H satisfies the following condition.

$$\lambda_H \equiv \lambda_1 \geqq |\lambda_i| \quad \text{for all } i \in \{1, 2, \cdots\cdots, \theta n\} \tag{72}$$

where λ_is are the eigenvalues of eq. (71).

Now we can prove the following

Lemma 1.

(i) $\lambda_H > 0$ and there is no positive eigenvalue of eq. (71) other than λ_H.

(ii) $\lambda_H \gtreqless 1$ according as $\lambda_G \gtreqless 1$.

(Proof.)

(i) From eq. (71) and the characteristics of the determinant, we have the following relationship if $\lambda \neq 0$.

$$\Delta(\lambda) = \lambda^{\theta n} \begin{vmatrix} I - \frac{1}{\lambda}G_1 & -\frac{1}{\lambda}I & 0 & \cdots & 0 \\ 0 & I & -\frac{1}{\lambda}I & & 0 \\ \vdots & 0 & I & \ddots & \vdots \\ 0 & \vdots & \ddots & \ddots & -\frac{1}{\lambda}I \\ -\frac{1}{\lambda}G_2 & 0 & \cdots & 0 & I \end{vmatrix}$$

$$= \lambda^{\theta n} \begin{vmatrix} I - \frac{1}{\lambda}G_1 & -\frac{1}{\lambda}I & 0 & \cdots & 0 \\ 0 & I & -\frac{1}{\lambda}I & & 0 \\ \vdots & 0 & I & \ddots & \vdots \\ 0 & \vdots & \ddots & \ddots & -\frac{1}{\lambda}I \\ -\frac{1}{\lambda^2}G_2 & 0 & \cdots & 0 & I \end{vmatrix}$$

$$= \cdots\cdots\cdots\cdots$$

$$= \lambda^{\theta n} \begin{vmatrix} I - \frac{1}{\lambda}G_1 - \frac{1}{\lambda^\theta}G_2 & 0 & \cdots & 0 \\ -\frac{1}{\lambda^{\theta-1}}G_2 & I & \ddots & \vdots \\ \vdots & 0 & \ddots & 0 \\ -\frac{1}{\lambda_2}G_2 & \vdots & \ddots & I \\ -\frac{1}{\lambda}G_2 & 0 & \cdots & 0 \end{vmatrix}$$

$$= \lambda^{\theta n} \left| I - \frac{1}{\lambda}G_1 - \frac{1}{\lambda^\theta}G_2 \right| \cdot \begin{vmatrix} I & 0 & \cdots & 0 \\ 0 & \ddots & \ddots & \vdots \\ \vdots & \ddots & \ddots & 0 \\ 0 & \cdots & 0 & I \end{vmatrix}$$

$$= \lambda^{\theta n} \left| I - \left(\frac{1}{\lambda}G_1 + \frac{1}{\lambda^\theta}G_2\right) \right| = 0 \tag{73}$$

Hence, the positive solution of eq. (71) is equivalent to the positive value of λ which assures that $\rho_k = 1$, where ρ_k is the Frobenius root of the indecomposable nonnegative matrix $K(\lambda) \equiv \frac{1}{\lambda}G_1 + \frac{1}{\lambda^\theta}G_2$[20]. It follows from the Perron-Frobenius theorem that ρ_k is the strictly decreasing continuous function

of $\lambda>0$. On the other hand, we have $\rho_k>1$ for sufficiently small $\lambda>0$ since the matrix $K(\lambda)$ is not productive for sufficiently small $\lambda>0$ because of the fact $\lim_{\lambda\to 0}(1/\lambda)=\infty$, and we have $\rho_k<1$ for sufficiently large $\lambda>0$ because $\lim_{\lambda\to\infty}(1/\lambda)=0$. Therefore, there exists the *unique* $\lambda>0$ which assures that $\rho_k=1$.

(ii) From the definitions of the characteristic equations, λ_G and λ_H must satisfy the following conditions.

$$\left| I-\left(\frac{1}{\lambda_G}G_1+\frac{1}{\lambda_G}G_2\right)\right|=0 \qquad (74)$$

$$\left| I-\left(\frac{1}{\lambda_H}G_1+\frac{1}{\lambda_H^{\theta}}G_2\right)\right|=0 \qquad (75)$$

Suppose that $\lambda_G>1$. If $\lambda_H\leqq 1$, then, we have $\left(\frac{1}{\lambda_G}G_1+\frac{1}{\lambda_G}G_2\right)\leq\left(\frac{1}{\lambda_H}G_1+\frac{1}{\lambda_H^{\theta}}G_2\right)$, which implies that the Frobenius root of the matrix $\left(\frac{1}{\lambda_H}G_1+\frac{1}{\lambda_H^{\theta}}G_2\right)$ is greater than that of the matrix $\left(\frac{1}{\lambda_G}G_1+\frac{1}{\lambda_G}G_2\right)$. But, this is a contradiction because the equations (74) and (75) require that the value of either root must be one. This proves that $\lambda_G>1\Rightarrow\lambda_H>1$. By using the similar reasoning, we can prove that $\lambda_G<1\Rightarrow\lambda_H<1$ and $\lambda_G=1\Rightarrow\lambda_H=1$.

(q. e. d.)

The following theorem is a simple economic interpretation of *Lemma 1*.

Theorem 6.

The system (66) can produce the wage-price inflation if and only if the combination $(\tilde{r}_1, \tilde{r}_2, \cdots\cdots, \tilde{r}_n, \tilde{\omega})$ lies above the after tax wage-profit surface. In other words, the condition for the occurence of the wage-price inflation in the system (66) is the same as that in the system (49).

Now, let us consider the case of $\lambda_H>1$. Although the matrix G_1 is indecomposable, the matrix H is not necessarily indecomposable[22]. Therefore, we can not exclude the possibility that the relative prices continue to oscillate without converging to some limits. This phenomenon can occur if there exists $i\neq 1$ such that $\lambda_H\equiv\lambda_1=|\lambda_1|$. However, for simplicity's sake, we shall *assume* a priori as follows.

Assumption 7. $\lambda_H\equiv\lambda_1>|\lambda_i|$ if $i\neq 1$.

In this case, λ_H becomes to be the 'dominant root' so that the rate of inflation of the price of each good will approach to $\lambda_H-1>0$ ultimately if the initial condition $z(0)$ is appropriate.

Now, the after tax real wage rate $\tilde{\omega}^{**}(t)$ is expressed as follows in view of eq. (41b)".

$$\tilde{\omega}^{**}(t)\equiv\frac{(1-\tau_w)w(t)}{p(t)(b^d+f\bar{\pi}b^l)}=\frac{p(t-\theta)(b^d+f\bar{\pi}b^l)}{p(t)(b^d+f\bar{\pi}b^l)}\tilde{\omega} \qquad (76)$$

Hence, under the above assumption, we have

$$\lim_{t\to\infty}\tilde{\omega}^{**}(t)=\frac{\left\{p(t)/\lambda_H^{\theta}\right\}(b^d+f\tilde{\pi}b^f)}{p(t)(b^d+f\tilde{\pi}b^f)}\tilde{\omega}=\frac{\tilde{\omega}}{\lambda_H^{\theta}} \tag{77}$$

Lemma 2.

Suppose $\lambda_G>1$ so that $\lambda_H>1$. Then, other things being equal, (i) the larger θ, the smaller is λ_H, and (ii) the larger θ, the larger is λ_H^{θ}.

(Proof.)

(i) Suppose that $\theta_1<\theta_2$ and $1<\lambda_{H1}\leqq\lambda_{H2}$, where λ_{Hi} is the Frobenius root of the matrix H which is accompanied by θ_i. Then, we have $(\frac{1}{\lambda_{H1}}G_1+\frac{1}{\lambda_{H1}^{\theta_1}}G_2)\geq(\frac{1}{\lambda_{H2}}G_1+\frac{1}{\lambda_{H2}^{\theta_2}}G_2)$ so that the Frobenius root of the matrix $(\frac{1}{\lambda_{H1}}G_1+\frac{1}{\lambda_{H1}^{\theta_1}}G_2)$ must be greater than that of the matrix $(\frac{1}{\lambda_{H2}}G_1+\frac{1}{\lambda_{H2}^{\theta_2}}G_2)$. But, this is a contradiction because both matrix must have the common Frobenius root $\rho=1$ in view of eq. (75). Therefore, we have $\lambda_{H1}>\lambda_{H2}>1$.

(ii) Suppose that $\theta_1<\theta_2$. Then, we have $\lambda_{H1}>\lambda_{H2}>1$ from (i). Furthermore, suppose that $\lambda_{H1}^{\theta_1}\geqq\lambda_{H2}^{\theta_2}$. In this case, we have $(\frac{1}{\lambda_{H1}}G_1+\frac{1}{\lambda_{H1}^{\theta_1}}G_2)\leq(\frac{1}{\lambda_{H2}}G_1+\frac{1}{\lambda_{H2}^{\theta_2}}G_2)$, which implies that the Frobenius root of $(\frac{1}{\lambda_{H1}}G_1+\frac{1}{\lambda_{H1}^{\theta_1}}G_2)$ is smaller than that of $(\frac{1}{\lambda_{H2}}G_1+\frac{1}{\lambda_{H2}^{\theta_2}}G_2)$. But, this contradicts eq. (75). Hence, we must have $\lambda_{H1}^{\theta_1}<\lambda_{H2}^{\theta_2}$.

(q. e. d.)

Theorem 7.

Suppose that the combination $(\tilde{r}_1, \tilde{r}_2, \cdots\cdots, \tilde{r}_n, \tilde{\omega})$ is above the after tax wage-profit surface and *Assumption 7* is satisfied. Then, if the time lag of the workers' response is increased (decreased), the ultimate rate of inflation decreases (increases) and $\lim_{t\to\infty}\tilde{\omega}^{**}(t)$ decreases (increases).

(Proof.)

These propositions directly follow from eq. (77) and *Lemma 2.*

(q. e. d.)

It is easily seen, in passing, that the theorems 4 and 5 in the previous section are still effective in the present model under *Assumption 7.*

Lastly, let us consider the aggregation of this system. The right-Frobenius vector $\tilde{x}\equiv[\tilde{x}_1, \tilde{x}_2, \cdots\cdots, \tilde{x}_{\theta n}]'\geq 0$ of the matrix $H\geq 0$ can be written as

$$[\lambda_H I-H]\tilde{x}=0. \tag{78}$$

We shall also normalize $\tilde{x}$ so as to satisfy the condition

$$\sum_{i=1}^{\theta n}\tilde{x}_i=1. \tag{79}$$

Substituting eq. (78) into eq. (69), we obtain

$$\bar{z}_t=\lambda_H(\hat{f},\ \tilde{\omega}\ ;\ \pi,\ \tilde{\pi},\ \tau_r,\ \tau_w)\ \bar{z}_{t-1} \tag{80}$$

where $\bar{z}_t\equiv z(t)\tilde{x}$. $\bar{z}_t$ is a weighted average of the prices in the period $(t-\theta+1)$ through the period t. Eq. (80) shows that eq. (42) in the simple one sector model still serves as a 'surrogate' of rather complicated system in this section.

IV. A Dual Analysis ; Many Goods Multiplier Process and the 'Standard Price'

Up to the previous section, we have investigated the disaggregated dynamics of the price system and its aggregation in terms of the standard commodity. In this section, we shall consider the 'dual' of the previous analysis, i. e., the disaggregated dynamics and the aggregation of the quantity system. For this purpose, let us take up the multisectoral version of the Keynesian multiplier process which was formulated by Morishima (1976) chap. 8.

Morishima's so called 'Leontief-Keynes process' is formulated as follows.

$$x(t)=A^{\ominus}x(t-1)+D(t-1)+g \tag{81}$$

where $A^{\ominus}\geq 0$ is the indecomposable capital depreciation matrix, $x(t)\equiv[x_1(t),\ x_2(t),\ \cdots\cdots,\ x_n(t)]'$ is the commodity output vector, $D(t)\equiv[D_1(t),\ D_2(t),\ \cdots\cdots,\ D_n(t)]'$ is the effective consumption demand vector and $g\equiv[g_1,\ g_2,\ \cdots\cdots,\ g_n]'\geq 0$ is the vector of the 'autonomous demands' which include the firms' investment expenditures for the fixed capitals and the government expenditures[23]. Following Morishima (1976) and the Keynesian tradition, let us assume that $D_i(t)$ is a simple linear function of the real national income, i. e.,

$$\begin{aligned} D_i(t)&=c_i(\bar{p}(t))(1-\tau)\bar{Y}(t)+d_i \\ &\equiv c_i(\bar{p}(t))(1-\tau)\bar{p}(t)[I-A^{\ominus}]x(t)+d_i \\ &\quad (i=1,\ 2,\ \cdots\cdots,\ n) \end{aligned} \tag{82}$$

where $\bar{p}(t)\equiv p(t)/w(t)=[p_1(t)/w(t),\ p_2(t)/w(t),\ \cdots\cdots,\ p_n(t)/w(t)]$ is the price vector and $\bar{Y}(t)=\bar{p}(t)[I-A^{\ominus}]x(t)$ is the pre tax net national income, both are measured in terms of the 'wage unit' following Keynes' (1936) suggestion. τ is the average income tax rate ($0\leqq\tau<1$).

Substituting eq. (82) into eq. (81) gives

$$\begin{aligned} x(t)=&[A^{\ominus}+(1-\tau)c(\bar{p}(t-1))\bar{p}(t-1)[I-A^{\ominus}]]x(t-1) \\ &+(d+g) \end{aligned} \tag{83}$$

where $c(\bar{p}(t))\equiv[c_1[\bar{p}(t),\ c_2(\bar{p}(t),\ \cdots\cdots,\ c_n(\bar{p}(t))]'\geq 0$ is the vector of the consumption coefficients and $d\equiv[d_1,\ d_2,\ \cdots\cdots,\ d_n]'\geqq 0$ is the 'autonomous' consumption vector.

Now, let us assume that $\bar{p}(t)$ is positive and constant through time and $\bar{p}(t)>\bar{p}(t)A^{\ominus}$, namely,

$$\bar{p}(t)=\bar{p}>0 \tag{84}$$

and

$$\bar{p}[I-A^{\ominus}]>0\,. \tag{85}$$

These conditions are consistent with the steady state of the wage-price inflation analyzed in the previous sections. Substituting these conditions into eq. (83), we have

$$x(t)=Vx(t-1)+h \tag{86}$$

where $V\equiv[A^{\ominus}+(1-\tau)c(\bar{p})\bar{p}[I-A^{\ominus}]]\geq 0$ and $h\equiv d+g\geq 0$.

We can easily find the solution of eq. (86) by the simple iteration, i. e.,

$$x(t)=[I+V+V^2+\cdots\cdots+V^{t-1}]h+V^t x(0) \tag{87}$$

It is well known that this process is stable if and only if the nonnegative matrix V is 'productive' so that the Frobenius root λ_v is less than one.

Morishima (1976) proved that this condition is satisfied under the standard Keynesian assumption that the 'marginal propensity to consume' is less than one as follows.

From eq. (82) we have

$$\bar{p}D(t)=\bar{p}c(\bar{p})(1-\tau)\bar{Y}(t)+\bar{p}d \tag{88}$$

so that

$$(1-\tau)\hat{p}c(\hat{p})=\Delta(\hat{p}D(t))/\Delta\bar{Y}(t) \tag{89}$$

which implies that $(1-\tau)\hat{p}c(\hat{p})$ is the marginal propensity to consume. Now, let us assume that

$$(1-\tau)\hat{p}c(\hat{p})<1. \tag{90}$$

In this case, we have

$$\hat{p}V=\hat{p}A^{\ominus}+(1-\tau)\hat{p}c(\hat{p})\hat{p}[I-A^{\ominus}]$$
$$<\hat{p}A^{\ominus}+\hat{p}[I-A^{\ominus}]=\hat{p} \tag{91}$$

where $\hat{p}>0$ by assumption. Eq. (91) implies that the matrix $V\geq 0$ is productive, so that the adjustment process (86) is stable. In this case, we have $\lim_{t\to\infty} V^t=0$ and $[I+V+V^2+\cdots\cdots]=[I-V]^{-1}>0$ [24], so that from eq. (87) we can conclude that

$$\lim_{t\to\infty} x(t)=[I+V+V^2+\cdots\cdots]h=[I-V]^{-1}h=\bar{x}>0. \tag{92}$$

$[I-V]^{-1}$ is nothing but the so called 'matrix multiplier', because we can see the effects of the variations of the autonomous expenditures by using the following simple formula.

$$\Delta\bar{x}=[I-V]^{-1}\Delta h \tag{93}$$

Now, we shall consider the aggregation of the system (86). For this purpose, let us consider the left-Frobenius vector $p^*\equiv[p_1^*, p_2^*, \cdots\cdots, p_n^*]>0$ of the matrix V, namely,

$$p^*[\lambda_v I-V]=0 \quad ; \sum_{i=1}^{n} p_i^*=1. \tag{94}$$

From eq. (86) and eq. (94) we have

$$p^*x(t)=p^*Vx(t-1)+p^*h=\lambda_v p^*x(t-1)+p^*h \tag{95}$$

or equivalently,

$$y_t=\lambda_v y_{t-1}+h^* \tag{96}$$

where $y_t\equiv p^*x(t)$, $h^*\equiv p^*h$ and

$$0<\lambda_v=\lambda_v(\underset{\ominus}{\tau},\ \underset{\oplus}{c(\hat{p})})<1. \tag{97}$$

The aggregator p^* is the 'dual' of the Sraffian standard com-

modity which is the right-Frobenius vector of the relevant matrix, so that we shall call p^* the 'standard price' vector which is distinct from the 'actual' price vector $\hat{p}$. y_t is the gross national product which is measured in terms of the 'standard prices'. Needless to say, eq. (96) represents the adjustment process of the conventional one sector Keynesian model, and λ_v is the marginal propensity to consume in this aggregated system. Note that the stability condition of the system (96) ($\lambda_v<1$) coincides with that of the disaggregated counterpart (eq. (86)).

Eq. (96) can be solved by the usual way, namely,

$$y_t=(1+\lambda_v+\lambda_v^2+\cdots\cdots+\lambda_v^{t-1})h^*+y_0\lambda_v^t$$
$$=\frac{1-\lambda_v^t}{1-\lambda_v}h^*+y_0\lambda_v^t \tag{98}$$

and

$$\lim_{t\to\infty} y_t=(1+\lambda_v+\lambda_v^2+\cdots\cdots)h^*=\frac{1}{1-\lambda_v}h^*\equiv\bar{y}>0. \tag{99}$$

This process can be illustrated by the graphical device which is popular in the elementary textbooks of Macroeconomics (see Fig. 6).

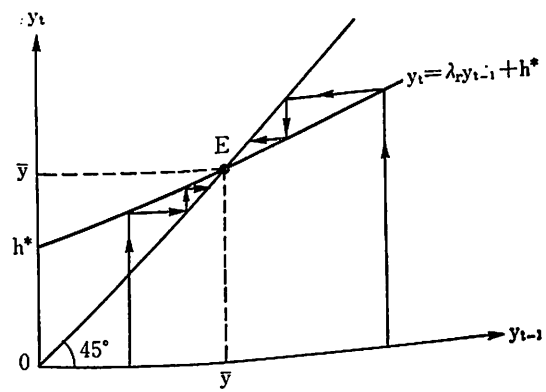

Fig. 6.

By the way, from eq. (99) we obtain the usual (scalar) multiplier formula, i. e.,

$$\frac{\Delta\bar{y}}{\Delta h^*}\equiv\frac{p^*(\Delta\tilde{x})}{p^*(\Delta h)}=\frac{1}{1-\lambda_v}>1. \tag{100}$$

Hence, in a sense, the simple one sector Keynesian model in the elementary textbooks is a correct 'surrogate' of the multisectoral Keynesian system.

The above analysis neglected the difference of the consumption patterns from the wage income and the profit income following the textbook Keynesian model. However, we can show that the basic conclusion of the previous analysis is not affected even if we explicitly consider the difference of the consumption patterns from two income categories following Post Keynesian or Marxian tradition.

Now, let us modify eq. (81) and eq. (82) as follows respectively.

$$x(t)=A\Theta x(t-1)+D^w(t-1)+D^r(t-1)+g \tag{81}'$$

$$D_i^w(t)=c_i^w(\bar{p}(t))(1-\tau_w)\bar{Y}_w(t)+d_i^w \tag{82}'$$

$$D_i^r(t)=c_i^r(\bar{p}(t))(1-\tau_r)\bar{Y}_r(t)+d_i^r$$

$$(i=1,\ 2,\ \cdots\cdots,\ n)$$

where $D^w(t)=[D_1^w(t),\ D_2^w(t),\ \cdots\cdots,\ D_n^w(t)]'$ and $D^r(t)\equiv[D_1^r(t),\ D_2^r(t),\ \cdots\cdots,\ D_n^r(t)]'$ are the effective consumption demand vectors from the wage income and the profit income. Furthermore, $\bar{Y}_w(t)$ and $\bar{Y}_r(t)$ are the pre tax wage income and the pre tax profit income which are measured in terms of the 'wage unit'.

Next, let us assume the following price system.

$$p(t)=p(t)A[\hat{r}]+p(t)A\Theta+w(t)\ell$$

or,

$$\bar{p}=\bar{p}A[\hat{r}]+\bar{p}A\Theta+\ell \tag{101}'$$

where $\bar{p}>0$, $\bar{p}A[\hat{r}]>0$, $\ell>0$ and $[\hat{r}]$ is constant through time.

In this case, $\bar{p}$ also becomes to be constant. Obviously, this situation is consistent with the steady state of wage-price inflation. In this case, we have

$$\bar{Y}_w(t)=\ell x(t) \tag{102}$$

and

$$\bar{Y}_r(t)=\bar{p}A[\hat{r}]x(t). \tag{103}$$

Substituting the equations (82)', (101)', (102) and (103) into eq. (81)', we obtain the following system.

$$\begin{aligned}x(t)&=[A\Theta+(1-\tau_w)c^w(\bar{p})\ell+(1-\tau_r)c^r(\bar{p})\bar{p}A[\hat{r}]]x(t-1)\\&\quad+(d^w+d^r+g)\\&\equiv\tilde{V}x(t-1)+\tilde{h}\end{aligned} \tag{104}$$

where $\tilde{V}\equiv[A\Theta+(1-\tau_w)c^w(\bar{p})\ell+(1-\tau_r)c^r(\bar{p})\bar{p}A[\hat{r}]]\geq 0$, $c^w(\bar{p})\equiv[c_1^w(\bar{p}),\ c_2^w(\bar{p}),\ \cdots\cdots,\ c_n^w(\bar{p})]'\geq 0$, $c^r(\bar{p})\equiv[c_1^r(\bar{p}),\ c_2^r(\bar{p}),\ \cdots\cdots,\ c_n^r(\bar{p})]'\geq 0$, $d^w\equiv[d_1^w,\ d_2^w,\ \cdots\cdots,\ d_n^w]'\geqq 0$, $d^r\equiv[d_1^r,\ d_2^r,\ \cdots\cdots,\ d_n^r]'\geqq 0$ and $\tilde{h}\equiv d^w+d^r+g\geq 0$.

We can easily confirm that $(1-\tau_w)\bar{p}c^w(\bar{p})$ and $(1-\tau_r)\bar{p}c^r(\bar{p})$ are the marginal propensities to consume from the wage income and the profit income respectively. Now, we shall assume that

Assumption 8. $(1-\tau_w)\bar{p}c^w(\bar{p})\leqq 1$ and $(1-\tau_r)\bar{p}c^r(\bar{p})<1$.

Theorem 8.

Under *Assumption 8*, the matrix $\tilde{V}$ is productive so that the system (104) is stable.

(Proof.)

From the definition of $\tilde{V}$ and eq. (101)', we have

$$\tilde{p}\tilde{V}=\tilde{p}A^{\ominus}+(1-\tau_w)\tilde{p}c^w(\tilde{p})\ell+(1-\tau_r)\tilde{p}c^r(\tilde{p})\tilde{p}A\langle\hat{r}\rangle$$
$$<\tilde{p}A^{\ominus}+\ell+\tilde{p}A\langle\hat{r}\rangle=\tilde{p}\ ;\ \tilde{p}>0, \tag{105}$$

which implies that $\tilde{V}$ is productive.

(q. e. d.)

Now, let us consider the left-Frobenius vector $p^{**}>0$ of $\tilde{V}$, i. e.,

$$p^{**}\langle\lambda_{\tilde{v}}I-\tilde{V}\rangle=0 \tag{106}$$

where

$$0<\lambda_{\tilde{v}}\equiv\lambda_{\tilde{v}}(\underset{\ominus}{\tau_w},\ \underset{\ominus}{\tau_r},\ \underset{\oplus}{c^w}(\tilde{p}),\ \underset{\oplus}{c^r}(\tilde{p}))<1. \tag{107}$$

From the equations (104) and (106), we obtain the aggregated system

$$\tilde{y}_t=\lambda_{\tilde{v}}\tilde{y}_{t-1}+h^{**} \tag{108}$$

where $\tilde{y}_t\equiv p^{**}x(t)$ and $h^{**}\equiv p^{**}\tilde{h}$. Qualitalively eq. (108) is the same as eq. (96) so that we need not repeat the further analysis.

V. Concluding Remarks

In this paper we have presented some examples of the applications of the Sraffian idea to the economic dynamics. It must be noted, incidentally, that we investigated the dynamics of the price system and the quantity system separately. Without doubt, this is not a satisfactory way to analyze the working of the economy as a whole. But, there is some reality in the following assertion by Goodwin.

"The fact that output is kept constant in the analysis of price levels and that price is kept constant in dealing with output is not as inconsistent as it seems. It is merely a device for reducing a non-linear problem to the more tractable form of a pair of linear ones. Nearly simultaneous variations of the twin motions can be studied. First price is held constant and then output is held constant to find the change in price. The process is then repeated, successively. In this manner the parallel but somewhat independent behaviour of both is obtained". (Goodwin (1983) p. 51)

For example, we can study the effects of the change of the tax policy by the government as follows in line with Goodwin's suggestion.

Suppose that the government enforces the tax increase, i. e., τ_r or τ_w is increased. According to the model of the price system presented in section III, the direct effect of this policy is the acceleration of the inflation. However, this policy also affects the state of the effective demand. The model of the quantity system which was presented in section IV shows that the tax increase induces the reduction of the effective demand through the reduction of the value of each element of the matrix multiplier, so that the level of employment must decrease. This fact may have some feedback effects on the price system. First, the increase of the unemployment may weaken the bargaining power of the workers so the parameter $\tilde{\omega}$ may decrease. Furthermore, the decrease of the national income may induce the improvement of the balance of payment through the reduction of the import. This fact may contribute to the improvement of the terms of trade through the rise of the value of the domestic currency

relative to the foreign currency under the floating exchange rate system. These indirect feedback effects through the quantity system has the depressing rather than the accelerating effect on the wage-price inflation process. Therefore, the tax increase may or may not accelerate the inflation. Furthermore, the changes of the relative prices in this process will have some feedback effects on the quantity system[25].

If we formulate this system formally, we will have a system of the nonlinear difference equations with many variables, because we must introduce some sorts of nonlinearity into the system to consider the interdependence of the price system and the quantity system explicitly. Behavior of such a system may be very complicated. For example, even the 'chaotic' motion can emere[26]. It is beyond the scope of this paper to trace the behavior of such a system in detail. This is the theme which is left to the future investigation. But, Sraffa's method of the aggregation may contribute to simplify the analysis of such a system considerably[27].

<Appendix ; Labor Value and Morishima-Seton Equation in an Open Economy>

In this appendix we shall concentrate on a special topic which was not considered in the text, i. e., the Marxian theory of value and exploitation in an open economy.

A-1. Labor Value and the Definition of the Rate of Exploitation

We shall retain the notation and the assumptions which are adopted in section III of the text. Then, the system of Marxian 'labor value' equations in our open economy may be formulated as follows.

$$\Lambda=\Lambda A\Theta+\Lambda f\pi M\Theta+\ell \tag{A1}$$

where $\Lambda\equiv[\Lambda_1, \Lambda_2, \cdots\cdots, \Lambda_n]$ is the vector of the labor values of the domestically produced commodities. The first part of the right hand side of eq. (A1) shows that the quantity of the (direct and indirect) domestic labor for the replacement of the domestically produced capital goods, while the second part is the quantity of the (direct and indirect) domestic labor for the production of the export goods which can be exchanged with the imported capital goods for replacement in the international market.

Obviously, eq. (A1) is a natural extension of the notion of the labor values in the closed system into the open system[28]. From *Assumption* 5 in the text we have $[I-(A\Theta+f\pi M\Theta)]^{-1}\geq 0$, so that eq. (A1) can be solved as follows[29].

$$\Lambda=\ell[I-(A\Theta+f\pi M\Theta)]^{-1}=\ell\sum_{t=0}^{\infty}(A\Theta+f\pi M\Theta)^t>0 \tag{A2}$$

Then the rate of exploitation (e) is naturally defined as

$$e\equiv\frac{1-\omega(\Lambda b^d+\Lambda f\bar{\pi}b^f)}{\omega(\Lambda b^d+\Lambda f\bar{\pi}b^f)}>-1. \tag{A3}$$

Now, we can consider an alternative definition of the rate of exploitation (e′) which is in line with Morishima (1974)'s approach, namely,

$$e'\equiv\frac{N-\ell x^0}{\ell x^0} \tag{A4}$$

where $N>0$ is the 'actual' labor time and x^0 is an optimal solution of the following linear programming problem.

$$\text{Minimize } \ell x \text{ subject to } x\geqq A\Theta x+f\pi M\Theta x+\omega(b^d+f\bar{\pi}b^f)N, \quad x\geqq 0 \tag{A5}$$

But, it is easy to show that $\ell x^0=\omega\Lambda(b^d+f\bar{\pi}b^f)N$ so that $e=e'$[30]. That is, the alternative definitions of the rate of exploitation we have considered above are identical each other.

A-2. Morishima-Seton Equation

It is well known that Morishima and Seton (1961) derived the Marxian equality

$$r=\frac{eV^*}{C^*+V^*} \tag{A6}$$

in a framework of the circulating capital model with equal rate of profit in the closed economy, where r is the pre tax rate of profit, and C^* and V^* are

weighted averages of the so called 'constant capitals' and 'variable capitals' which are caluculated in terms of the labor values respectively. Now, let us reconsider the Morishima-Seton equation in our analytical framework.

Marxian 'prices of production' system with equal rate of profit in an open economy can be expressed as[31][33].

$$p = r\,p\{A+f\pi M+\omega(b^d+f\bar{\pi}b^f)\ell\}+p\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\ell\} \tag{A7}$$

or equivalently,

$$p[I-r\{A+f\pi M+\omega(b^d+f\bar{\pi}b^f)\ell\}-\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\ell\}] = 0. \tag{A7}'$$

Eq. (A7)′ implies that the vector of the 'prices of production' $p>0$ can be expressed as the left-Frobenius vector of the matrix $Q\equiv r\{A+f\pi M+\omega(b^d+f\bar{\pi}b^f)\}+\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\}$[33]. Then, we can consider the 'dual' of p, i. e., the right-Frobenius vector $x^*>0$ of the matrix Q.

$$[I-r\{A+f\pi M+\omega(b^d+f\bar{\pi}b^f)\ell\}-\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\ell\}]x^* = 0 \tag{A8}$$

It is easily seen that x^* represents the output composition of the 'von Neumann path' with the equal rate of growth r.

Next, from eq. (A3) we have

$$(1+e)\Lambda\omega(b^d+f\bar{\pi}b^f) = 1. \tag{A9}$$

Substituting eq. (A9) into eq. (A1), we obtain

$$\Lambda[I-\{A\Theta+f\pi M\Theta+(1+e)\omega(b^d+f\bar{\pi}b^f)\ell\}] = 0. \tag{A10}$$

This equation implies that the labor value vector $\Lambda>0$ can be expressed as the left-Frobenius vector of the matrix $T\equiv A\Theta+f\pi M\Theta+(1+e)\omega(b^d+f\bar{\pi}b^f)\ell\geq 0$[34]. Then, we can consider the 'dual' of Λ, i. e., the right-Frobenius vector $x^{**}>0$ of the matrix T.

$$[I-\{A\Theta+f\pi M\Theta+(1+e)\omega(b^d+f\bar{\pi}b^f)\ell\}]x^{**} = 0 \tag{A11}$$

Theorem A1.

$$r = \frac{eV_v^*}{C_v^*+V_v^*} = \frac{eV_p^*}{C_p^*+V_p^*} \tag{A12}$$

where $C_v^*\equiv\Lambda(A+f\pi M)x^*$, $V_v^*\equiv\Lambda\omega(b^d+f\bar{\pi}b^f)\ell x^*$, $C_p^*\equiv p(A+f\pi M)x^{**}$, and $V_p^*\equiv p\omega(b^d+f\bar{\pi}b^f)\ell x^{**}$.

(Proof.)

(i) Pre-multiplying eq. A8 by $\Lambda>0$ and rearranging terms, we have

$$\Lambda[I-\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\ell\}x^* = r\,\Lambda\{A+f\pi M+\omega(d^d+f\bar{\pi}b^f)\ell\}x^*\equiv r(C_v^*+V_v^*). \tag{A13}$$

On the other hand, post-multiplying eq. (A10) by $x^*>0$ and rearranging terms, we have

$$\Lambda[I-\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\ell\}x^* = e\Lambda\omega(b^d+f\bar{\pi}b^f)\ell x^*\equiv eV_v^*. \tag{A14}$$

Comparing the equations (A13) and (A14), we have

$$r = eV_v^*/(C_v^*+V_v^*).$$

(ii) Post-multiplying eq. (A7)′ by $x^{**}>0$ and rearranging terms, we have

$$p[I-\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\ell\}]x^{**} = rp\{A+f\pi M+\omega(b^d+f\bar{\pi}b^f)\ell\}x^{**} \equiv r\,(C_p^*+V_p^*). \tag{A15}$$

On the other hand, pre-multiplying eq. (A11) by $p>0$ and rearranging, we have

$$p[I-\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\ell\}x^{**} = ep\omega(b^d+f\bar{\pi}b^f)\ell x^{**}\equiv eV_p^*. \tag{A16}$$

Comparing eq. (A15) and (A16), we have

$$r = eV_p^*/(C_p^*+V_p^*). \qquad \text{(q. e. d.)}$$

Corollary A1.

$r>0$ if and only if $e>0$.

The first equality of eq. (A12) is nothing but the Morishima-Seton equation in our model. Corollary of *Theorem A1* is nothing but so called 'Fundamental Marxian theorem' in an open economy.

Finally, we shall consider the case with differential rates of profit. Any price system with differential rates of profit may be written as follows.

$$p[I-\{A+f\pi M+\omega(b^d+f\bar{\pi}b^f)\ell\}[\hat{r}]-\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\ell\}=0 \tag{A17}$$

where

$$[\hat{r}]=\begin{pmatrix} r_1 & & 0 \\ & r_2 & \\ & & \ddots \\ 0 & & r_n \end{pmatrix} \tag{A18}$$

is the diagonal matrix of the pre tax rates of profit (we need not assume that r_is are nonnegative although we assume that $p>0$). Then, we can define the 'average pre tax rate of profit' $\bar{r}$ by using the vector x^{**} as follows.

$$\bar{r}\equiv\frac{px^{**}-p(A\Theta+f\pi M\Theta)x^{**}-p\omega(b^d+f\bar{\pi}b^f)\ell x^{**}}{p(A+f\bar{\pi}M)x^{**}+p\omega(b^d+f\pi b^f)\ell x^{**}}$$
$$\equiv\frac{p\{A+f\pi M+\omega(b^d+f\bar{\pi}b^f)\ell\}[\hat{r}]x^{**}}{p\{A+f\pi M+\omega(b^d+f\bar{\pi}b^f)\ell\}x^{**}} \tag{A19}$$

Theorem A2.

$$\bar{r}=\frac{eV_p^*}{C_p^*+V_p^*} \tag{A20}$$

where $C_p^*\equiv p(A+f\pi M)x^{**}$ and $V_p^*\equiv p\omega(b^d+f\bar{\pi}b^f)\ell x^{**}$.

(Proof.)

Pre-multiplying eq. (A11) by $p>0$ and rearranging terms, we have

$$p[I-\{A\Theta+f\pi M\Theta+\omega(b^d+f\bar{\pi}b^f)\ell\}]x^{**}$$
$$=ep\omega(b^d+f\bar{\pi}b^f)\ell x^{**}\equiv eV_p^*. \tag{A21}$$

Dividing both sides of this equation by $p\{A+f\pi M+\omega(b^d+f\bar{\pi}b^f)\ell\}x^{**}\equiv C_p^*+V_p^*$ and considering eq. (A19), we obtain eq. (A20).

(q.e.d.)

Corollary A2.

$\bar{r}>0$ if and only if $e>0$.

Therefore, the Fundamental Marxian theorem can be extended to the open economy with differential rates of profit.

Notes

* This paper was written while the author was staying at the New School for Social Research in New York as a visiting research scholar, and a shorter version was presented at the URPE (Union for Radical Political Economics) session at ASSA (Allied Social Science Associations) in Washington D.C., U.S.A. (December 30, 1990) Thanks are due to the valuable comments by Professors A.K. Dutt and H.D. Kurz at the Conference. The author was also much indebted to Prof. Willi Semmler for providing the comfortable research environment. Needless to say, however, any remaining error is the author's own.

(1) From eq. (3) the (pre tax) 'maximum rate of profit' in the case of zero real wage is obtained as $R=\{1-(a\Theta+\pi m\Theta)\}/(a+\pi m)$. If the system is productive, R must be positive so that the inequality $1>a\Theta+\pi m\Theta$ must be satisfied. From now on, we assume that this condition is in fact satisfied.

(2) Obviously, the terms of trade depend on the rate of foreign exchange as well as tne price level of the foreign country in terms of foreign currency. *Other things being equal*, the rise (the fall) of the value of the domestic currency relative to the foreign currency will improve (deteriorate) the terms of trade.

(3) This procedure of the introduction of the tax into the present analytical framework is in line with Eatwell (1980).

(4) Fig. 2 is but a reproduction of Fig. F2 in Asada (1989).

(5) $B\geqq 0$ implies that the matrix (or the vector) B is nonnegative. $B\geq 0$ implies that B is semipositive, while $B>0$ implies that B is strictly positive.

(6) This assumption implies that all domestic goods are 'basics' in the sense

of Sraffa (1960). We can extend easily, however, the most of the results of the analyses in this paper to the case where the 'non basics' exist. See, for example, Pasinetti (1977) chap. 5.

(7) Contrary to the usual formulation of the Sraffian system, we do *not* assume the equal rate of profit among industries. In other words, we allow for the existence of some 'monopolistic' elements in the economy. As for the analyses of the differential profit rates among industries in the somewhat different context, see Semmler (1984), Steedman (1984) and Asada (1988).

(8) we denote the transpose of the matrix (or the vector) B by B'.

(9) The idea of this formulation is essentially owning to Ara (1987) chap. 12. See also Metcalfe and Steedman (1979b) and Steedman (1979).

(10) The Perron-Frobenius theorem assures that p is strictly positive and unique up to scalar multiplication since G is nonnegative and indecomposable *by assumption*. (As for the Perron-Frobenius theorem, see, for example, Nikaido (1968) chap. 2.)

(11) Steedman (1984) provides the similar argument in the context of the closed economy.

(12) *Assumption 3* assures that there exists j $\epsilon\{1, 2, \cdots\cdots, s\}$ such that $m_{kj}>0$ if k $\epsilon\{1, 2, \cdots\cdots, n\}$ is fixed arbitrarily.

(13) It must be noted that the statements of *Theorem 1* are reinforced rather than invalidated if some imported goods are used both as the capital goods and the wage goods.

(14) $[I-C\Theta]^{-1}C=[I+C\Theta+\{C\Theta\}^2+\cdots\cdots]\ C\geqq C\geqq A\geqq A\Theta$ and $A\Theta$ is indecomposable from *Assumption 2*.

(15) Note that we can also express eq. (31) as

$$\omega^*\equiv w\ell x^*/(p[I-C\Theta]x^*)$$

from eq. (30), so that ω^* can be considered to be the wage share in the (hypothetical) standard system.

(16) We do not pretend to assert that such a formulation is new or original. Similar models were already investigated by several authors. (See, for example, Okishio (1977b) chap. 1, Aoki (1977), Nikaido and Kobayashi (1978), Goodwin (1983) chap. 4 and Ara (1987) chap. 12.) We take up this model only as an important example of the application of the Sraffian idea to the simple dynamic system.

(17) Obviously, we are implicitly assuming that $\tilde{r}_j>0$ for all j and $\tilde{\omega}>0$.

(18) See Nikaido (1968) chap. II.

(19) This condition includes the pure circulating capital model ($\delta_1=\delta_2=\cdots\cdots=\delta_n=1$) and the ever-lasting fixed capital model ($\delta_1=\delta_2=\cdots\cdots=\delta_n=0$) as two famous extreme cases.

(20) As for such a procedure, see, for example, Nikaido (1968) chap. 2, Murata (1977) chap. 3 or Ara (1987) chap. 1.

(21) By assumption, G_1 is indecomposable. In this case, K (λ) is also indecomposable if $\lambda>0$.

(22) It is easy to prove that H is indecomposable if G_1 is indecomposable. However, G_1 is not indecomposable if there are some domestic goods which are not used as the wage goods nor exported in exchange for the imported wage goods.

(23) For simplicity's sake, we ignore the international trade throughout this section.

(24) V is indecomposable because $V\geqq A\Theta$ and we are assuming that $A\Theta$ is indecomposable. Therefore, $[I-V]^{-1}$ becomes to be strictly positive.

(25) We can also trace the effects of the other kind of the fiscal policy or the monetary policy in a similar way. By the way, it must be noted that we might underestimate the instability of the system because we are neglecting the effect of the inflation expectation. If the inflation expectation is explicitly considered, the system will become more unstable.

(26) It is well known that even the simplest type of the nonlinear difference equation with single variable can produce the chaotic behavior. See, for example, Day (1982) (1983) and Bhaduri and Harris (1986).

(27) Nikaido and Kobayashi (1978) managed to analyze the interrelated price-quantity dynamics in a rather simple way, but at the cost of the unrealistic assumptions that (i) the profit is automatically invested and (ii) the proportions of the wage goods coincide with those of the standard commodity *by accident*. In the models presented in this paper, we required *no* such assumptions. By the way, as for the recent studies of the so called 'cross dual' dynamics of some sort of the interaction between the price system and the quantity system, see Flaschel and Semmler (1987) (1988).

(28) Essentially the same formulation was developed by Okishio(1977a)chap. 2. This is an answer to the following question by Steedman. "How could

the traditional Marxist embodied labour content of commodities be determined in an open economy, when there is no way of allocating to individual commodities, produced with imported means of production, the labour used to produce the exports which 'pay' for those imports?" (Steedman (1977) p. 200)

(29) Note that the labor values in this model depend not only on the technological conditions but also on the terms of trade. For example, the improvement (deterioration) of the terms of trade induces the decrease (increase) of the labor values.

(30) Let us consider the dual problem of (A5), i. e.,

Maximize $v\omega(b^d+f\bar{\pi}b^f)N$ subject to $v[I-(A\ominus+f\pi M\ominus)]\leqq\ell$, $v\geqq 0$.

For any $v\in E\equiv\{v\in R^n_+ | v[I-(A\ominus+f\pi M\ominus)]\leqq\ell\}$, we have $v\leqq\ell[I-(A\ominus+f\pi M\ominus)]^{-1}=\Lambda\in E$ since $[I-(A\ominus+f\pi M\ominus)]^{-1}\geq 0$ by assumption. (*) Therefore, Λ is an optimal solution of the problem (*) so that we have $\omega\Lambda(b^d+f\bar{\pi}b^f)N=\ell x^0$ in view of the duality theorem of linear programming.

(31) In this appendix, we are assuming, following the Marxian tradition, that wages are paid out of capital rather than out of the current revenue.

(32) From the equations (A1) and (A7) we have $p/w=\Lambda$ if $r=0$, where $w=p\omega(b^d+f\bar{\pi}b^f)$ is the money wage rate. This equality means that the 'commanded labor' is equal to the labor value if there is no profit. This fact means that the definition of the labor values in the forms of eq. (A1) passes a sort of the 'consistency test'.

(33) We assume that the matrix Q is nonnegative although r need not be nonnegative.

(34) T is nonnegative since $1+e>0$ from eq. (A3).

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10.2 Exchange rates, Canadian dollars per unit / Taux de change, dollars canadiens par unité

Year / Année	U.S. dollar / Dollar américain	British pound / Livre britannique	French franc / Franc français	German mark / Mark allemand	Japanese yen (000's) / Yen japonais (000's)	G-10 index (1981 = 100)(1) / Indice G-10 (1981 = 100)(1)
B	*3400*	*3412*	*3404*	*3405*	*3407*	*3418*
1951	1.053	2.947	0.300	0.251		
1952	0.979	2.734	0.279	0.233	2.72	
1953	0.983	2.767	0.281	0.234	2.73	
1954	0.973	2.734	0.278	0.232	2.70	
1955	0.986	2.754	0.281	0.234	2.74	
1956	0.984	2.752	0.281	0.234	2.73	
1957	0.959	2.679	0.255	0.228	2.66	
1958	0.971	2.728	0.230	0.232	2.70	
1959	0.959	2.694	0.195	0.230	2.66	
1960	0.970	2.723	0.198	0.233	2.69	
1961	1.013	2.839	0.207	0.252	2.81	
1962	1.069	3.001	0.218	0.267	2.97	
1963	1.079	3.020	0.220	0.271	3.00	
1964	1.079	3.012	0.220	0.271	3.00	
1965	1.078	3.014	0.220	0.270	3.00	
1966	1.077	3.009	0.219	0.269	2.98	
1967	1.079	2.962	0.219	0.271	2.98	
1968	1.077	2.579	0.218	0.270	2.99	
1969	1.077	2.574	0.208	0.275	3.01	
1970	1.044	2.502	0.189	0.286	2.92	
1971	1.010	2.469	0.183	0.291	2.91	122.95
1972	0.991	2.479	0.196	0.311	3.27	123.42
1973	1.000	2.452	0.226	0.378	3.70	120.35
1974	0.978	2.288	0.204	0.379	3.35	124.00
1975	1.017	2.259	0.238	0.414	3.43	119.06
1976	0.986	1.781	0.207	0.392	3.33	124.32
1977	1.063	1.857	0.217	0.459	3.98	114.47
1978	1.141	2.191	0.254	0.570	5.48	103.83
1979	1.171	2.486	0.276	0.640	5.37	100.53
1980	1.169	2.720	0.277	0.644	5.19	100.62
1981	1.199	2.430	0.222	0.532	5.45	100.01
1982	1.234	2.158	0.189	0.509	4.97	99.36
1983	1.232	1.869	0.162	0.483	5.19	100.26
1984	1.295	1.728	0.149	0.456	5.46	96.65
1985	1.366	1.771	0.153	0.468	5.77	92.02
1986	1.389	2.038	0.201	0.643	8.30	86.29
1987	1.326	2.173	0.221	0.739	9.19	88.18
1988	1.231	2.193	0.207	0.703	9.61	93.93
1989	1.184	1.941	0.186	0.631	8.60	98.80
1990	1.167	2.082	0.215	0.724	8.10	99.26
1991	1.146	2.028	0.204	0.694	8.53	100.83
1992	1.209	2.130	0.229	0.776	9.55	94.96

(1) A rise in the index indicates an increase in the Canadian dollar.
(1) Une hausse de l'indice signale une augmentation du dollar canadien.
Source: Bank of Canada.
Source: Banque du Canada.

7:30

Marc Carrie, ~~[illegible]~~ 770-4306

61 Muguet St

Queensways → Carling & Parkway

→ left lane, turn left onto Parkway going north all the way → T junction, right (Richmond Rd)

Next set of lights, left on Island Park Drive (used car dealers) → keep on north, across bridge, keep going north until another T → right

→ across one set of lights, then first street on left is Muguet (Ultra Mar Gas St. on corner)

Series J471-480. Bond and stock yields, annual averages, 1934 to 1977
(yield in per cent)

Year	Government of Canada					Other bond yield averages[3]				Stock dividend yields[4] (composite)
	3 month treasury bills[1]	Average bond yields[2]				Provincials	Municipals	Industrials	Public utilities	
		1-3 years	3-5 years	5-10 years	10 years and over					
	471	472	473	474	475	476	477	478	479	480
1977	7.33	7.33	7.79	8.13	8.70	9.53	9.71	9.71	9.59	4.82
1976	8.87	8.11	8.31	8.72	9.18	10.11	10.40	10.48	10.42	4.48
1975	7.39	7.40	7.68	8.01	9.03	10.16	10.70	10.76	10.74	4.75
1974	7.82	8.03	8.12	8.27	8.90	9.90	10.22	10.16	10.21	4.25
1973	5.47	6.54	6.98	7.16	7.56	8.36	8.54	8.47	8.52	2.79
1972	3.56	5.54	6.26	6.74	7.23	8.13	8.35	8.30	8.36	2.77
1971	3.56	4.93	5.55	6.15	6.95	8.03	8.30	8.35	8.38	3.32
1970	5.99	6.57	7.10	7.58	7.91	9.04	9.44	9.18	9.27	3.68
1969	7.19	7.49	7.66	7.76	7.58	8.40	8.84	8.75	8.62	3.18
1968	6.27	6.37	6.68	6.85	6.75	7.60	7.80	7.92	7.77	3.45
1967	4.64	5.29	5.64	5.94	5.94	6.70	6.95	7.09	6.94	3.54
1966	4.99	5.38	5.55	5.74	5.69	6.29	6.46	6.50	6.39	3.61
1965	3.98	4.52	4.90	5.09	5.21	5.59	5.75	5.68	5.66	3.15
1964	3.75	4.41	4.72	4.92	5.18	5.53	5.67	5.50	5.52	3.11
1963	3.56	4.21	4.48	4.77	5.09	5.43	5.59	5.37	5.47	3.38
1962	4.05	4.28	4.60	4.76	5.11	5.50	5.70	5.45	5.41	3.29
1961	2.81	3.59	4.37	4.61	5.05	5.49	5.71	5.48	5.41	2.97
1960	3.20	3.96	4.52	4.85	5.18	5.65	6.00	5.70	5.68	3.53
1959	4.81	5.03	4.94	5.10	5.07	5.64	5.99	5.62	6.02	3.00
1958	2.25	3.28	3.47	3.69	4.11	4.75	5.15	5.00	4.90	3.67
1957	3.76	4.46	4.56	4.39	4.11	4.98	5.49	5.36	5.21	3.67
1956	2.92	3.60	3.76	3.75	3.62	4.26	4.69	4.61	3.94	3.29
1955	1.62	2.19	2.79	2.86	3.14	3.42	3.74	3.99	3.73	4.09
1954	1.43	2.18	2.67	2.90	3.18	3.49	3.92	4.10	3.94	4.99
1953	1.71	3.25	3.55	3.69	3.68	4.15	4.66	4.49	4.36	5.41
1952	1.06	2.68	3.22	3.58	3.59	4.13	4.65	4.29	4.24	5.35
1951	0.79	2.37	2.69	3.18	3.24	3.65	4.07	3.89	3.82	5.22
1950	0.55	1.81	2.22	2.67	2.78	3.12	3.46	3.50	3.30	5.96
1949	0.49	1.66	2.24	2.64	2.83	3.16	3.56	3.57	3.39	6.54
1948	0.41	1.44	2.27	2.72	2.93	3.13	3.43	3.51	3.44	5.84
1947	0.41	1.43	1.75	2.25	2.57	–	–	–	–	5.04
1946	0.39	1.39	1.69	2.32	2.61	–	–	–	–	4.06
1945	0.37	1.39	1.92	2.54	2.93	–	–	–	–	4.62
1944	0.39	1.46	2.13	2.68	2.99	–	–	–	–	5.33
1943	0.48	1.52	2.23	2.81	3.01	–	–	–	–	5.82
1942	0.54	1.48	2.18	3.03	3.06	–	–	–	–	7.19
1941	0.58	1.40	2.11	2.92	3.10	–	–	–	–	6.42
1940	0.70	1.48	2.16	2.96	3.28	–	–	–	–	5.88
1939	0.71	1.51	2.11	2.88	3.16	–	–	–	–	5.57
1938	0.59	1.14	1.93	2.76	3.09	–	–	–	–	5.82
1937	0.72	1.37	2.07	2.93	3.17	–	–	–	–	4.72
1936	0.85	1.28	1.72	2.46	2.97	–	–	–	–	4.28
1935	1.50	–	–	–	–	–	–	–	–	4.66
1934	2.50	–	–	–	–	–	–	–	–	4.84

[1] Twelve-month average of last Thursday in each month, from 1954 to 1977. Prior to 1954, average of weekly tenders.

[2] Twelve-month average of last Wednesday in each month, from 1954 to 1977. Prior to 1954, generally mid-month quotations. Also, prior to 1954, the yields are on theoretical 2-year, 5-year, 10-year and 15-year bonds.

[3] These are the McLeod, Young, Weir bond yield averages and they relate to the last business day in each month. 12-month averages were calculated.

[4] Stock dividend yields are averages of 12 monthly yields; source: Bank of Canada, *Review*, *Table 37*, series B4245, from 1956 to 1977. Prior to 1956, common stock prices from the first edition have been reproduced above.

Series J481-494. Indexes of common stock prices, 1914 to 1977

(1975=1,000 from 1956 to 1977; 1935-39=100 from 1914 to 1956)

Year[1]	Mines	Industrials	Utilities	Banks	Financial services	Oil and gas	Consumer products	Merchandising	TSE 300 composite
	481	482	483	484	485	486	487	488	489
1977	1,000	892	1,190	892	839	1,198	872	817	1,010
1976	1,191	1,031	1,061	951	944	1,069	916	933	1,039
1975	1,000	998	1,001	1,006	1,003	1,005	1,058	1,003	1,000
1974	1,070	967	970	934	856	1,069	1,134	924	1,018
1973	1,271	1,057	1,014	1,049	1,082	1,461	1,370	1,269	1,213
1972	1,088	989	1,096	1,038	1,066	1,267	1,287	1,258	1,136
1971	1,109	771	1,160	789	809	1,085	1,026	950	969
1970	1,280	706	1,041	684	685	857	986	774	911
1969	1,370	820	1,139	709	720	1,090	1,057	956	1,036
1968	1,286	755	1,120	585	586	905	927	1,001	931
1967	1,275	802	1,137	473	499	752	846	761	885
1966	1,233	805	1,171	439	479	571	782	669	835
1965	1,211	901	1,274	476	495	536	884	659	955
1964	1,076	759	1,184	476	533	493	801	568	797
1963	862	591	1,124	466	518	419	704	452	674
1962	824	505	1,066	455	503	423	639	410	625
1961	902	515	1,096	481	528	425	620	471	646
1960	684	431	910	396	415	342	466	365	514
1959	697	496	874	450	465	460	503	450	562
1958	616	395	837	363	377	499	405	353	495
1957	749	388	834	352	358	607	356	257	532
1956	829	359	886	373	374	586	399	251	568

Year	Mines	Industrials	Utilities	Banks
	490	491	492	493
1956	134.4	282.7	206.3	275.8
1955	116.9	239.6	197.0	246.3
1954	91.3	182.3	165.0	208.0
1953	92.1	160.1	157.2	168.9
1952	103.6	176.6	168.3	148.4
1951	99.2	172.0	162.3	144.6
1950	89.9	127.6	132.5	147.4
1949	87.4	103.1	117.4	134.4
1948	82.0	107.2	120.2	129.3
1947	86.7	99.3	117.3	130.8
1946	97.8	108.6	132.5	130.0
1945	95.2	93.7	120.2	95.7
1944	81.3	78.8	100.8	82.0
1943	70.1	78.6	101.3	80.5
1942	52.3	60.4	70.4	81.2
1941	72.4	63.9	70.7	90.5
1940	81.2	74.2	80.9	95.6
1939	104.5	91.2	86.1	102.5
1938	103.1	94.6	90.4	101.6
1937	102.1	113.6	122.4	109.3
1936	107.7	109.6	110.7	98.0
1935	85.9	79.9	92.7	89.6
1934	–	68.1	104.9	92.1
1933	–	51.8	97.3	84.7
1932	–	34.8	97.6	92.0
1931	–	53.7	167.8	123.1
1930	–	94.5	248.2	141.1
1929	–	146.8	293.4	164.8
1928	–	102.3	281.3	170.9
1927	–	72.4	243.7	140.7
1926	–	53.9	200.6	122.2
1925	–	41.7	173.0	115.0
1924	–	33.6	169.1	105.4
1923	–	33.0	158.6	107.6
1922	–	29.6	142.5	103.5
1921	–	26.8	130.2	103.9
1920	–	34.2	137.2	105.7
1919	–	29.7	157.6	110.6
1918	–	24.0	151.6	104.9
1917	–	23.9	166.6	106.6
1916	–	26.1	171.2	111.0
1915	–	20.4	160.8	114.0
1914	–	20.1	191.8	115.7

[1] Average of twelve month-end closing prices during year.

[2] Excluding mining stock index, 1914 to 1956.

Series J495-518. Gross and net new issues of securities[1], 1936 to 1976

(millions of dollars)

Year	Government of Canada						Provincial					
	Gross			Net			Gross			Net		
	Canadian dollars	Other currency	Total	Canadian dollars	Other currency	Total	Canadian dollars	Other currency	Total	Canadian dollars	Other currency	Total
	495	496	497	498	499	500	501	502	503	504	505	506
1976	6,137	–	6,137	2,590	-2	2,588	4,546	4,676	9,222	3,809	4,386	8,195
1975	6,129	–	6,129	3,434	-37	3,397	4,658	3,302	7,960	3,864	2,921	6,785
1974	9,057	–	9,057	3,317	-45	3,272	3,192	1,669	4,860	2,297	1,487	3,785
1973	3,138	–	3,138	-588	-90	-677	2,742	830	3,572	2,088	526	2,614
1972	3,470	–	3,470	1,270	-2	1,269	2,717	1,099	3,816	2,143	847	2,990
1971	5,208	–	5,208	2,344	-2	2,342	2,616	750	3,366	2,258	400	2,658
1970	4,359	–	4,359	1,224	-110	1,114	2,230	574	2,804	1,694	385	2,079
1969	6,424	16	6,440	255	14	269	1,619	1,074	2,693	977	977	1,953
1968	6,329	268	6,597	909	266	1,175	1,730	892	2,623	1,114	830	1,944
1967	3,694	–	3,694	820	-205	615	1,994	748	2,742	1,359	690	2,049
1966	4,159	–	4,159	415	-5	410	1,666	416	2,082	1,211	355	1,566
1965	2,874	–	2,874	-57	-5	-62	1,097	272	1,369	516	246	762
1964	3,383	–	3,383	557	–	557	977	416	1,393	582	356	938
1963	3,301	135	3,436	634	119	752	1,002	330	1,332	613	285	898
1962	3,307	135	3,442	425	96	521	1,118	113	1,231	591	96	687
1961	3,429	–	3,429	1,044	-55	990	1,137	33	1,170	940	5	946
1960	2,665	–	2,665	705	-1	704	675	93	768	455	25	480
1959	2,893	–	2,893	289	-149	141	556	336	889	313	249	562
1958	9,200	–	9,200	1,383	-2	1,382	559	166	725	469	144	613
1957	2,602	–	2,602	-52	-68	-120	632	133	765	504	44	547
1956	1,527	–	1,527	-500	-116	-616	420	214	635	348	191	540
1955	1,370	–	1,370	399	-60	340	371	–	371	260	-50	210
1954	3,400	–	3,400	-298	-3	-301	380	116	496	246	47	293
1953	2,033	–	2,033	457	-6	451	251	140	391	160	111	272
1952	827	–	827	-122	-2	-124	355	93	448	248	58	306
1951	578	–	578	-315	-53	-368	149	270	419	28	221	250
1950	2,108	62	2,170	-28	-73	-101	316	93	409	168	-9	159
1949	721	100	821	-406	12	-393	464	–	464	361	-30	331
1948	1,085	290	1,375	-392	148	-243	344	–	344	232	-33	199
1947	366	–	366	-257	-30	-288	442	7	449	324	-61	263
1946	914	–	914	220	-153	67	133	–	133	30	-32	-2
1945	3,636	–	3,636	3,536	-46	3,491	109	70	178	-6	-10	-16
1944	3,129	–	3,129	2,686	-65	2,621	69	32	101	-23	-21	-44
1943	2,950	99	3,050	2,634	-139	2,494	131	18	148	22	-24	-2
1942	2,069	–	2,069	1,820	-172	1,648	121	23	143	15	-70	-54
1941	925	11	936	743	-206	537	81	1	82	10	-31	-21
1940	609	–	609	457	-128	329	169	–	169	83	-10	73
1939	185	20	205	70	-56	14	106	48	154	56	-1	55
1938	190	89	278	84	-9	75	120	–	120	65	-13	52
1937	249	85	334	5	-10	-5	168	10	177	88	-22	66
1936	315	88	403	175	-26	150	118	–	118	76	-23	53

Series J495-518. Gross and net new issues of securities[1], 1936 to 1976 (concluded)
(millions of dollars)

Year	Municipal						Corporate					
	Gross			Net			Gross			Net		
	Canadian dollars	Other currency	Total	Canadian dollars	Other currency	Total	Canadian dollars	Other currency	Total	Canadian dollars	Other currency	Total
	507	508	509	510	511	512	513	514	515	516	517	518
1976	776	826	1,602	536	717	1,253	2,048	3,110	5,158	1,239	3,004	4,242
1975	882	535	1,417	642	479	1,121	3,227	795	4,022	2,293	621	2,915
1974	633	237	870	393	160	553	2,423	392	2,815	1,551	226	1,778
1973	627	111	738	370	29	399	2,135	162	2,297	1,578	-23	1,555
1972	632	147	779	374	72	445	2,215	254	2,468	1,551	71	1,623
1971	613	33	646	308	-50	259	2,345	286	2,631	1,786	49	1,834
1970	558	56	614	202	-26	176	1,650	546	2,196	1,131	362	1,494
1969	461	131	592	194	45	239	1,004	543	1,547	451	382	833
1968	411	124	535	214	73	288	936	508	1,444	436	298	734
1967	616	156	773	358	108	466	1,196	283	1,479	700	154	854
1966	519	158	678	280	69	349	917	684	1,601	404	566	970
1965	469	67	536	226	21	248	1,321	601	1,922	927	422	1,349
1964	553	151	704	285	115	401	1,006	314	1,320	573	214	787
1963	584	42	626	372	3	374	709	354	1,063	389	278	667
1962	451	58	509	223	21	244	591	273	864	226	178	404
1961	488	29	517	353	-20	333	602	268	870	196	149	345
1960	461	126	588	277	89	366	610	107	717	302	9	311
1959	395	120	514	218	84	302	418	57	475	86	13	99
1958	355	176	530	199	149	348	743	210	953	464	192	656
1957	287	127	414	176	103	279	787	410	1,197	555	387	942
1956	246	109	355	135	89	224	812	229	1,041	581	209	790
1955	302	43	344	214	19	234	689	9	698	369	-40	329
1954	298	46	344	211	30	241	588	88	676	367	54	422
1953	200	76	276	124	58	182	432	66	498	281	53	334
1952	183	48	231	111	40	151	434	148	582	239	135	374
1951	–	–	–	–	–	–	430	11	441	306	-9	296
1950	–	–	–	–	–	–	491	25	516	350	–	350
1949	–	–	–	–	–	–	314	–	314	184	-12	172
1948	–	–	–	–	–	–	354	–	354	268	-11	257
1947	–	–	–	–	–	–	507	6	513	320	-165	155
1946	–	–	–	–	–	–	410	176	586	131	-134	-3
1945	–	–	–	–	–	–	131	57	189	53	-55	-2
1944	–	–	–	–	–	–	76	67	143	-22	-21	-43
1943	–	–	–	–	–	–	34	27	61	-30	-36	-66
1942	–	–	–	–	–	–	43	13	55	-17	-149	-167
1941	–	–	–	–	–	–	20	2	22	-39	-30	-70
1940	–	–	–	–	–	–	45	5	50	-34	-38	-72
1939	–	–	–	–	–	–	193	65	257	112	-138	-26
1938	–	–	–	–	–	–	77	13	90	48	-36	12
1937	–	–	–	–	–	–	123	25	148	92	-90	2
1936	–	–	–	–	–	–	221	36	257	182	-164	18

[1] Excluding treasury bills.

J428-446. Life insurance, 1959 to 1976

SOURCE: special tabulations prepared in Business Finance Division, Statistics Canada.

These series were assembled from the annual reports of the federal Department of Insurance which covered all federally registered companies and societies and from the annual reports of the Superintendent of Insurance for Ontario which provided data for all large provincial companies and societies. This approach means that some provincial companies and societies which do not operate in Ontario were missed, but this omission should not have a significant impact on the figures. In the case of the federal companies, *Financial Flow Accounts, Volume* II, was used. While this book splits out the out-of-Canada asset data, it does not provide any out-of-Canada data on liabilities; however, reference to the quarterly survey for 1976 and 1977 shows that out-of-Canada liabilities are just under 90 per cent of out-of-Canada assets. The out-of-Canada business of provincial companies is small and since it was not readily available, it was ignored.

In respect of share capital and contributed surplus, the share capital only was available from federal companies, contributed surplus was not shown. In the summary reports on provincial companies no share capital and contributed surplus data were available. Consequently, share capital, contributed surplus, retained earnings and head office accounts (of British and foreign companies and societies) have been combined under the term 'Equity'.

A number of series on Canadian, British and foreign life insurance companies, from 1888 to 1959, are given in the first edition of this volume (series H373-408).

J447-470. Property and casualty insurance companies, 1966 to 1976

SOURCE: same as series J273-309.

Bond and Stock Yields, Net New Issues of Securities and Foreign Exchange Rates (Series J471-567)

J471-480. Bond and stock yields, annual averages, 1934 to 1977

SOURCE: *Bank of Canada Review,* table 20 (for bond yields), table 37 (for stock dividend yields).

See also the footnotes to series J471-480.

J481-494. Indexes of common stock prices, 1914 to 1977

SOURCE: Toronto Stock Exchange, *Monthly Reports,* December, 1935 to December 1977, and TSE *300 Index of Stock Prices and Supplements.*

The classification from 1956 to 1977 contains more groups than that from 1914 to 1956. Hence the table is shown in two parts. The data in the older part are simply reproduced from the first edition of this volume. See also the footnotes to series J481-494.

J495-518. Gross and net new issues of securities, 1936 to 1976

SOURCE: *Bank of Canada Review,* tables 29 and 30, from 1970 to 1978. Earlier data from Bank of Canada *Statistical Summary* and its former annual *Supplement.*

J519-534. Summary of total bonds outstanding, 1935 to 1976

SOURCE: Bank of Canada, Department of Banking and Financial Analysis.

J535-551. Net new security issues by type of security, 1936 to 1977

SOURCE: same as series J519-534.

J552-559. Net new security issues payable in foreign currencies, 1936 to 1977

SOURCE: same as series J519-534.

J560-567. Foreign exchange rates, 1913 to 1977

SOURCE: *Bank of Canada Review,* table 65.

These are annual averages of daily noon spot rates on the inter-bank market. British currency exchange rate is based on nominal quotations in terms of U.S. dollars converted to Canadian dollars.

Year-end Financial Assets and Liabilities According to the Financial Flow Accounts (Series J568-875)

The tables which follow are taken from Statistics Canada, *Financial Flow Accounts, Volume* II, *1961-1976,* (Catalogue 13-563). There are two tables for each sector, the year-end outstandings and the financial flows during the year. The flows are not the exact difference between any two adjacent year-end outstandings because of revaluations of assets, adjustments of liabilities, changes in corporate structure and other causes. However, both sets of data come from the same basic questionnaires of the Financial Flows Division. Explanatory notes may be found in the introduction to the above publication, and in an article in the *Canadian Statistical Review,* July 1976.

Both the sectors and the categories have been condensed herein to show the main headings only. The sectors are as follows: I and II: Persons and unincorporated business; III: Non-financial private corporations; IV: Non-financial government enterprises; V: The monetary authorities; VI: Banks and near-banks; VII: Insurance companies and pension funds; VIII: Other private financial institutions; IX: Public financial institutions; X: Federal government; XI: Provincial and local governments and hospitals; XII: Social security funds; and XIII: Rest of the world.

The main categories of assets and liabilities will be found in the column headings of the tables and are broadly similar from sector to sector.

The relationship between the national accounts figures on saving and non-financial investment and the flow-of-funds data on changes in financial assets and liabilities is shown in the first four columns of each flow table. The 'statistical discrepancy' between the above two sets of data is shown in the fifth column of each flow table.

J1-10. Currency and chartered bank deposits, 1913 to 1977

(millions of dollars)

Currency outside banks			Chartered bank deposits (less float)				Total		Float
Notes	Coin	Total	Personal savings	Government of Canada	Other (less float)	Total (less float)	Including Government of Canada	Excluding Government of Canada	
1	2	3	4	5	6	7	8	9	10
7,268	826	8,094	44,948	4,733	36,579	86,259	94,353	89,618	2,411
6,573	760	7,333	40,478	3,103	31,880	75,461	82,794	79,691	1,350
6,079	708	6,787	33,237	3,663	27,359	64,259	71,046	67,383	2,614
5,213	656	5,868	29,789	4,682	21,784	56,255	62,124	57,442	2,542
4,620	589	5,209	24,604	2,361	19,220	46,186	51,395	49,034	2,379
4,056	518	4,574	19,949	2,407	16,892	39,248	43,822	41,415	1,480
3,506	488	3,993	17,783	2,239	14,572	34,594	38,587	36,348	1,017
3,106	461	3,568	16,615	1,257	10,972	28,845	32,412	31,155	1,044
2,903	434	3,337	15,030	1,308	9,540	25,877	29,214	27,906	1,459
2,660	399	3,060	13,622	669	10,507	24,798	27,858	27,188	1,582
2,494	335	2,829	11,760	618	9,096	21,473	24,302	23,685	1,190
2,296	293	2,589	10,248	919	7,741	18,908	21,497	20,578	1,108
2,153	266	2,419	9,725	797	7,201	17,723	20,142	19,345	871
2,025	229	2,254	8,935	696	6,164	15,795	18,049	17,353	902
1,886	198	2,084	8,443	914	5,623	14,980	17,064	16,150	1,119
1,817	177	1,994	7,932	564	5,193	13,689	15,683	15,119	1,010
1,800	158	1,959	7,618	588	4,998	13,205	15,163	14,575	981
1,732	144	1,876	7,215	510	4,313	12,037	13,914	13,404	884
1,705	128	1,832	6,900	404	4,057	11,360	13,193	12,789	919
1,660	121	1,781	6,844	319	4,303	11,466	13,247	12,927	1,224
1,555	112	1,667	6,108[2]	423	3,725[2]	10,256	11,923	11,500	1,151
1,498	108	1,605	6,007	246	3,580	9,833	11,438	11,192	1,330
1,449	101	1,550	5,633	517	3,697	9,847	11,397	10,880	1,002
1,362	96	1,458	5,218	176	3,462	8,856	10,314	10,137	827
1,335	94	1,430	4,756	473	3,130	8,359	9,789	9,316	752
1,289	88	1,377	4,600	49	3,281	7,930	9,307	9,258	706
1,191	84	1,275	4,296	88	3,100	7,484	8,759	8,671	489
1,136	78	1,214	4,176	257	3,116	7,549	8,763	8,506	430
1,110	74	1,184	4,086	164	2,776	7,026	8,210	8,046	291
1,115	70	1,185	3,752	236	2,725	6,713	7,898	7,662	359
1,046	66	1,112	3,453	216	2,455	6,124	7,236	7,020	322
1,031	65	1,096	3,179	281	2,482	5,942	7,038	6,757	298
992	63	1,055	2,635	846[2]	2,186[2]	5,667[2]	6,722[2]	5,878[2]	275[2]
930	60	990	2,173	707	2,022	4,902	5,892	5,185	243
794	55	849	1,698	577	1,815	4,090	4,939	4,362	266
633	49	681	1,423	314	1,660	3,397	4,078	3,764	210
450	42	492	1,474	74	1,362	2,910	3,402	3,328	198
341	38	379	1,451	21	1,161	2,633	3,012	2,991	172
247	34	281	1,551	99	1,064	2,714	2,995	2,896	136
207	31	238	1,660	64	658	2,382	2,620	2,556	116
207	30	237	1,583[2]	13[2]	661[2]	2,257[2]	2,494[2]	2,481[2]	130
191	29	220	1,548	25	622	2,195	2,415	2,390	128
170	28	198	1,486	12	591[2]	2,089[2]	2,287[2]	2,275[2]	120
157	27	184	1,407	24	517	1,948	2,132	2,108	102
151	26	177	1,357	33	457	1,847	2,024	1,991	86
144	27	171	1,378	53	417	1,848	2,019	1,966	80
160	27	187	1,360	111	496	1,967	2,154	2,043	102
163	25	188	1,426	27	548	2,001	2,189	2,162	127
187	26	213	1,434	60	624	2,118	2,331	2,271	152
193	25	218	1,520	46	582	2,148	2,366	2,320	167
192	24	216	1,445	43	581	2,068	2,284	2,241	136
190	23	213	1,373	16	512	1,901	2,114	2,098	124
176	23	199	1,319	22	502	1,843	2,042	2,020	130
177	23	200	1,238	25	498	1,761	1,961	1,936	151
187	23	210	1,180	38	484	1,702	1,912	1,874	133
184	23	207	1,185	19	464	1,668	1,875	1,856	117
191	23	214	1,241	34	471	1,746	1,960	1,926	109
235	23	258	1,293	10	540	1,843	2,101	2,091	150
237	22	259	1,138	121	590	1,849	2,108	1,987	146
229	21	250	958	148	620	1,726	1,976	1,828	116
200	19	219	996	18	501	1,515	1,734	1,716	96
157	17	174	845	18	408	1,271	1,445	1,427	77
131	16	147	721	26	397	1,144	1,291	1,265	64
113	16	129	663	11	329	1,003	1,132	1,121	49
117	15	132	625	9	351	985	1,117	1,108	61

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[2] Change in definition. See text.

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Profesor Ernesto Herzberg

Dear Ernesto:

When you first invited me to speak at your University, I was pleased to be able to accept. And when you and Profesor Jesus... met with me and discussed my research on exchange rates in order to get me to submit a research proposal through your department, I complied once again. In spite of my heavy schedule in Mexico, I wrote up and transmitted to you my proposal for research on the exchange rate in Mexico.

Once you received my proposal, I heard nothing further from you. After several months of complete silence, I contacted you by telephone. You promised to have someone get in touch with me, but neither you nor anyone else did so. Several subsequent phone calls were similarly ignored, until this last one, which you responded to by leaving a cursorily message with the depatmental secretary, to the effect that the project is off. At no time have you tried to reach me directly, or to write to me to explain what has been going on.

I must say I find this behavior astonishing. It is so lacking in the courtesy ~~which I have found to be~~ characteristic of Mexico, that it leaves me quite at a loss to explain it. Need I say that I have no intention of having any further contact with your department?

There is one important matter which remains to be settled. The project I wrote up for you is my proprietary work, based on my ongoing research. I trust that you understand that it cannot be used by anyone else, as part of any other grant. Since it is going to be undertaken through another University in Mexico, I would like you to return my original proposal (in English) and all translations which have been made of it. Please send them back immediately.

Anwar M. Shaikh
Chairman
Department of Economics
Graduate Faculty
New School for Social Research

cc. Dean ...

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Canadian Journal of Economics XVII No. 2 May 1984

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I strongly recommend Pasinetti's concept of vertically integrated sectors and his criticism of Leontief interindustry input-output and von Neumann analysis. His concept is, I believe, an important addition to our analytical weaponry, but it must be fleshed out with a much better theory of institutional forms, such as firms and multi-activity establishments.

I do not recommend the chapters on business cycles (or structural dynamics) or international trade – the level and quality of analysis falls precipitously.

Although I have been critical, I would say that Pasinetti's book is one of the most demanding and interesting theoretical treatises on growth and capital accumulation I have read. I would repeat that his discussion of technological progress, in particular the effects that such progress has on the traditional theory of choice, is the most penetrating section of the book. As a part of the 'Cambridge critique of traditional economics,' I would again point out that this criticism has nothing whatever to do with capital aggregation but is directed at full general equilibrium theoretical analysis. The concept of waiting, which Pasinetti rejects, raises the fundamental question of the difference between subjective and objective theories of cost. As do most his writings, Pasinetti's treatise raises theoretical work to new and demanding levels.

THOMAS K. RYMES / Carleton University (on sabbatical leave at The Australian National University)

A General Theory of Exploitation and Class by John E. Roemer. Harvard University Press, 1982. Pp. ix, 297. Index. Bibliography. ISBN 0-674-34440-5

With the publication of his *Analytical Foundations of Marxian Economic Theory* (1981), John Roemer established his position as one of the new breed of Marxian economists able to combine mathematical rigour with an undenied *parti pris*. Employing general equilibrium theory and fixed point theorems, he proceeded through linear Leontief models and convex production sets to explore the robustness of familiar Marxian economic stories – the 'fundamental Marxian Theory,' the falling rate of profit, the law of value and the transformation problem, and theories of crisis. Many of the old standards were to be counted as casualties of Roemer's models; left standing, however, was the labour theory of value as a measure of exploitation.

Now, with *A General Theory of Exploitation and Class*, Roemer has continued his long march through Marxian economic theory. The goal here, already identified in the earlier book, is the necessity for Marxists to 'extend the theory of exploitation so as to be able to evaluate whether exploitation can exist under socialism' (1981, 6). Thus, two tasks are undertaken in the book under review – that of classifying 'modern socialist states in the taxonomy of historical materialism' and also the 'embedding of the Marxian theory of exploitation into a more general theory' (1982, 1). As we have come to expect from Roemer, the models and techniques deployed are elegant, the casualty toll for Marxian theories is high – and the results are controversial.

Part III, then, is the site of Roemer's reconstruction, containing a general theory of exploitation, consideration of exploitation in existing socialism and the reconciliation with the theory of historical materialism. And, now, the paradigm that comes explicitly to the fore is property rights, with exploitation defined through a game-theoretical approach. Roemer proposes that a group may be defined as exploited if a potential alternative exists in which it would be better off (and its complement, the exploiting coalition, would be worse off). Thus, the test of exploitation is the ability of the exploited coalition to withdraw from the existing game (under the specified withdrawal rules) and to select a superior alternative.

Accordingly, since feudal bondage imposed the necessity for the serf to perform desmesne labour despite his access to his own means of production, the test for feudal exploitation would be the potential ability of a coalition of serfs to withdraw from bondage with its own endowments and to improve its welfare in an economy where only private property exists. Feudal exploitation, then, results from specifically feudal relations; it is marked by allocations where agents receive less than their marginal product (Roemer's apposite comment on the historical specificity of neoclassical welfare judgments).

For capitalism, on the other hand, rather than unequal access to personal freedom, the source of inequality is unequal access to alienable property (non-human means of production). A new withdrawal rule must be specified. Therefore, Roemer defines the appropriate test of capitalist exploitation as one in which a coalition could withdraw with its *per capita* share of means of production (i.e., if property relations in alienable property were abolished) and improve its welfare. Yet this test, he demonstrates, is *precisely the equivalent of Marxian exploitation (surplus labour theory) in the special case of identical labour endowments*. Marxian exploitation is thus revealed as a special case of capitalist exploitation, the form of exploitation inherent in specifically capitalist property relations.

All this brings us, finally, to socialist exploitation – to the inequality characteristic of a society in which private property in alienable assets (and thus capitalist exploitation) no longer exists but where *inalienable* assets (skills) are possessed by individuals. (The test for socialist exploitation is that a coalition be able to improve its position by withdrawing with its per capita share of society's inalienable assets.) Socialist exploitation is revealed to exist where individuals relate to each other as owners of differential labour-powers; its elimination is not the historic task of socialism but, rather, of a further stage (that of communism). To each according to his contribution.

The taxonomic exercise now completed, Roemer turns briefly to a consideration of actually existing socialism. Does 'this simple picture give an adequate representation of inequality and exploitation in existing socialism'? The answer is yes and no. Yes, because what we find is socialist exploitation and not capitalist exploitation (a point which Roemer is particularly anxious to demonstrate). No, because there is something else present in existing socialist societies for which a concept has not been developed – *status exploitation*, inequality derived from special privilege and position within the bureaucracy. Is this status exploitation (with its echoes of feudal

The argument begins simply enough. Starting with a pre-capitalist economy of simple commodity production using a Leontief-type technology, Roemer models a series of reproducible solutions (similar to Marx's concept of simple reproduction) for an egalitarian economy, a communal economy with stocks and an economy with private and differential ownership of stocks. In the last of these cases, he finds that some producers will work less than socially necessary labour time, that others will work more than this level and that the former benefit at the expense of the latter. This phenomenon, which corresponds to stock ownership and thus the capital intensivity of techniques feasible for individual producers, Roemer designates as exploitation. Thus, even in the absence of a labour market, this Marxian-like exploitation in which some agents appropriate the surplus labour time of others is found to be present; since all producers here are entirely in control of their own labour in the production process, this finding is said to call into question the 'fundamentalist' notion that exploitation occurs only at the point of production. Right at the outset, then, the focus for Roemer shifts away from relations within the production process to private ownership of means of production, from productive relations to property relations.

Chapter 2 introduces a labour market – the buying and selling of labour-power – into this model. Here Roemer demonstrates within the model his Class Exploitation Correspondence Principle (CECP) – that, as a consequence of optimizing behaviour, producers with low endowments (wealth) will sell labour power and will be exploited whereas those with high endowments will hire labour power and will be exploiters. This principle (which also considers intermediate classes) appears, then, to salvage the Marxian contention that classes (if not exploitation) require as a condition of existence the presence of a labour market. However, there is scant comfort here for fundamentalists, since in the following chapter Roemer proceeds to show that the introduction of a credit market (rather than a labour market) generates a functionally equivalent solution. His isomorphism theorem states 'truly, that it does not matter whether labour hires capital or capital hires labour: the poor are exploited and the rich exploit in either case' (93). CECP, in short, holds here; and again we see that the 'fundamental feature of capitalist exploitation is not what happens in the labour process, but the differential ownership of productive assets' (94–5).

Part II moves from simple reproduction models to extended reproduction (an accumulating economy), and here Roemer's principal concern is to establish the validity of CECP for more complex models. Thus, he introduces a general conical technology and again finds that CECP holds; to establish this result, however, the received doctrine of labour value as technically determined must be jettisoned and replaced by a concept of labour value dependent on equilibrium price – a position that he identifies as 'even more heretical' than the view of prices and values as alternative accounting systems emanating from the technical conditions of production. Finally, even more complicating is the consideration of differential endowments of homogeneous labour and that of heterogeneous labour. In the latter case, Roemer finds that an acceptable version of CECP based on a labour theory of exploitation (Marxian exploitation) can *not* be preserved. Thus, another casualty – the last survivor.

exploitation) 'socially necessary' – in that its attempted elimination will leave the exploited agents worse off? The verdict is not yet in.

In the end, there is historical materialism; history progresses by the successive elimination of forms of exploitation as they become socially unnecessary, as the property relations which engender them become fetters and the exploited classes claim their appropriate dowries. In the end, the account is traditional, perhaps even fundamentalist. Even our old friend, Marxian exploitation (the labour theory of exploitation), appears to re-emerge as the appropriate measure of capitalist exploitation – since heterogeneous labour is the basis of *socialist* exploitation (within capitalism).

There are enough sparks here to ignite many prairie fires. Some may wish to explore the inherent theory of justice, the implied labour / leisure trade-offs, the consistency of a concept of socially necessary exploitation – or any number of particular issues that Roemer admirably crystallizes. Yet it would seem that the most appropriate questions pertain to Roemer's two avowed goals – the embedding of Marxian theory in a general theory and the development of insight into the character of modern socialist states.

Here the results are questionable. The problems begin with the assumption that a unit of labour-power exudes a certain quantity of labour (i.e., the quality and intensity of labour are presumably given technically) and this holds whether the worker works for self, for feudal lord, for capitalist, or in a socialist collective. With this assumption Roemer's model assumes away the content of the Marxian distinction between labour-power and labour (and thus a central characteristic of Marxian theory). Roemer's workers within capitalism are simply owners of labour-power. They contract for the sale of their commodity (engaging presumably in extensive class struggle over the terms of the contract), and that is all. Labour is then rendered like every other inert input in the process of production, and it may be easily demonstrated that it is no more exploited than any other inert input (185–8).

What is lost here, of course, is the Marxian understanding that, unlike other contracts, the contract for this particular input is not concluded outside the production process. The quantity of labour secured is necessarily indeterminate, and it is only the continuous existence of compulsion, and resistance to compulsion, which determines the final term of that contract. Thus, what disappears in Roemer's model is capitalist relations of production, and it disappears by assumption. Production is here a black box. Exploitation (by assumption) takes place outside production, in the sphere of exchange. But it is not Marxian exploitation. What Roemer captures in his model is *rent*. Thus, it is not at all surprising that he discovers his Marxian-like exploitation in simple commodity production without the existence of a labour market, that he proposes his isomorphism theorem (of long neoclassical vintage for similar reasons) or that he designates income differences deriving from skill differentials as socialist *exploitation*.

Just as Roemer assumes away the worker as producer and treats him only as property owner, so also is the complementary surgical operation performed upon the capitalist. The counterparts of inert labour inputs are Roemer's capitalists, the owners

of other inert inputs, who are explicitly modelled 'simply as owning resources, rather than as the vessels of entrepreneurial talent' (205). They require no special skills to extract labour from labour-power (redundant in the model), to increase the difficulty of forming coalitions against them, to direct the production process as a whole. They are 'coupon-clippers' rather than 'entrepreneurs,' a distinction corresponding to Marx's division between the money-capitalist (the juridical owner) and the functioning capitalist. For Marx, both were aspects of the capitalist (although increasingly separated in actuality); and it was in the latter capacity that the capitalist actually exploited.

With the euthanasia, then, of the mere money-capitalist (the abolition of private property rights in means of production) in Roemer's model, there remains only a heterogeneous body of producers, with property rights in differential skills, who engage in horizontal transactions. Hierarchy and authority in production, the power and skill to direct production (i.e., to direct people within production), the entire *vertical* dimension is absent, because it was never part of the model. Would recognition of this dimension require yet a new category – 'techno-bureaucratic exploitation,' deriving from unequal access to the direction of the production process in an étatist society? Neither socialist exploitation (which pertains to the scarce scientist but not the bureaucrat) nor status exploitation (which, aside from its ad hoc character, is suggestive of aberrant, contingent corruption) seem sufficient to capture the hierarchical character of actually existing socialist countries. Certainly, the inequalities and rents of Roemer's socialist exploitation evade the real questions of modern socialist states, and the root of the problem emerges in the focus upon property relations rather than productive relations.

On his two chosen tasks, therefore, we must suggest that there are serious reasons to question Roemer's success and that the problems are linked. Yet, while the casualty tolls for Marxian economic theory may be inflated, there should be little doubt that Roemer has in this book taken the consideration of exploitation on to a new, promising terrain.

MICHAEL A. LEBOWITZ / Simon Fraser University

Topics

12/19/90

Chaos, Crisis, Rationality & Irrationality

- The main point of the theory of chaos is that the same "behavior" can under ~~a given~~ some conditions give rise to order, & under conditions give rise to disorder. ~~Does~~

- Crisis can be viewed as such a "phase change"

- Stress displaces the rational onto the irrational (even in personal psychology)

- In historical terms, there is a recurrence of the theme of social "irrationality" (as in 1920's — (+ speculation, bubbles, conspicuous consumption

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THE ONE-SIDEDNESS OF *CAPITAL*

by Michael A. Lebowitz

ABSTRACT: Contrary to Rosdolsky (and most analysts), Marx's proposed book on wage-labor was not incorporated into *Capital*. As a result, *Capital* does not develop an adequate totality, an organic whole, in which all presuppositions are results. The production of wage-labor, upon which the reproduction of capital depends, stands outside capital as a presupposition but not a result. With the logical development of the side of wage-labor, an adequate totality (capitalism as a whole) may be constructed which is characterized by "the worker's own need for development" as well as by capital's need for valorization—*i.e.*, by two-sided class struggle.

Implications of the one-sidedness of *Capital* itself are explored—including the inadequacies which have produced proposals to abandon the concept of labor-power as a commodity.

I. Wage-Labor: The Missing Book[a]

Dialectical logic demands that a thing be understood in its *connections* and not by itself. How, then, are we to understand *Capital*? In his original outline, Marx projected a study encompassing six books: capital, landed property, wage-labor, the state, international trade and the world market.[1] How, then, are we to understand *Capital*?

One *might* propose that the original outline was transcended, that its core was to be in the first three books—and, that the subject matter intended for the volumes on landed property and wage-labor was ultimately incorporated in *Capital*. This is the position of students such as Rosdolsky—for whom, then, the question of missing books and, thus, the incompleteness and inadequacy of *Capital* is a matter of little concern:

> However, the basic themes of the books on landed property and wage-labor were incorporated in the manuscripts of Volumes I and III of the final work, which took shape between 1864 and 1866. In this way the six books which were originally planned were reduced to one—the *Book on Capital*.[2]

(a) The core of this article appeared in a paper, "Capital as Finite," presented to the Conference on Marx, sponsored by the Department of Philosophy, University of Victoria, B.C. in October 1980.

Certainly, we have Marx's own testimony on the incorporation of themes from "landed property" into *Capital*.[3] But, no such evidence is apparently available when it comes to the projected volume on wage-labor; it is through a process of inference that Rosdolsky, for example, concludes that "all the themes of the earlier book on wage-labor come into the scope of Volume I" of *Capital*.[4] Yet, how strong is the basis for this critical conclusion?

Rosdolsky's basic argument is that the discussion of the wage and its forms, which was not part of the original plan for the book on capital but which constitutes Part VI of Volume I of *Capital*, was the "main part" of the proposed book on wage-labor; sometime not before 1864, he suggests, Marx made the decision to bring this material into *Capital* and to abandon his original outline.[5] However, it is not at all clear that the material which appeared in *Capital*—if it indeed was intended originally for the book on wage-labor—constituted "all the themes" or even "the basic themes" of the projected book on wage-labor. Indeed, Rosdolsky proceeded to contradict his own argument subsequently when considering Marx's assumption in *Capital* that the standard of necessaries for workers was to be treated as constant; no, he argued, this did not mean that the "average quantity of necessary means of subsistence" could not grow:

> Marx would have first dealt with this case in his intended "special theory of wage-labor" if he had ever reached the point of carrying out this part of his plan.[6]

Certainly, here is a critical flaw in the argument that the basic themes of the book on wage-labor were incorporated in *Capital*. Marx's extended discussions of the manner in which capital generates new needs for workers, the examination of changes in the standard of necessity for workers— all these were deferred *explicitly* by Marx until the book on wage-labor in order to avoid "confounding everything."[7] As late as 1864-5, in his notebooks for the "original chapter six" of *Capital* (a

work apparently not available to Rosdolsky), Marx noted:

> Man is distinguished from all other animals by the limitless and flexible nature of his needs ... The level of necessaries of life whose total value constitutes the value of labor-power can itself rise or fall. The analysis of these variations, however, belongs not here but in the theory of wages.[8]

None of this, of course, was ever incorporated in *Capital*—the standard of necessity there is assumed as given, given for a "given country, at a given period." Here, then, is one theme—perhaps even a basic theme—which did *not* come into the scope of *Capital*.

Now, this silence is important to recognize in itself; it reveals that *Capital* cannot be the source for a discussion of Marx's view of the course of real wages over time. Contrary to Joan Robinson's interpretation, Marx did not make the "argument that real wages tend to be constant;" it was an *assumption* to be removed in the book on wage-labor which remained unwritten.[9] But, there is an even more fundamental question posed—how much *else* did not get incorporated into *Capital*? In short, *what was to be included in the volume on wage-labor*? If there were essential themes intended for *Wage-Labor*, then to what extent must *Capital* by itself be judged to be incomplete and inadequate? Given the recent argument in this journal by Bowles and Gintis which proposes to rectify the inadequacy of *Capital* by jettisoning, among other things, the concept of labor-power as a commodity and labor as the use-value of labor-power, it is critical to explore the extent to which the site of the problem is the "missing book."[10]

Of course, the very question of a missing book would not in itself be sufficient for us to conclude that *Capital* was inadequate. We would have to grasp "exactly which themes were to come under the scope of the *Book on Wage-Labor*." But, we can not follow Rosdolsky in relying chiefly on a comparison of the *Grundrisse* with *Capital*.[11] Such a reconstruction would be nothing more than an eclectic compilation of extrinsic quotations; it would amount to a confession of inability to understand and *apply* Marx's method of dialectical logic. We need to know more about what *necessarily* would be in the volume on wage-labor; similarly, we need a standard by which to identify inadequacy. For both purposes, it is necessary to turn to *Capital* itself and to consider it logically.

II. Capital as Inadequate[(b)]

For *Capital*, the book, to be adequate, it must establish capital, the relation, as adequate. Capital must be established as a totality, an organic whole, in which all presuppositions are shown to be results, in which "everything posited is thus also a presupposition, this is the case with every organic system."[12] Through a process of deduction, the logical interconnection of all parts of the whole must be demonstrated, thereby permitting no elements to appear as external, extrinsic, independent, indifferent, exogenous to the system—but, rather, as "distinctions within a unity." In this manner, the intrinsic tendencies, the immanent laws, of the totality can be ascertained; and, this establishment of the inner, the essence, must precede the investigation and elaboration of the necessary forms of existence of the totality, the "multiplicity of its outward forms," and also the manner in which the inner tendencies are manifested and executed on the surface.

Now, this is not an assertation of the requirements of science—because that issue is not my concern here; it is merely an account of what Marx did in *Capital*. Marx's purpose was precisely to present capital as a whole, capital as a totality, in which the "intrinsic connection existing between economic categories or the obscure structure of the bourgeois economic system" would be revealed, and the means of developing that totality was a process of dialectical reasoning to ensure that "intermediate links" were not left out.[13]

While we cannot here trace in detail all the steps involved in the construction of the totality in *Capital*, it is sufficient to review the key moments in the process. Beginning with the commodity, the elementary form of wealth in capitalist society, Marx proceeded to analyze this particular concrete, a product of labor which was sold, and discovered that it contained a distinction—that it was, on the one hand, a use-value and, on the other, a value. Reasoning further, he concluded that the very concept of the commodity contained latent within it the concept of money—that the commodity was in and for itself only in exchange, only by passing into money, the independent expression of value. For the commodity as such to exist, it required that value take an independent form, and this is "achieved by the differentiation of commodities into commodities and money."[14] The distinction between use-value and value, inherent in the commodity, thus was expressed externally by the opposition between commodity and money.[15]

As independent value, money (the Other of Commodity) is also use-value, the power to represent and realize the value of all commodities, to be exchanged for all commodities; it is this which permits it to act as mediator for commodities (C-M-C). Yet, latent in money is that it can be an end in itself, that money as wealth can be a

(b) Discussion of the dialectics of capital draws upon my "Marx's Methodological Project" [Lebowitz 1980]. It is certainly not the only dialectical reading of *Capital*, and readers of this journal are likely to be familiar with that of Harry Cleaver [Cleaver 1979]. Another, unfortunately neglected treatment—and one which was a stimulus in directing me to Hegel and Lenin's appreciation of Hegel—is Raya Dunayevskaya's *Marxism and Freedom* [Dunayevskaya 1964]. Where my argument differs from these and others is that the discussion of *Capital* here is intended to demonstrate its inadequacy.

goal—for which the commodity is mediator and vanishing moment. Money for itself (M-C-M′), however, is merely value; in the movement of money as wealth, value is common and present in all forms—"both the money and the commodity function only as different modes of existence of value itself."[16] It is value-for-itself which moves through the forms of money and commodity in this process, which is the subject of this process. For self-expanding value, self-valorizing value, value-for-itself, commodity and money are mediators, vanishing moments, mere forms in a specific unity which is capital. Money, thus, is for itself only by passing into capital, self-expanding value; it differentiates itself into money which is spent and money which is advanced, into money as money and money as capital.

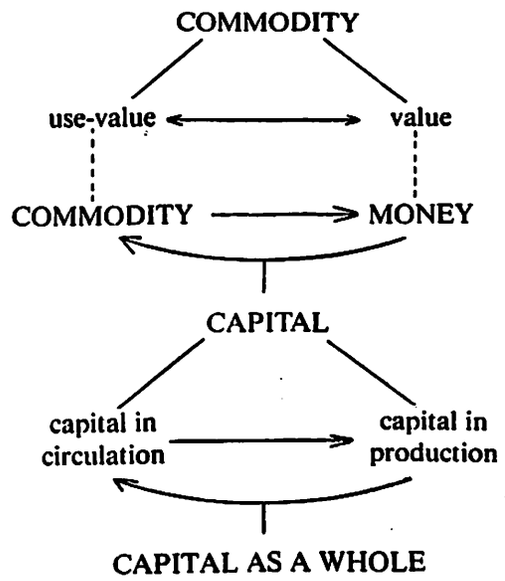
Considering capital, Marx concluded that it *too* contained a distinction. Encountered initially as a unity of commodity and money, as capital in the sphere of circulation, capital was shown to require (in order to exist as self-expanding value) a process which lay beyond circulation itself—a process of production; capital, thus, differentiates into capital in circulation and capital in production. Capital must leave the sphere of circulation and enter into that of production; and, it is in this latter sphere that we see capital, as self-valorizing value, generate the production of surplus value and secure the production of commodities containing surplus value. However, this surplus value in the commodity-form is only latent; to be made real, capital must return to the sphere of circulation and the commodity must be exchanged for money. Capital must always return to circulation, the point of departure. Capital in production is a mediator for capital in circulation. Yet, in turn, capital in circulation is a mediator for capital in production; capital can only grow by passing through circulation. The two processes are opposites, are mutually exclusive, are necessary to each other—and, indeed, are a specific unity, capital as a whole.[17] Capital as a whole, capital as totality, takes the forms of capital in circulation and capital in production—just as it takes those of commodity and money. (The steps in the construction of this totality may be seen in Figure I.)

Capital as a whole, thus, is the totality which Marx constructs in *Capital*; it is this unity of production and circulation whose moments are clearly set out in the titles of the three volumes of *Capital*. As this totality, capital must move through a continuing circuit, which can be expressed in several ways. Seen as the circuit of money-capital, we begin with money-capital (M) purchasing as commodities (C) both means of production (Mp) and labor-power (Lp); there is an intervening process of production (P) after which commodities containing surplus value are produced (C′) which must be sold (C′-M′) in order to return to the money-capital form:

$$M—C\begin{matrix}Mp\\Lp\end{matrix}\ \ldots P \ldots C' - M'.$$

FIGURE I:

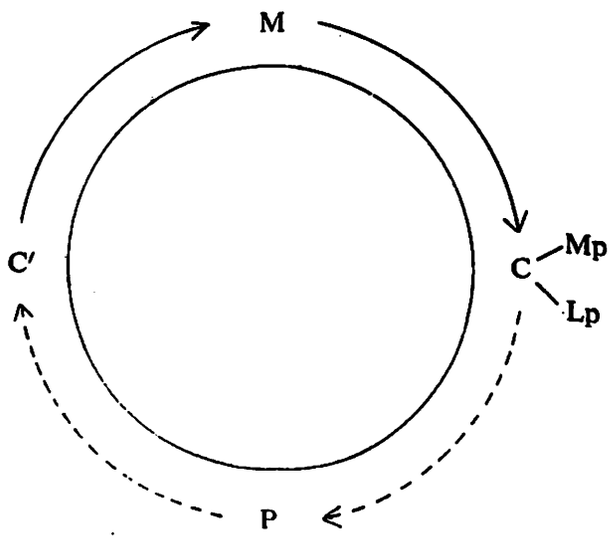
THE CONSTRUCTION OF CAPITAL AS A TOTALITY



Alternatively, the circuit may be viewed as one of productive capital (beginning and ending with P) or as one of commodity-capital (beginning and ending with C′). However, all particular forms of the circuit were inadequate and one-sided: the circuit of capital had to be understood as all forms simultaneously and was best conceived as a "circle" (as depicted in Figure II).

FIGURE II:

THE CIRCUIT OF CAPITAL AS A WHOLE



Considering, then, the circuit of capital as a whole, Marx observed that "all premises of the process appear as its result, as a premise produced by it itself. Every element appears as a point of departure, of transit and of return."[18] In short, all presuppositions, all preconditions, all premises are themselves results within the circuit of capital—that is precisely the nature of capital understood as a totality, capital as process of reproduction:

> In a constantly revolving circle every point is simultaneously a point of departure and a point of return....The reproduction of capital in each one of its forms and stages is just as continuous as the metamorphosis of these forms and the successive passage through the three stages.[19]

In short, reproduction (understood as the reproduction both of material products and of relations of production) is the central concept of the organic whole, of capital as totality. The reproduction models with which Marx ends Volume II of *Capital* in which the two departments of production (means of production and articles of consumption) are shown to produce the requirements for reproduction, the presuppositions, are precisely a view of capital as whole, of capital as a unity of production and circulation. Similarily, the very concept of simple reproduction is that of the organic whole. As Marx noted in the opening lines of Chapter 23 in Volume I, the chapter on "Simple Reproduction:"

> Whatever the social form of the production process, it has to be continous, it must periodically repeat the same phases. A society can no more cease to produce than it can cease to consume. When viewed, therefore, as a connected whole, and in the constant flux of its incessant renewal, every social process of production is at the same time a process of reproduction.[20]

Thus, capital understood as a totality, an interconnected whole, produces and reproduces material products and social relations—which are themselves presuppositions and premises of production. "These relations are on the one hand prerequisites, on the other hand results and creations of the capitalist process of production; they are produced and reproduced by it."[21] In short, we have in capital as a whole a closed social input-output system in which nothing is exogenous. And, now, having established capital as a whole, Marx proceeds to "locate and describe the concrete forms which grow out of the *movements of capital as a whole:*" it is now possible to "approach step by step the form which they assume on the surface of society."[22]

Yet, there is an obvious question (perhaps not so obvious unless the logical structure of *Capital* is clear): do we *really* have an adequate totality in capital as a whole? Is it really an organic whole in which all presuppositions are results, in which all points of departure are points of return? Or, *does capital as a whole itself contain a distinction,* one which will not permit us to stop here (or, rather, one which permits us to pause only for a moment)?

The answer to this obvious question is also obvious. Yes, there is an element which is not part of capital, which is not produced and reproduced by capital, which is a point of departure but not one of return in the circuit of capital, a presupposition which is not also a result of capital itself. And, it is one which is necessary for the reproduction of capital, which is required for the very existence of capital itself. The point is made clearly in Marx's chapter on Simple Reproduction:

> The maintenance and reproduction of the working class remains a necessary condition for the reproduction of capital. But the capitalist may safely leave this to the worker's drives for self-preservation and propagation.[23]

Yet, this point—that capital depends on something outside it, the production of the worker—is too important to rest solely on the extrinsic evidence of a single quotation (although there are others). If capital as a whole is not an adequate totality, then this should be clear from a closer examination of its reproduction, from an examination of its reproduction model and of the circuit of capital.

Consider first the model of simple reproduction in Volume II of *Capital*. Here we are presented with two departments of production: Department I (Means of Production) and Department II (Articles of Consumption). There are two inputs into production in each department—means of production and labor-power (and, thus, two component sources of value—constant capital and living labor—C + (V + S)); and, there are two outputs—means of production (Mp) and articles of consumption (Ac). One output, means of production, is also an input; it is both a result and a presupposition of production. The other output, articles of consumption, however, is not here an input; and, the other input, labor-power, is not here an output. The model, in fact, is not closed in itself: there are three variables (Mp, Ac, Lp) and only two processes of production.

If we consider the condition for simple reproduction, for equilibrium, which may be derived from this model, *i.e.*, that $C_2 = V_1 + S_1$, we may note that this condition does not meet the requirements for reproduction *if we specify that reproduction must entail the reproduction of a given number of required workers*. All that this condition specifies is that the number of workers in each department (or, alternatively, the quantity of new labor in each) must be *in a particular ratio;* in other words, it is consistent with different levels of total employment —with full employment equilibrium, below full employment equilibrium, etc.[24] In short, there is a "degree of freedom" which results precisely from the fact that the model is not closed, from the fact that a closed system requires a "third" department.

The same point may be demonstrated more graphically in relation to the circuit of capital as depicted in the form of a circle. First, we must recognize that the circuit as illustrated in Figure II is inadequate because it does not distinguish the two different types of commodities produced under capitalist relations—means of production and articles of consumption; this distinction, necessary for reproduction, must be introduced into the circuit if it is to represent truly the process of reproduction. Now, we see that the circuit includes both an exchange of money for means of production (M-Mp) and an exchange of means of production for money (Mp-M)—which are the same act viewed from different sides; means of production are clearly both a presupposition and a result within the circuit of capital.

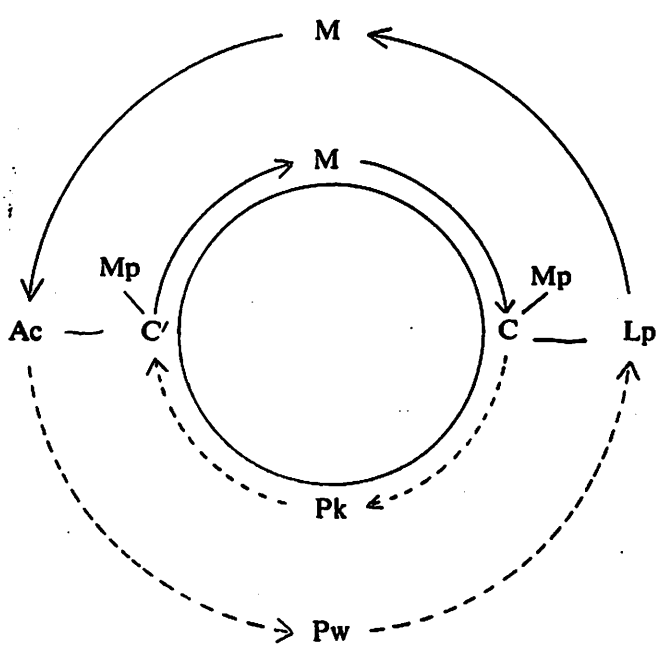
However, this point merely underlines the asymmetry (which has been hidden) between labor-power and articles of consumption: there is an exchange of money for labor-power (M-Lp) and an exchange of articles of consumption for money (Ac-M); labor-power is only a presupposition, and articles of consumption are only a result within the circuit of capital. Clearly, to have all presuppositions results and all results presuppositions, an additional relationship must be identified—that between articles of consumption and labor-power.

The first step in closing this system must be to recognize explicitly the metamorphosis within circulation which occurs as labor-power is exchanged for money which is in turn exchanged for articles of consumption (Lp-M-Ac); both parts of this metamorphosis have already been implied by the movements of capital within *its* circuit—M-Lp, Ac-M. Yet, this step is still inadequate because labor-power remains here a presupposition but not a result. We have here the consumption of labor-power but not its production and the production of articles of consumption but not their consumption. In short, the system can only be complete by positing another process of production, *a second moment of production* (Pw), distinct from the process of production of capital—one in which labor-power is produced in the course of consuming articles of consumption. *The circuit of capital implies a second circuit, the circuit of wage-labor (which is depicted in Figure III).*

The necessary existence of this second moment of production, the production of the worker (Pw), simply clarifies Marx's comment in the *Grundrisse* regarding the division of the entire circuit of capital into four moments: "each of the two great moments of the production process and the circulation process appears again in a duality." Two of these four moments were the moments of circulation (M-C, C′-M′), and a third was the capitalist production process. These three moments will be recognized as the moments within capital as a whole, within the circuit of capital. But, what was the fourth moment—the *other* process of production? Marx's comment was that this moment was to be seen as separate; it involved the exchange of variable capital for living labor capacity and here population was the "main thing." And, where was this second moment of production to be analysed? "Moment IV belongs in the section on wages, etc."[25]

FIGURE III:

THE CIRCUIT OF CAPITAL AND WAGE-LABOR



Capital as a whole, as a totality, does not accordingly include within it that which is a "necessary condition for the reproduction of capital"—the maintenance and reproduction of the working class. "The continous existence of the working class is necessary for the capitalist class, and so is therefore the consumption of the laborer made possible by M-C." But, this individual consumption of the laborer does not fall within the circuit of capital; only the productive consumption, the process of production of capital, does.[26]

Thus, capital as a whole is *not* the adequate totality in which all presuppositions, all premises, are shown to be results. Upon examination, it is shown not to exist on its own without a necessary relation to an Other; it turns out to contain a distinction—it must posit the wage-laborer outside it in order to exist as such. It is necessary, then, to consider wage-labor insofar as it exists *outside* capital. As Marx commented at an early point about political economy, a political economy which considered the worker only as a working animal and not "when he is not working, as a human being"—"Let us now rise above the level of political economy."[27] Similarly, it is time to rise above the level of the political economy of capital, which constitutes only a moment within an adequate totality.

III. Situating Wage-Labor

Capital as a whole, it develops, is not a stopping point but differentiates into capital, on the one hand, and wage-labor, on the other. We have considered initially the side of capital, and now we must examine that of wage-labor.

Thus far, we have seen wage-labor insofar as it is a moment within capital, as it exists for capital. In *Capital*, the book, we are first introduced to wage-labor in itself as the worker separated from means of production, who stands opposite capital as not-capital, who is the possessor of a use-value for capital—the only use-value for capital as such, labor-power. Labor-power confronts money as use-value, just as money confronts labor-power as value in the sphere of circulation; capital, value-for-itself, posits here an independent use-value outside it.

With the completion of the process of exchange (the buying and selling of labor-power), we enter into the process of capitalist production where the use-value which capital has purchased is consumed, where the exercise of labor-power (labor) is brought within capital. Here we see the wage-laborer compelled to work subordinated to the will of capital in order to achieve the goal of capital, valorisation (self-expansion). And, finally, we see the wage-laborer once again in the sphere of circulation (C′-M′) as capital seeks to realize the surplus value contained in the commodities which have been produced.

Thus, wage-labor is present in every moment of capital. It exists for capital as a necessary means for the growth of capital; it is the mediator for capital (K-WL-K). Value-for-itself posits an independent use-value in order to be for self. Yet, *within the circuit of capital, there is already a distinction which points beyond it.* Capital does not only confront the wage-laborer who is the possessor of a use-value; it also necessarily faces the wage-laborer as the possessor of value in the sphere of circulation (C′-M′). Capital is not only value in relation to wage-labor; it is also, in its commodity-form, use-value for wage-labor.

Wage-labor thus approaches capital in its commodity-form as value in relation to use-value (M-Ac). Capital indeed *must* be a use-value in order to be realized as value. The question then becomes—what is a use-value for wage-labor in this sphere of circulation? And, this question cannot be answered by reference solely to the sphere of circulation any more than the similar question posed with respect to capital. For capital to be a use-value for wage-labor, it must be so in the sphere of production by being consumed as such. It is necessary to go beyond the sphere of circulation of wage-labor and enter into the sphere of production of wage-labor.

Considered *abstractly,* a necessary starting point, the process of production of the worker necessarily appears as a natural process of production; considered as a whole, however, it may be seen as a process of reproduction of a specific relation—that of wage-labor. Firstly, this process of production is immediately a process of consumption:

> It is clear that in taking in food, for example, which is a form of consumption, the human being produces his own body. But this is also true of every kind of consumption which in one way or another produces human beings in some particular aspect.[28]

The process of production of the worker, in short, is a process of consuming use-values; and, these use-values are not limited to those associated with physiological subsistence, but include any which produce the worker in "some particular aspect."

Secondly, the result of this process of production is the worker himself. "Now, as regards the worker's consumption, this reproduces one thing—namely himself, as living labor capacity."[29] We have here the "reconversion" of means of subsistence into "fresh labor-power;" in short, "the product of individual consumption is the consumer himself."[30]

Finally, the process of production of the worker is a *labor process.* There are two aspects in this designation. First of all, this process is an activity—that is to say, the process of consuming use-values in order to produce the worker is not passive but active. Time spent in this activity cannot be contrasted to time spent in the direct labor process of capital as non-producing time, as free time compared to direct labor time:

> It goes without saying, by the way, that direct labor time itself cannot remain in the abstract antithesis to free time in which it appears from the perspective of bourgeois economy.[31]

On the contrary, what occurs during "free time" is a process of production, a process in which the nature and capability of the worker is altered. It is "time for the full development of the individual, which in turn reacts back upon the productive power of labor as itself the greatest productive power."[32] This second process of production, which political economy does not see, is precisely the process of producing the worker:

> From the standpoint of the direct production process [of capital] it can be regarded as the production of *fixed capital,* this fixed capital being man himself.[33]

In the course of this activity, thus, the human being is altered. He acts upon that which is external to him and "simultaneously changes his own nature."[34] "Free time—which is both idle time and time for higher activity—has naturally transformed its possessor into a different subject, and he then enters into the direct production process as this different subject."[35] In this activity, accordingly, which is simultaneously an exercise and a cultivating of labor-power, the worker produces himself as a specific type of labor-power.[36] Every act of consumption of a use-value produces him in a particular

aspect; every process of activity alters him as the subject who enters into all activities. As Marx noted in the *Theories of Surplus Value:*

> Man himself is the basis of his material production, as of any other production that he carries on. All circumstances, therefore, which affect man, the *subject* of production, more or less modify all his functions and activities, and therefore too his functions and activities as the creator of material wealth, of commodities."

The process of production of the worker, considered as a labor process, may be represented as follows:

$$U \ldots . Pw \ldots Lp,$$
$$Lp$$

where labor-power (Lp) is both an input and an output and use-values (U) are means of production which are consumed in this process of production. We may note that these use-values, which significantly are not also outputs of this process, include both those produced directly as commodities and also others which may not be produced under capitalist relations.[c]

The second aspect of the production of the worker considered as a labor process is that the activity involved in this process is "purposeful activity." In other words, there is a pre-conceived goal, a goal which exists *ideally*, before the process itself; and, this particular labor process is a process of realizing this goal by the subordination of the will of the worker to that purpose.[38] And, what is this goal which exists latently before the process of production of the worker? It is the worker's conception of self—as determined within society. It is this which "creates the ideal, internally impelling cause for production"; it is this which "*ideally posits* the object of production as an internal image, as a need, as drive and as purpose."[39] The preconceived goal of production here is "the worker's own need for development."[40] This goal, determined within society—since the *category*, "Man", has no needs—is a presupposition of this process of production.[d][41]

Thus, just as the process of production of capital has as its goal the valorization of capital, the process of production of the worker has that of "the worker's own need for development." On the one hand, we have capital for itself, value for itself; on the other hand, we have labor-power for itself, use-value for itself. In the process of production of the worker, "Man makes his life activity itself the object of his will and of his consciousness....(H)is own life is an object for him."[42] The worker here "belongs to himself."[43]

The process of production of the worker, considered as labor process, is accordingly a labor process of the "simple" type in which human beings employ means of production in order to realize their own preconceived goal, in which they dominate the conditions and results of their labor, in which their labor is not distinct from selves but is indeed activity for self, activity in "his own interest."[44]

But, what are the requirements of this particular labor process? First, the necessary means of production must be accessible to the worker; he must be able to secure the use-values required in order to realize his goal. These are use-values not in themselves but only use-values insofar as they correspond to the goal of production; this is what generates "needs" for particular use-values—they are use-values which conform to the requirements of socially developed human beings. Those needs, which are part of the very nature of the worker, constitute the category of "actual social needs"; rather than being restricted to physiological requirements, they can for example encompass:

> the worker's participation in the higher, even cultural satisfactions, the agitation for his own interests, newspaper subscriptions, attending lectures, educating his children, developing his taste, etc.[45]

Yet another requirement of this particular labor process is labor-power itself. Since the labor process is a process of activity, there must be the *capacity* to carry out this activity: both the energy (the "strength, health and freshness")—since there is only a certain quantity of "vital force" to expend—and the particular quality and capability (which is itself a product of previous activity) must be available.[46] Similarly (but distinct from capacity itself), there must be *time* for this labor process: "Time is the room of human development."[47] As Marx noted in his chapter on the work-day:

> The worker needs time in which to satisfy his intellectual and social requirements, and the extent and number of these requirements is conditioned by the general level of civilization.[48]

In short, in this process of production in which the goal is the development of the worker, the worker needs time ("free time") for his full development:

(c) Despite the formal similarity to representations by Bowles and Gintis or Cleaver [Bowles and Gintis 1981:10-11;Cleaver 1977: 96-99], it must be stressed that a *different* process is considered here—the *self-production of the subject*. Thus, there is no attempt at this point to represent household labor (which is properly situated once we have considered the production of wage-labor as such.) There is here, of course, an implicit criticism of the view that household labor produces labor power.

(d) To mitigate charges of "abstract humanism" (and other, more serious offenses), it may be noted that a later stage of argument would include within the goals of male wage-laborers the reproduction of patriarchy.

> Time for education, for intellectual development, for the fulfillment of social functions, for social intercourse, for the free play of the vital forces of his body and his mind.[49]

What, then, are the prospects that the worker will be able to realize his goals? Consider this process of production of the worker—not only what is produced but also what is *not* produced. The process has as its result the worker, as living labor capacity; it is its *only* product. The use-values, necessary as presuppositions, are not produced, are not results—thus, this cannot be a system of reproduction. Indeed, they *cannot* be produced within this process—because wage-labor *by definition* is separated from the means of production necessary to produce them; given this separation, labor-power "cannot be used either directly for the production of use-values for its owner or for the production of commodities, by the sale of which he could live."[50] And, not only does the worker not produce the use-values he requires—he necessarily annihilates them in the process of production, which is a process of consumption, a process which "simply reproduces the needy individual."[51] In short, this particular labor process is not at all a natural process of production but is the production of a particular social relation, the production of wage-labor:

> (It) reproduces the individual himself in a specific mode of being, not only in his immediate quality of being alive, and in specific social relations. So that the ultimate appropriation by individuals taking place in the consumption process reproduces them in the original relations in which they move within the production process and towards each other;...[52]

Thus, in order to produce for self, the wage-laborer must secure use-values from outside his own process of production. Under the prevailing circumstances, he must take the only potential commodity he has, living labor capacity, and must re-enter the sphere of circulation; he must find the buyer for whom it is a use-value—capital. To be for self, the wage-laborer must be a being for another.

We have here the worker as wage-laborer for self—as one who approaches capital as a means, a means whose end is the worker for self. *Capital faces not a wage-laborer for capital but a wage-laborer for self.* In short, we first consider the relation of capital and wage-labor as one of K-WL-K, where wage-labor is a mediator for capital, where the end is capital. Yet we now see that there is *also* WL-K-WL, where capital is a mediator for the wage-laborer, where the wage-laborer is the end in itself, where labor for capital is a mere means and not an end at all. *Capital here is a moment in the reproduction of wage-labor.* Yet, for capital to be a mediator for wage-labor, wage-labor must be a mediator for capital.

In this very sphere of circulation, where the worker offers up his labor-power as a commodity, where he stands opposite capital merely as the possessor of use-value, "the worker is thereby posited as a person who is something for himself apart from his labor, and who alienates his life-expression only as a means towards his own life."[53] Yet, it is not merely that the worker posits his living labor capacity as separate from self in circulation; it is that this separation necessarily becomes so, is realized as such, as capital consumes labor-power in the process of production of capital. Here the worker expends himself in accordance with the goal of capital and under the direction and control of capital; here there is an "inverted" labor process in which "it is not the worker who employs the conditions of his work, but rather the reverse, the conditions of work employ the worker."[54]

Thus, the worker must engage in activity which is not for self. "The worker, instead of working for himself, works for, and consequently under, the capitalist."[55] It is a process in which the worker resists "the domination of capital", where "capital is constantly compelled to wrestle with the insubordination of the workers."[56] Similarly, workers struggle to "set limits to the tyrannical usurpations of capital"—they struggle over the length and intensity of the work-day in order to retain living labor capacity for themselves, they struggle over the length of the work-day in order to have time for themselves.[57] Thus we see that *underlying* the discussion of the struggle over the workday in *Capital* is what has *not* been established in *Capital*—the wage-laborer as being-for-self; these struggles are themselves latent in the process of production of the wage-laborer.[e]

Finally, this process of production of capital, a process of "sacrifice"—which "correctly expresses the *subjective relation of the wage worker to his own activity,*" is an activity which itself produces the wage-laborer as a particular socially developed human being, as one with the "need to possess".[58] Thus, capitalist production, which produces both the alien commodity and the alienated worker, constantly generates new needs for workers.[59] (The goals of wage-labor, initially considered as presupposition of its own labor process, are seen here as themselves results.) Further, these needs cannot be fully realized—because capitalist production is limited by capital's goal of valorization "rather than the relation of production to social requirements, i.e. to the requirements of socially developed human beings;" there are "capitalist limitations" on the satisfaction of needs.[60] Thus, there is a gap between the "actual social needs" of the wage-laborer and those which he is customarily able to realize (his "necessary needs"):

(e) Dunayevskaya emphasizes the struggle over the work-day as a new element in the plan for *Capital* resulting from the real movement of workers. I would agree that this is an element from the book on wage-labor which did find its way into *Capital*—but it does so without any logical development for the side of wage-labor comparable to that presented for the side of capital. [Dunayevskaya 1964: 88-91]

> The limits within which the need for commodities in the market, the demand, differs quantitatively from the *actual social* need, naturally vary considerably for different commodities; what I mean is the difference between the demanded quantity of commodities and the quantity which would have been in demand at other money-prices or other money or living conditions of the buyers.[61]

And, this inability to realize all his actual social needs, to secure the requisite use-values to realize his goal, produces dissatisfaction... "so long as the need of man is not satisfied, he is in *conflict* with his needs, hence with himself."[62] Inherent in the wage-laborer as being-for-self, thus, is the struggle for higher wages.

Class struggle—*from the side of the wage-laborer*—is what emerges from consideration of wage-labor. We have not merely capital for itself but also wage-labor for itself; there are thus *two* "oughts"—not merely capital's need for valorization but also "the worker's own need for development." This two-sided struggle, in which each attempts to reduce the other to dependence, is present in, for example, the struggle over the work-day —where "between equal rights, force decides;" and, it is similarly present in the struggle over wages:

> The fixation of its actual degree (that of profit) is only settled by the continuous struggle between capital and labor, the capitalist constantly tending to reduce wages to their physical minimum and to extend the working day to its physical maximum, while the working man constantly presses in the opposite direction. The matter resolves itself into a question of the respective powers of the combatants.[63]

Between two "oughts", force decides.

Our consideration of wage-labor began as an investigation of that which stood outside capital; it remains now to complete the development of its unity with capital. Consider the process of production of capital and that of wage-labor. Firstly, these processes are *opposites*. In the first, labor-power is consumed by capital, exists for capital; in the second, labor-power is consumed by the worker and exists for the worker. In the first, the means of production possess and dominate the worker; in the second they are possessed and dominated by the worker. The distinction thus is one of the worker for capital vs. the worker for self.

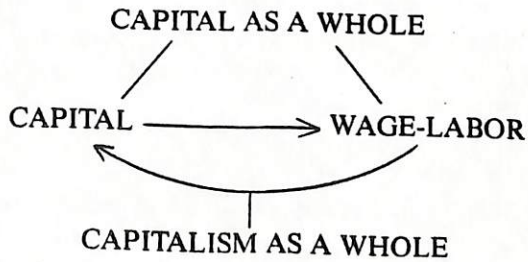
Further, these processes *exclude* each other. The worker cannot be for capital and self simultaneously. The more time the worker exists for capital, the less time there is for self. Similarly, the greater the intensity of work for capital, the more energy consumed by capital, the less which is available for self. Thus, labor for capital is distinct from labor for self; it is labor alienated from self. The worker is only for self when he is not a worker for capital.

Finally, these processes, which are opposites and exclude each other, are also *necessary to each other*. If the worker does not produce for capital, he does not produce for self; if he does not produce for self, he is not available for capital. If capital does not go through its circuit, the worker cannot go through his; if the worker does not go through his circuit, capital can not proceed through its. The reproduction of capital requires the reproduction of wage-labor as such; the reproduction of wage-labor as such requires the reproduction of capital. The two processes of production presuppose each other. They are thus a unity.

We have here now a totality in which all presuppositions are results and all results are presuppositions—the unity of capital and wage-labor, capitalism as a whole; it is a unity of opposites whose very nature is class struggle. (This further development is illustrated in Figure IV.)

FIGURE IV:

CAPITALISM AS A WHOLE AS TOTALITY



IV. The One-sidedness of *Capital*(f)

Capital is one-sided—but not because it excludes wage-labor as such. Obviously, wage-labor in itself could not be absent from *Capital*—because we could not even talk about the development of capital without it. Without the barrier which is wage-labor, why would capital shift from absolute surplus-value to relative surplus-value, from formal to real subsumption of labor; why would capital introduce machinery, increase the technical composition of capital, develop its own specific mode of production? Wage-labor is there as the barrier which capital transcends. But, it is not present as the ought which has capital as *its* barrier; it is not there as wage-labor *for itself*.

(f) While he appropriately emphasizes the necessity to focus on two-sided class struggle, Cleaver errs in viewing the problem as one of incorrect readings of *Capital* rather than as a problem of one-sidedness in *Capital* itself. The two-sidedness is only *latent* in *Capital* (just as capital is only latent in the commodity—and requires the full development of the totality to be grasped adequately. Cleaver, in short, ignores the intermediate links in reading the two-sidedness directly into *Capital* [Cleaver 1979].

Thus, even where the struggles of workers are noted (as in the matter of the work-day), the logical presupposition from the side of wage-labor, wage-labor for itself, is absent. It is only with the development of the side of wage-labor, the side absent from *Capital,* that we have an adequate basis for considering the struggle of workers to realize their own goals. We have now "the inner totality," capitalism as a whole, which contains not only the goals of capital but also those of wage-labor—*which imply the non-realization of capital's goals,* which press in the opposite direction.[64]

Certainly, we can no longer assume "necessary needs," the level of needs customarily satisfied, constant—that assumption in *Capital* which was to be removed in the book on wage-labor. Not when we explicitly recognize the existence of the ought of wage-labor, when we see that against the thrust and tendency of capital "the working man constantly presses in the opposite direction"; not when we posit workers struggling to reduce the gap between their existing standard and their actual social needs—just as they press in the direction of lowering the work-day.

Rather, the level of necessary needs is itself revealed to be a product, a result—the result of class struggle. *That* is the historical and moral element in the value of labor-power. Indeed, Volume I of *Capital,* with its introduction of the concept of necessary needs as an unexplained presupposition, *requires* the consideration of wage-labor-for-itself and the development of the totality, capitalism as a whole, in order to show necessary needs as a result. By itself, *Capital* cannot explain logically the level of necessary needs.

Indeed, by itself, *Capital* presents only capital's tendencies and not those of wage-labor, only capital's thrust to increase the rate of surplus-value and not wage-labor's thrust to reduce it. The tendencies of the totality itself, however, can only be considered when it has been completed. That is one aspect of the one-sidedness of *Capital.* But, there is another. We cannot even affirm that *Capital* has presented the one side of the totality, capital with its tendencies, adequately.

It is only within the completed totality that we have capital which faces workers who are struggling for their own goals, who are more than mere technical inputs to be stretched to emit more labor or to be produced more cheaply. In capitalism as a whole, capital does not merely seek the realization of its own goal, valorization; it also must seek to suspend the realization of the goals of wage-labor. It attempts to *defeat* workers, to negate its negation in order to posit itself.

In short, without the explicit recognition of the goals of workers and their struggles to realize them, how can we understand those actions of capital which are undertaken to divide wage-labor against itself, to defeat wage-labor? Those actions have as their presupposition the existence of workers' goals, wage-labor for itself.

Without the proper understanding of capitalism as a totality, our view of the actions of capital is one-sided, too. It is not simply that we fail to understand the place of wage-labor; it is that we do not understand capital *in relation to wage-labor.* There is an incomplete understanding of capital. *Only when we have the completed totality can we properly grasp the distinctions within the unity.* What we are presented with in *Capital* is merely a *moment of capital* in the development of the whole.

Within the totality which is capitalism as a whole, we recognize explicitly that capital not only strives to increase the work-day and to increase productivity but also strives to weaken the position of workers. Alterations in the mode of production (co-operation, manufacture, machinery, etc.) may have as their *immediate* purpose the defeat of workers in their attempt to realize their own goals. Thus, hiring immigrant workers from different ethnic groups with different languages is *more* than cooperation —it may even lower productivity; and, establishing a hierarchy of workers in manufacture may have its origin in the attempt to reduce the solidarity of wage-labor. Similarly, when capital considers the introduction of machinery in place of direct living labor, its consideration (properly understood) cannot be limited to calculation of the relative quantities of labor in machinery *vs.* labor-power (as described in *Capital,* I)—but also turns on the need "to tread underfoot the growing demands of the workers."[65]

Since it is valorization (and not efficiency as such) which is the goal of capital, a given innovation will be introduced if it sufficiently suspends the ability of workers to realize their goals, if it divides and separates them—even if it is less efficient (in the narrow technical sense). Thus, in capitalism as a whole, the adequate totality, we see the *innate tendency* of capital not only to increase productivity, to develop productive forces, but also to produce divisions among workers.[66] Recognition of this as an inner tendency of capital—flowing from its goal of valorization within the totality—is critical; it means that, understood as a system of reproduction, divisions among workers are products and results—rather than incidental historical presuppositions.

This entire side of capital, which flows logically from consideration of capital as a distinction within the totality, has been lost because of the failure to complete that totality. It is—and must be recognized as such—an inadequacy of *Capital,* the result of its one-sidedness. Bowles and Gintis, however, locate the source of this very inadequacy of *Capital* in the labor theory of value and in the concept of labor-power as commodity (and labor as use-value of labor-power). Arguing correctly that a central focus must be on precisely the set of practices by which capital suc-

ceeds in *extracting* surplus-value, they propose that emphasis on the labor theory of value is "economism":

> It reduces the site of capitalist production to a restricted—indeed impoverished—subset of the variety of practices which jointly determine the dynamics of accumulation.[67]

Who could deny the diagnosis as economism? What else are we to say about an account of the development of technology, productivity, changes in the labor process, deskilling of workers, etc., without situating these in the context of the struggle of capital to suspend the realization of the goals of workers? Where these developments occur against the backdrop of the working class *in itself* but not *for itself*? The clear tendency is to think in terms of the autonomous development of productive forces; it is to view technological development as "neutral"—a plausible inference when one does not consider capitalism as a whole. In short, in capital as presented incompletely in *Capital*, we do not see those changes in the labor process, etc., as precisely the result of class struggle—shaped and structured by the very nature of class struggle (which is at the centre in a consideration of capitalism as a whole as a totality). In this sense, it is accurate to describe such a view as "economistic."

Of course, the same point must be made on the side of wage-labor. To look merely at wage-labor-for-itself and its struggles to achieve its immediate goals (e.g., wages, time, control over the labor process, etc.,) is not to situate it adequately within the totality—as wage-labor in relation to capital. The necessary struggle of workers to dissolve differences among themselves (to constitute themselves as One) and to divide capital against itself —i.e, the struggle of wage-labor to *defeat* capital, to negate its negation in order to posit itself—would be obscured. And, this, too, is economism. In short, once we posit capitalism as a whole as the adequate totality, a totality whose essence is class struggle, we recognize it as a one-sided, economist view not to explore those goals and practices of both capital and wage-labor which emerge out of their interaction.

Thus, on the diagnosis—the inadequacy of *Capital* in explaining real phenomena, in presenting the "real movement," it is possible to agree with Bowles and Gintis. And, perhaps, that is the most important point to stress—despite the obvious differences in the paths traversed. Nevertheless, the formal similarity of results cannot disguise the eclectic surgery that Bowles and Gintis have performed on the body which they wish to save. Surely, is not the suggestion that labor-power is not a commodity merely a metaphor to underline Marx's failure to rise above political economy and to consider the worker "when he is not working, as a human being?" And, is it the representation of labor as the use-value of labor-power which deprives the labor theory of value of insight into the extraction of labor from labor-power—or, is it the failure to articulate the concept of wage-labor for itself, the failure to recognise "the worker's own need for development"?[68] In short, should not Occam's razor apply here?

The strength of Marx's method of dialectical reasoning was that —in contrast to an eclecticism which begins from forms of existence, neglects the development of intermediate links and cannot establish necessity—it generates an understanding of the necessary interconnection of the whole. The argument presented here is that it was precisely the failure to develop the side of wage-labor—which is latent within *Capital*—which has produced a faulty understanding of the whole (and of the place of *Capital* within it.) *Capital* must be understood in its connection—in its connection to the book on Wage—Labor, which was to complete "the inner totality," in its connection to the book on the State in which there was to be "the concentration of the whole," and in connection to the book on the World Market:

> the world market, the conclusion, in which production is posited as a totality together with all its moments, but within which, at the same time, all contradictions come into play. The world market then, again, forms the presupposition of the whole as well as its substratum.[69]

The mistake has been to let one book stand for six—a failure which says much about the understanding of Marx's method. The immediate question is, however, whether it is possible to understand capitalism as a whole without the exploration of the "basic themes" which were to be in the missing book on Wage-Labor.

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NOTES

1. Marx to Engels, April 2, 1858 in [Marx and Engels 1965:104]
2. [Rosdolsky 1977:11] Note that Mandel follows Rosdolsky's lead on this in his introduction to Volume I of Capital. [Marx 1977:28-9,944]
3. Marx to Engels, August 2, 1862 in [Marx and Engels 1965:128-9]
4. [Rosdolsky 1977:22,57]
5. *Ibid.*, 17,61
6. *Ibid.*, 286n
7. [Lebowitz 1977-8]
8. [Marx:1977:1068-9]

9. [Lebowitz 1977-8:442-7]
10. [Bowles and Gintis 1981]
11. [Rosdolsky:1977:5]
12. [Marx:1973:278]
13. [Marx 1968:164-5]
14. [Marx 1977:181]
15. *Ibid.*, 199
16. *Ibid.*, 225
17. [Lebowitz 1976]
18. [Marx 1957:100]
19. [*Ibid.*, 101]
20. [Marx 1977:711]
21. Marx 1959:798]
22. *Ibid.*, 25
23. [Marx 1977:718]
24. $C_2 = V_1 + S_1$. Then, $V_2(C_2/V_2) = V_1(1 + S_1/V_1)$ and $V_2/V_1 = (1 + S_1/V_1)/(C_2/V_2)$. The ratio of workers in Department II relative to those in Department I, N_2/N_1, must bear the same relation; but, nothing requires that $N_1 + N_2 = N_T$, where N_T represents the total number of workers.
25. [Marx 1973:520-1]
26. [Marx 1957:74-5]
27. [Marx 1975a:241]
28. [Marx 1973:90-1]
29. *Ibid.*, 676
30. [Marx 1977:718,290]
31. [Marx 1973:712]
32. *Ibid.*, 711
33. *Ibid.*, 711-2
34. [Marx 1977:283]. Note also that "the producers change, too, in that they bring out new qualities in themselves, develop themselves in production, transform themselves, develop new powers and ideas, new modes of intercourse, new needs and new language [Marx 1973:494]."
35. *Ibid.*, 712
36. *Ibid.*, 712
37. [Marx n.d.:280]
38. [Marx 1977:284]
39. [Marx 1973:91-2]
40. [Marx 1977:772]
41. [Marx 1975b:189]
42. [Marx 1975a:276]
43. [Marx 1977:717]
44. *Ibid.*, 718
45. [Marx 1973:287]
46. [Marx 1977:341, 343]
47. [Marx 1962:439]
48. [Marx 1977:341]
49. *Ibid.*, 375
50. [Marx 1957:29]
51. [Marx 1977:719]
52. [Marx 1973:717n]
53. *Ibid.*, 289
54. [Marx 1977:548]
55. *Ibid.*, 448
56. *Ibid.*, 449,489-90
57. [Marx 1962:439]
58. [Marx 1973:614]
59. [Lebowitz 1977-8]
60. [Marx 1959:253,854]
61. *Ibid.*, 185
62. [Marx 1975b:191]
63. [Marx 1977:344; Marx 1962:443]
64. [Marx 1973:264]
65. [Marx 1977:562-3]
66. We can agree entirely with Bowles and Gintis in their comment that "it is essential to stratify the workforce in order to minimize worker solidarity;" although, in the grand dialectical and essentialist manner, we would say—"it is part of the *essence* of capital to do so." [Bowles and Gintis 1981:15]
67. *Ibid.*, 1
68. *Ibid.*, 17
69. [Marx 1973:264,227-8]

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RETHINKING MARXISM

STRUGGLES IN MARXIST THEORY

ESSAYS FOR HARRY MAGDOFF & PAUL SWEEZY

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The Theoretical Status of Monopoly Capital

Michael A. Lebowitz

I

In 1966, Paul Baran and Paul Sweezy published *Monopoly Capital*, a book which was extremely influential in introducing a Marxian perspective to a new generation of critics of aspects of capitalism. More than simply an attempt to popularize Marx, however, *Monopoly Capital* also boldly advanced the argument that Marxian social science had *stagnated*, stagnated because of its reliance on the assumption of a competitive economy: "the Marxian analysis of capitalism still rests in the final analysis on the assumption of a competitive economy."[1]

Modern capitalism, however, was characterized by monopoly; the typical economic unit, they noted, "has the attributes which were once thought to be possessed only by monopolies."[2] And, recognition of this and its significance had to be at the core of analysis. The emergence of monopoly capital anticipated but not investigated by Marx, had to be seen not as "effecting essentially quantitative modifications of the basic Marxian laws of capitalism,"—but as a "qualitatively new element in the capitalist economy."[3] Thus, monopoly power, rising surpluses, expansion of unproductive expenditures and stagnation as the normal state of the economy—elements introduced earlier in Sweezy's *Theory of Capitalist Development*—constituted the qualitatively new character of modern capitalism.[4]

For some Marxists, however, all this has little to do with Marxism. The very concept of a monopoly stage of capitalism, it has been argued, is "incompatible" with Marx's theory. For, rather than the reduction of competition, Marx believed that capitalism would "tend to be *less* monopolistic" and competition more intense.[5] Rather than Marxism, according to these critics, the Baran-Sweezy theory of monopoly capital is idealist, bourgeois and leads logically to reformism.[6] There is, it appears, what one critic has described as an "ambiguous and unclarified relationship of American neo-Marxism to classical Marxism."[7]

But, then, what is classical Marxism in this area? In Marx's *Capital*, there are two apparent themes which point in opposite directions.[8] In Volume I, there

I am particularly grateful for the comments of Paresh Chattopadhyay, John Bellamy Foster and George Warskett on an earlier version of the essay.

is the account of growing monopolization, the "expropriation of many capitalists by a few," the growing force of attraction and centralization—and the explicit statement relating the intensity of competition to the number of capitals in a particular sphere: "competition rages in direct proportion to the number, and in inverse proportion to the magnitude, of the rival capitals."[9] In Volume III, on the other hand, equalization of the profit rate and capital mobility are shown to depend upon the degree of development of capitalism. The less capital is "adulterated and amalgamated with survivals of former economic conditions" and the more the credit system develops, the greater the extent to which capital succeeds in equalizing profit rates among the various spheres of production.[10] For those who emphasize this latter theme, then, monopoly power, barriers to entry, differential profit rates are, at best, transitory phenomena; the very development of capitalism breaks down monopolies and intensifies the competition among capitals through the mechanism of capital mobility.

The basis of the division over the status of the concept of monopoly capital, thus, appears to be present in Marx himself; and, the possibility that Marx was simply inconsistent must be acknowledged—an admission that would provide the degree of freedom allowing all to choose among competing quotations according to taste. Yet, the proper situation of the concept of monopoly capital cannot rely simply upon the consideration of extrinsic quotations. Rather, it is necessary to attempt to reconstruct Marx's inner argument and to establish which, if any, of Marx's statements flow logically and necessarily from his theory.

II. Essence and Appearance in Marx's Method

To understand the place of monopoly capital in Marx's framework, we must first be clear as to the relation which Marx posed between the concept of capital and capital as it really exists. Before one could understand the behavior and the movements of capital on the surface, it was necessary to grasp the inner nature, the essential character, of capital—that which distinguished it; the understanding of "capital in general," the concept of capital, "an abstraction which grasps the specific characteristics which distinguish capital from all other forms of wealth—or modes in which (social) production develops"—this conscious abstraction from surface phenomena was required in order to comprehend the inner laws, immanent tendencies and intrinsic connections of capital.[11]

Only then could one proceed to consider capital as it *really* exists—as individual capitals, as many capitals, as capitals in competition. Only then could one understand the apparent movements on the surface:

> a scientific analysis of competition is possible only if we can grasp the inner nature of capital, just as the apparent motions of the heavenly bodies are intelligible only to someone who is acquainted with their real motions, which are not perceptible to the senses.[12]

Thus, with an understanding of the concept of capital, of capital as self-expanding value, value-for-itself, standing opposite wage-labor, the necessary impulse of capital to develop productive forces in order to secure relative surplus value is readily grasped. On the surface, in competition, however, that process did not occur with the conscious goal of the reduction of necessary labor. Rather, individual capitals acted in order to reduce their individual cost-prices, in order to "pocket the difference between their costs of production and the market-prices of the same commodities produced at higher costs of production"; they develop productivity in order to increase their individual profits.[13] In place of the essential opposition of capital and wage-labor, on the surface there is substituted the opposition of capitals.

Through their individual actions, then, many capitals in competition *execute* the inner laws of capital; it is the "way in which the immanent laws of capitalist production manifest themselves in the external movement of the individual capitals, assert themselves as the coercive laws of competition."[14] Competition, Marx noted, "is nothing more than the way in which many capitals force the inherent determinants of capital upon one another and upon themselves." It does not "*explain* these laws; rather, it lets them be *seen*, but does not produce them."[15]

Thus, the action of capital upon capital, the real process of capital, invents no new laws or tendencies; it merely realizes those inherent in the very nature of capital. To try to explain those laws by reference to surface phenomena, however, is to follow the course of vulgar political economy; "to try to explain them simply as the results of competition therefore means to concede that one does not understand them."[16] Indeed, remaining at the level of appearance, one can never establish *necessity*; it is only the inner insofar as it is manifested as outer, essence insofar as it appears, that has the character of necessity:

> Wherever it is competition as such which determines anything, the determination is accidental, purely empirical, and only pedantry or fantasy would seek to represent this accident as a necessity.[17]

It was not, of course, merely the understanding of the essential in the apparent movements of capital which concerned Marx. Also critical was the necessity to "grasp the inner connection in contrast to the multiplicity of outward forms," to locate and describe the concrete forms, to demonstrate the inner connections within the forms of capital assumed "on the surface of society."[18] That was, in part, the project of Volume III of *Capital*—to

demonstrate why essence, the inner nature of capital, necessarily appeared as it did.

Thus, we see here in Volume III the consideration of the rate of profit (which has the rate of surplus-value as its "invisible and unknown essence") and prices of production ("an utterly external and *prima facie* meaningless form of the value of commodities, a form as it appears in competition").[19] Similarly, various forms of capital and sources of revenue are shown to necessarily emerge from the movements of capital as a whole; merchant capital and merchant profits, interest-bearing capital and interest, landed property and rent—all these apparently independent forms of wealth are reduced "to their inner unity by means of analysis."[20] As he had earlier remarked about Ricardo, Marx here explains "in this way all phenomena, even those like ground rent, accumulation of capital and the relation of wages to profit, which at first sight seem to contradict it [his formula]; it is precisely that which makes his doctrine a scientific system."[21]

It was the same effort to demonstrate the consistency of the outer forms with the inner nature of capital which underlies Marx's discussion of the transformation of values into prices of production. Discussion of this process, which occurs through the equalization of the rate of profit, is intended to show that logically there is a necessary redistribution of surplus value and value on the surface—but nothing which is inconsistent with the inner relations. Thus, for what classical political economy offered up as its external "law," prices of production, Marx provides an inner explanation.

Yet, certainly consideration of this particular process of transformation could not exhaust the relation of many capitals on the surface to the concept of capital. Logically, the consistency of the actions of many capitals, the action of capital upon capital, requires consideration of *all possible forms* of many capitals. Many capitals logically can include at one extreme an infinite number of capitals (the "perfect competition" case) or, at the other extreme, two capitals within a society. In short, one possible or contingent form of capital is not sufficient to demonstrate the necessary consistency of the outer forms of capital with its inner nature. And, certainly Marx was explicit as to the limits of his discussion of transformation of values through the equalization of profit rates. Equalization of profit rates, he noted, implies mobility of capital, its free movement between various spheres of production; "the premise in this case is that no barrier, or just an accidental and temporary barrier, interferes with the competition of capitals."[22]

Rather than fetishizing the transformation process, Marx proceeded to argue that where such barriers existed, where prices received exceeded the price of production (and therefore yielded higher than the average profit rate), where, in short, capital took the form of monopoly, here too this contingency would not violate the inner relations established. Either the existence of a monopoly would produce a redistribution of surplus value ("a local disturbance in the distribution of surplus value")—as in the other case considered—or, it could produce a reduction in wages below the value of labor power.[23] In either case, Marx considered the presence of monopoly a phenomenon which did not at all contradict his formula.

Thus, competitive capital (*if* we may so designate the capital considered in the transformation discussion) and monopoly capital were simply two contingent forms of capital, two forms of capital as it exists, two forms by which the inner laws of capital were executed.[24] And, yet, we know that there is more than that to the question of monopoly capital—that of the status of a contingent form of capital; there is also the question of *necessity*, of the necessary emergence of monopoly.

III. Monopoly: From Contingency to Necessity

The proposition that the competitive form of capital has a tendency to give way to a monopoly form had a long lineage for Marx. It appears in Engel's early "Outlines of a Critique of Political Economy" as the "law of the centralization of private property," where large capitals swallow small capitals; was repeated by Proudhon and then identified as a movement and process (rather than an abstract formula) by Marx in his *Poverty of Philosophy;* and, then, once again appears as the tendency toward concentration of land and capital in a few hands and the victory of large capitals over small capitals in their contest in the *Communist Manifesto* and *Wage-Labor and Capital*.[25] So, it is not surprising to see the proposition reappear in *Capital*.

In *Capital*, the argument is that of the centralization of capital. Noting that he could not here develop the "laws of centralization of capitals, or of the attraction of capital by capital," Marx proceeded to offer a few facts. And these facts were that the battle of competition was fought by the cheapening of commodities, that large capitals beat the smaller capitals and that small capitals were thereby ruined, leaving large-scale industry under the control of a few hands.[26] Centralization of capital then reappears in the discussion of the historical tendency of capitalist accumulation, where we find that "one capitalist always strikes down many others" and there is "a constant decrease in the number of capitalist magnates."[27] All this plays a critical role in the account of the end of capital; the monopoly of capital becomes a fetter on the development of productive forces.

The argument, we note, is basically the same as that of *Wage-Labor and Capital:* centralization emerges out of competition of capitals, attraction out of repulsion; individual capitals reduce their cost-prices and compel other capitals to follow suit or fall by the wayside. And, it is, of course, an *outer* or external account, one which presupposes consideration of individual capitals and of the competition of capitals (which, in fact, requires the discussion of Volume III of

Capital). Yet, consideration of competition itself was premature, was possible "only if we can grasp the inner nature of capital."

We have, in short, a process of centralization of capital—which plays such a critical role in Volume I—presented as the result of an external movement of many capitals; it is presented as an outer movement determined by competition of capitals. *Is it, then, a process which is contingent, purely empirical which only pedantry would represent as necessary?* Is it an outer movement for which there is no inner law, no immanent tendency, which gives it the character of a *necessary* process?

Well, it is certain that Marx had in mind an inner law for which the process of centralization was "merely" a manifestation. It was a law which he noted could not be "developed here," and thus he limited himself to a few facts, an outer account. Similarly, he identified centralization of capital as the *means* by which "the immanent laws of capitalist production itself" accomplished the expropriation of individual capitals.[28] But, what *was* the inner law for which the process of centralization as described was an outer form?

IV. The Inner Tendency of Capital to Become One

The inner tendency, we propose, was simply the tendency of capital to become One, a tendency to develop from the form of many capitals (a fragmentation of capital given in its beginnings) to one adequate to its concept, capital in general. It is a tendency seen to be inherent in the very concept of capital itself—for all capital to be integrated as One capital in one hand and for all others to be in the position of wage-labor in relation to that capital. There are two aspects here: (1) the separation of the conditions of labor from all who labor and (2) the integration of these in one hand.

In short, we are describing as the inner tendency of capital precisely what is present in its historical genesis and inherent in its concept—expropriation/separation. Expropriation is "the point of departure for the capitalist mode of production; *its accomplishment is the goal of this production. In the last instance, it aims at the expropriation of the means of production from all individuals.*"[29] Indeed, every moment in the development of capital is to be understood as the development of this separation, on the one hand, and integration, on the other. In the primitive or original accumulation of capital, that "*historical* process of separation which transforms the conditions of labor into capital and labor into wage-labor," there is already contained the integration of the conditions of labor.[30] As soon as capitalist production stands on its own feet, however, "it not only maintains this separation, but reproduces it on a constantly extending scale."[31]

Thus, simple reproduction of capital, that heuristic device, "reproduces in the course of its own process the separation between labor-power and the conditions of labor."[32] And, the accumulation of capital "reproduces the separation and the independent existence of material wealth as against labor on an ever increasing scale."[33] Finally, we have the process described as centralization:

> This is only the last degree and the final form of the process which transforms the conditions of labor into capital, then reproduces capital and the separate capitals on a larger scale and finally separates from their owners the various capitals which have come into existence at many points of society and centralizes them into the hands of big capitalists.[34]

It is just a further instance of separating—"raised to the second power"—the conditions of production from the producers, a process that "forms the conception of capital" and which is finally expressed as "centralization of existing capitals in a few hands and a deprivation of many of their capital."[35] Thus, we are describing here simply the progressive development of what is inherent in the concept of capital; discussing pre-capitalist formations in the *Grundrisse*, Marx commented: "the relation of labor to capital, or to the objective conditions of labor as capital, presupposes a process of history which dissolves the various forms in which the worker is a proprietor, or in which the proprietor works."[36] That process is clearly one which continues—i.e., is a product and result of capital itself.

But, what are the *limits*, the theoretical limits, to this process? In a number of cases, the limit is expressed as the centralization in a *few* hands. Post-dating many of these comments, on the other hand, are the changes which Marx introduced in the 1872 French edition (incorporated by Engels into the fourth German edition):

> In any given branch of industry centralization would reach its extreme limit if all the individual capitals invested there were fused into a single capital. In a given society this limit would be reached only when the entire social capital was united in the hands of either a single capitalist or a single capitalist company.[37]

How do we choose among the various quotations? Does this process of separation proceed to the point of centralizing capital into a few hands, those of the big capitalists, or does it proceed *further?* And how precisely do Marx's comments on the place and role of the credit system and the emergence of the corporation fit in ? Are they manifestations of the inner law or are they merely coincidental, reinforcing contingent developments?

What must be acknowledged is that however often Marx repeated this inner law of which centralization was a manifestation, it is one thing to present a proposition with the characteristic of Hegelian elegance—and quite another

thing to demonstrate its *necessity*. In the absence of such a demonstration of necessity, we need not worry about whether the tendency of capital to become One stops *before* this point—because there *is* no such tendency at all.

V. The Three Aspects of Integration

To demonstrate the necessity of the tendency of capital to become One, we must show that the very separation and disintegration of capitals is contrary to the concept of capital, that there is a particular restriction to the growth of capital and the development of productive forces inherent in the separation of capital—and, that accordingly the adequate development of capital requires the cancellation of that separation and fragmentation. In general, it must be shown that the unity of producers with the conditions of production is a barrier to the growth of capital—and, thus, that expropriation is necessary.

We need, however, to be more specific. For capital to become One—i.e., for the entire social capital of a given society to be united in the hands of a single capitalist or a single capitalist company, three separate (though related) processes are required:

1. Horizontal integration—the integration of all capitals in a single sphere,
2. Vertical integration—the integration of capitals in spheres which are organically related in the production of use-values, and
3. Conglomerate integration—the integration of capitals in differing spheres independent of any organic relation. For integration to be complete, all three tendencies must be present. Thus, it is necessary to demonstrate that the existence of seperate capitals in *each* case is contrary to the concept of capital within Marx's argument.

a. The Case for Horizontal Integration

Consider first the tendency for horizontal integration, the most readily apparent argument which Marx provides. Here the task is to demonstrate that the existence of separate capitals in a given sphere of production is a barrier to capital—and, accordingly, that capital has a tendency to negate that barrier.

Capital in general, self-expanding value, has the tendency to grow; faced with wage-labor, which struggles for its own goals, capital must develop productive forces in order to secure relative surplus value. Yet, the separation of capitals within a particular sphere of production means that each capital thwarts the growth of every other capital:

> the part of the social capital domiciled in each particular sphere of production is divided among many capitalists who confront each other as mutually independent and competitive commodity-producers.[38]

A critical part of Marx's argument, though, is that the very development of the specifically capitalist mode of production entails the requirement for "a definite and constantly *growing minimum amount of capital*"; "the conditions of production now demand the application of capital on a mass scale." [39] The separation and independence of capitals in a particular sphere, however, prevents at a certain point the development of capital:

> the world would still be without railways if it had to wait until accumulation had got a few individual capitals far enough to be adequate for the construction of a railroad.[40]

The separation of capitals prevents the development of productive forces to the extent that integration of capital would permit; it is contrary to capital's tendency to reduce necessary labor and secure relative surplus value.

And, thus, we have the tendency for attraction of capitals, which "becomes more intense in proportion as the specifically capitalist mode of production develops along with accumulation."[41] The process of integration destroys the "individual independence" of existing capitals, transforms many small capitals into a few large ones; it allows for the development of processes of production "socially combined and carried out on a large scale"; it "intensifies and accelerates the effects of accumulation"; and, "it simultaneously extends and speeds up those revolutions in the technical composition of capital."[42]

This process of horizontal integration of capital, a redistribution of capitals within a particular sphere, is of course the familiar account of centralization. It is executed by the actions of capitals upon capitals, by the competition of capitals whereby "success and failure both lead here to a centralization of capital, and thus to expropriation on the most enormous scale."[43] Since it is so familiar, it is also critical to emphasize that it is *only one form* of the process of integration and that it is inadequate in itself for a tendency for the entire social capital to be united in the hands of a single capitalist. Its limit (understood as a mathematical limit rather than a prediction) is a single capital in a given branch of industry; but, it leaves the possibility of a multitude of separate industries all producing different use-values and separated by commodity exchange.

b. The Case for Vertical Integration

The tendency for vertical integration of capital is not nearly as well developed in *Capital*, and its relative de-emphasis must be regarded as an inadequacy of *Capital*. Nevertheless, it is certainly present. Here the task is to demonstrate that the existence of capitals which are organically related in the production of use-values *but separated by commodity exchange* is a barrier to capital.

The matter here revolves around the difference between the purchase of a commodity by one capital from another and the purchase of the commodity labor-power. In the first case, the individual capitalist pays for all the labor he receives; in the second, he only pays for the *necessary* labor:

> when the capitalist enters the commodity market as a buyer, . . . he has to pay the full value of a commodity, the whole of labor-time embodied in it, irrespective of the proportions in which the fruits of the labor-time were divided or are divided between the capitalist and the worker. If, on the other hand, he enters the labor market as a buyer, he buys in actual fact more labor than he pays for.[44]

Consider, then, the implications for the introduction of machinery. For capital *in general*, machinery will be introduced as soon as it involves a net saving on labor—as soon as more labor is replaced in a particular process of production than is required to produce the given machine; in short, it is introduced as soon as it allows for the increase in productivity and thus the generation of relative surplus value.

However, this is *not* the point at which the individual capitalist who must purchase machinery as a commodity will introduce the new technique. For the individual capitalist, it is not the difference between the labor contained in the machine and the labor it displaces that matters; rather, it is the difference between the labor in the machine and the portion of the direct labor which that capitalist *pays* for:

> the limit to using a machine is therefore fixed by the difference between the value of the machine and the value of the labor-power replaced by it.[45]

It is only this difference which influences the action of the individual capitalist. For the individual capitalist, it is not the increase in productivity—i.e., the reduction in the value of the commodity—which matters; it is the reduction in his individual cost-price. Thus, "the law of increased productivity of labor is not, therefore, absolutely valid" for the individual capital, for capital as a whole when separated and fragmented by commodity exchange. Capital, here, goes against its historic mission:

> Its historic mission is unconstrained development in geometric progression of the productivity of human labor. It goes back on its mission whenever, as here, it checks the development of productivity.[46]

Thus, all other things equal, One capital will introduce machinery sooner and more extensively than individual capitals separated by commodity exchange.

This point is the core of Marx's comment:

> The field of application for machinery would therefore be entirely different in a communist society from what it is in bourgeois society.[47]

But, it is not communist society nor (as Rosdolsky suggests) "state capitalist" society which is at issue here—it is simply the tendency in capital for vertical integration, the tendency to go beyond the barrier presented by the separation of capitals.[48]

Vertical integration of capital makes possible the further development of combined labor processes. It is present at the origin of the capitalist development of manufacture, where that which was previously separated by commodity exchange becomes part of a continuous process of production; and, it grows ever more intense with the development of the specifically capitalist mode of production—where there is "the progressive transformation of isolated processes of production, carried on by customary methods, into socially combined and scientifically arranged processes of production."[49] Vertical integration of capital substitutes, for the anarchy, the "chance and caprice" of commodity exchange, the *a priori* plan of combined labor processes.[50]

For capitals in competition, this tendency for vertical integration is realized as result of the saving which will accrue to the individual capital which chooses to produce means of production rather than to purchase these as commodities—the savings which emerge by no longer paying for the surplus value of another capital:

> If, therefore, he produces his raw materials and machinery himself instead of buying them, he himself appropriates the surplus labor he would otherwise have had to pay out to the seller of the raw materials and machinery.[51]

In the battle of competition, vertical integration (the tendency for means of production to be removed from commodity exchange) is executed by the competition of individual capitals to expand at the expense of competing capitals.

As a tendency, vertical integration of capital was inadequately stressed by Marx—and, as a result, this important aspect of the integration of capital tends to be overlooked; but its basis is clearly present in Marx's theory. Its limit is the complete removal of means of production from commodity exchange and the establishment of *fully* combined labor processes—from raw materials to final use-values for consumers. Combined with horizontal integration developed to its limit (with which it interacts), it yields one capital in every socially-combined sphere of production producing final use-values; but, it is still not

adequate to the concept of all social capital in the hands of a single capitalist—because it retains the separation of the various spheres.

c . The Case for Conglomerate Integration

Finally, in what way is the separation of capital into independent, discrete spheres contrary to the concept of capital? Consider an *absolute* separation where the "various spheres of production are related to one another, within certain limits, as foreign countries or communist countries."[52] In this case, all surplus value generated and realized within a particular sphere would have to be accumulated in that sphere or consumed. Capital could not expand to its utmost—because it would be denied access to the means for its maximum self-expansion. But, that is contrary to the concept of capital, where "every limit appears as a barrier to be overcome."[53] In seeking the highest possible rate of profit and in shifting, accordingly, capital from one sphere to another, the individual capitalist acts in accordance with the inner nature of capital:

> In acting thus the individual capitalist only obeys the immanent law, and hence the moral imperative, of capital to produce as much surplus-value as possible.[54]

Thus, the equalization of the rate of profit is inherent in the concept of capital as self-expanding value; it occurs through the competition of capitals to expand, where "the action of capitals on one another has the force to assert the inherent laws of capital."[55] And capital's tendency is always to transcend any barriers to its growth:

> It is the perpetual tendency of capitals to bring about through competition this equalization in the distribution of surplus-value produced by the total capital, and to overcome all obstacles to this equalization .[56]

The process by which this occurs, of course, is the shift of capital from one sphere to another, the free movement of capital. But, this requires that capital exists in its universal form— money-capital. Only here does capital possess "the form which enables it as a common element, irrespective of its particular employment, to be distributed amongst the different spheres, amongst the capitalist class, according to the production needs of each separate sphere."[57] Only here, in money-capital, in the money-market, do all distinctions as to the quality of capital disappear:

> All the different forms assumed by capital according to the different spheres of production or circulation in which it is invested, are obliterated here. It exists here in the undifferentiated, always identical form, that of independent exchange-value, i.e., of money.[58]

Here, in the money market, "capital appears as the general element as opposed to individual capitals"; here, there is a real presence of capital as a whole:

> In the money market, capital is posited in its totality; there it *determines prices, gives work, regulates production,* in a word, is the *source of production*.[59]

Capital is always latently One in the form of money-capital, the form by which the equalization of profit rates is accomplished—a process which "implies, furthermore, the development of the credit system, which concentrates the inorganic mass of the disposable social capital vis-a-vis the individual capitalist."[60]

What, then, is this money-capital which is concentrated in the credit system and which stands opposite individual capitals? Simply, it is the capital which has been realized in the form of money-capital in the course of the circuit of capital but for which the individual capital has no use at the moment—latent money-capital for the individual capital; it is "released capital," which is put at the disposal of other capitalists.[61] With the development of the credit and banking system, for which this latent money-capital provides one of the foundations, this money-capital is put at the disposal of a mediator, the banker:

> the banker, who receives the money as a loan from one group of the reproductive capitalists, lends it to another group of reproductive capitalists, so that the banker appears in the role of a supreme benefactor; and at the same time, the control over this capital falls completely into the hands of the banker in his capacity as middleman.[62]

Thus, money-capital "assumes the nature of a concentrated, organized mass, which, quite different from actual production, is subject to the control of bankers, i.e., the representatives of social capital." Here, "the bankers confront the industrial capitalists and the commercial capitalists as representatives of all money-lenders. They become the general managers of money-capital."[63]

Yet, this movement of capital from sphere to sphere in this manner is, by its very nature, a *short-term movement*. The money-capital is capital to which the particular lender, the capitalist for whom it is latent money-capital, is *not*

indifferent; it is capital ultimately intended for return to his own particular circuit of capital. The very development of the specifically capitalist mode of production, however, generates a requirement for *long-term* capital, for large masses of capital to be "welded together" on a long-term basis.[64] It is for this very reason that Marx could announce: "the *ultimate positing* of capital in the form adequate to it—is joint-stock capital." Or, as he informed Engels—"*Share capital* as the most perfect form" of capital.[65]

Thus, the development of the corporation is immanent in the concept of capital. And, as is well-known, here we see the further separation between labor and the conditions of labor, the further dissolution of "the various forms in which the worker is a proprietor, or in which the proprietor works." In the corporation, the function of capital "is entirely divorced from capital ownership, hence also labor is entirely divorced from ownership of means of production and surplus-labor."[66] The ownership of capital is separated here from those who are not indifferent to its particular employment, the functioning capitalists,—those who combine both the ownership of capital and the function of capital within one person. Capital here "is employed by people who do not own it and who consequently tackle things quite differently than the owner, who anxiously weighs the limitations of his private capital insofar as he handles it himself."[67] We have "the mere manager who has no title whatsoever to the capital," who performs "all the real functions pertaining to the functioning capitalist," on the one hand, and the owner of capital, who disappears from the production process, a "mere money-owner capitalist" on the other hand. Capital here in its "most perfect form" is:

> directly endowed with the form of social capital (capital of directly associated individuals) as distinct from private capital . . . It is the abolition of capital as private property within the framework of capitalist production itself.[68]

With the development of corporations in different spheres of production, money-capital (that undifferentiated, homogeneous form of capital) can now be distributed in large masses among the different spheres according to the requirements of those various spheres; it can now be made available to those who actually put it to work, those who perform the function of capital. Is, then, "many corporations," many separate and distinct congelations of money-capital, adequate to the concept of capital? One would have to answer—no. Separate ownership in the various spheres could still inhibit the free entry of capital (through the determination of the particular requirements for money-capital); separate and distinct ownership here is consistent with a barrier to the equalization of profit rates which is immanent in the concept of capital.

The adequate form of capital, then, is One corporation (or, many corporations which are identical)—a unitary authority which can shift capital from sphere to sphere in such a way as to maximize the self-expansion of capital. In conglomerate integration, the tendency for the integration of capitals in different spheres independent of any organic relation, we have the third aspect of the tendency of capital to become One. And, as in the other aspects, its real emergence to its limit is latent within the nature of capital. Just as vertical integration is latent in the addition of constant capital to new living labor in the formation of value, and just as horizontal integration is latent in the formation of market-value, so also is conglomerate integration latent in the equalization of the profit rate, where every capitalist is to be regarded "actually as a shareholder in the total social enterprise." In the equalization of the profit rate, the formation of the general rate of profit:

> the various capitalists are just so many stockholders in a stock company . . . so that profits differ in the case of the individual capitalists only in accordance with the amount invested by each in the aggregate enterprise, i.e., according to his investment in social production as a whole, according to the number of his shares.[69]

And, how does the process of conglomerate integration occur within competition? The formation of corporations, of course, occurs due to the requirement of individual capitals to amass the funds required to expand; and, the movement into different spheres occurs as capitals competing to expand *diversify* in order to maximize their individual rate of self-expansion. Diversification, thus, is the manifestation of conglomerate integration—another manifestation of the tendency of capital to become One.

The combination of the three aspects of integration (horizontal, vertical and conglomerate) thus has as its limit the case "when the entire social capital [is] united in the hands of either a single capitalist or a single capitalist company."

VI. The "Perfecting" of Capital

How do we stand, now, in relation to the concept of monopoly capital? It must be recognized that one-sidedness in stressing one or another aspect of the tendency of capital to become One has marked the controversies over the theoretical status of monopoly capital. The inconsistency between Marx's own statements is only an apparent inconsistency; their inner unity is revealed in the notion of the tendency of capital to become One.

And, this tendency is the very process of development of capital itself. Beginning on the basis of the fragmentation of capitals, capital develops by transforming its historical presuppositions into a form increasingly adequate to its inner nature. Always One in essence, capital increasingly becomes so in phenomenal form by acting upon itself—through the process of competition of

individual capitals. Thus, capital is increasingly "posited, not only *in itself*, in its substance, but is posited also in its *form*."[70] It is potentiality, that which is always inherent in the concept of capital, increasingly realized, increasingly emerging into existence. Adapting an argument from Hegel, we might say that the development of capital is the advance from the "germ of the perfect" to the perfect."[71]

Monopoly Capital represents this "perfecting" of capital, this qualitative alteration in the phenomenal form of capital. From a Marxist (in contrast to a bourgeois) perspective, monopoly capital is a more perfect, purer form of capital than that found in its historical infancy. As Sweezy has recently proposed, "the transformation of competitive into monopoly capital not only does not negate this relationship [the capital/wage-labor relationship—M.A.L.], it refines and perfects it."[72] The inner nature of capital thus comes increasingly to the surface. That which, for the very unfinished and undeveloped nature of capital, was the "esoteric possession of a few individuals" becomes "exoteric, comprehensible, and capable of being learned and possessed by everybody."[73] The illusions created by competition, the fetishism of commodities, the appearance of freedom for wage-labor, the illusory form of exploitation—all these are increasingly dissipated in the very development of capital, its tendency to become One.

To deny, then, a qualitative alteration in the phenomenal character of capital is a misplaced loyalty to the concept of capital. The problem with the Baran-Sweezy notion of monopoly capital has not been its focus on the need for a special theory of monopoly capital but, rather, its one-sided focus on the aspect of horizontal integration (with its corollaries of barriers to entry and differential profit rates). As incorrect is a position which privileges capital flows between branches of production as the highest form of competition, treating competition within particular branches as "primitive"; it is a position which, focussing on a form of capital's tendency, loses sight of its essence.[74] Both positions are one-sided. They fail to capture the whole of capital's tendency to become One, a tendency which in the real world proceeds unevenly (and which, accordingly, generates partial and one-sided analyses). Only the whole—the recognition of the three sides of capital's tendency to become One—however, represents Marx's position. At this late date, it should not be necessary to stress the importance of a special theory of monopoly capital, a theory which reflects the qualitative alteration of capital as its phenomenal form increasingly corresponds to its inner nature, a theory which focusses on those essential features which become increasingly manifest as capital perfects itself. Perhaps it is important, however, to emphasize the necessity for developing such a theory immanently out of Marx's concept of capital rather than through the usual practices of induction and empiricism so characteristic of post-Marx studies. The former approach, attempted here, allows us to situate a theory of monopoly capital in relation to Marx and reveals the later developments as already latent in the concept of capital; the latter approach, however, necessarily always leaves unclarified the precise relation to Marx's work.[75]

Notes

1. Paul A. Baran and Paul M. Sweezy, *Monopoly Capital*, New York: Monthly Review, 1966, pp. 3-4.
2. *Ibid.*, p. 6.
3. *Ibid.*, p. 5.
4. Paul Sweezy, *The Theory of Capitalist Development*, New York: Monthly Review Press, 1956.
5. Steve Zeluck, "On the Theory of the Monopoly Stage of Capitalism," *Against The Current*, Vol. I, no. 1, Fall 1980, p. 44; For a reply to Zeluck, see John Bellamy Foster, "Is Monopoly Capital an Illusion?", *Monthly Review*, September 1981.
6. Zeluck, *op. cit.*, pp. 50-52; John Weeks, *Capital and Exploitation*, Princeton, 1981, pp. 153, 157, 165-167; John Weeks, "The Sphere of Production and the Analysis of Crisis in Capitalism," *Science and Society*, Vol. XLI, no. 3, Fall 1977, pp. 286,301; See also J.A. Clifton, "Competition and the Evolution of the Capitalist Mode of Production," *Cambridge Journal of Economics*, 1977. p. 150.
7. Hugh Mosley, "Monopoly Capital and the State: Some Critical Reflections on O'Connor's *Fiscal Crisis of the State*," *Review of Radical Political Economy*, Vol. 11, no. 1, Spring 1979, p. 53.
8. Clifton, *op. cit.*, p. 145; Philip L. Williams, "Monopoly and Centralization in Marx," *History of Political Economy*, Summer 1982.
9. Karl Marx, *Capital*, 1, New York: Vintage Books, 1977, pp. 929, 779, 777.
10. Karl Marx, *Capital*, 3, Moscow: Foreign Languages, 1959, pp. 172, 177, 192, 426.
11. Karl Marx, *Grundrisse*, New York: Vintage Books, 1973. p. 449; *Theories of Surplus Value*, 2, Moscow: Progress Publishers, 1968, p. 106; The discussion here draws heavily upon Lebowitz, "Marx's Methodological Project," unpublished manuscript, 1980; however see Roman Rosdolsky, *The Making of Marx's "Capital"*, London: Pluto Press, 1977.
12. Marx, *Capital*, 1, p. 433.
13. *Ibid.*, 3, p. 259.
14. *Ibid.*, 1, p. 433.
15. Marx, *Grundrisse*, pp. 651, 552.
16. *Ibid.*, p. 752.
17. Marx, *Capital*, 3, p. 356.
18. Marx, *Theories of Surplus Value*, 3, Moscow: Progess Publishers, 1971, p. 500; *Capital*, 3, p. 25.
19. *Ibid.*, pp. 43, 194.
20. Marx, *Theories of Surplus Value*, 3, p. 500.
21. Marx, *Poverty of Philosophy*, New York: International Publishers, 1963. pp. 49-50.
22. Marx, *Capital*, 3, p. 743; cf. also *Ibid.*, p. 192.
23. *Ibid.*, pp. 839-40.

24. Sweezy explicitly presents this position in his recent book, *Four Lectures on Marxism*, New York: Monthly Review, 1981, p. 63.
25. Friedrich Engels, "Outlines of a Critique of Political Economy," Marx and Engels, *Collected Works*, 3, New York: International Publishers, 1975, p. 441; Marx, *Poverty of Philosophy*, pp. 151-52; Marx and Engels, *Communist Manifesto* and Marx, *Wage-Labor and Capital*, in Marx and Engels, *Selected Works*, 1, Moscow: Foreign Languages, 1962, pp. 57, 104.
26. Marx, *Capital*, 1, p. 777.
27. *Ibid.*, p. 929.
28. *Ibid.*, pp. 777, 928-29.
29. Marx, *Capital*, 3, p. 430. Emphasis added.
30. Marx, *Theories of Surplus Value*, 3, pp. 314-15.
31. Marx, *Capital*, 1, p. 874.
32. *Ibid.*, p. 723.
33. Marx, *Theories of Surplus Value*, 3, p. 315.
34. *Ibid.*, p. 315.
35. Marx, *Capital*, 3, p. 241.
36. Marx, *Grundrisse*, p. 497.
37. Marx *Capital*, 1, p. 779.
38. *Ibid.*, p. 776.
39. *Ibid.*, p. 1035; Marx, *Theories of Surplus Value*, 3, p. 311.
40. Marx, *Capital*, 1, p. 780.
41. *Ibid.*, p. 778n.
42. ibid, pp. 777,778n,780.
43. Marx, *Capital*, 3, p. 430.
44. Marx, *Theories of Surplus Value*, 3, p. 216.
45. Marx, *Capital*, 1, p. 515.
46. Marx, *Capital*, 3, p. 256-57.
47. Marx, *Capital*, 1, p. 515n.
48. Rodolosky, *op. cit.*, pp. 524-29.
49. Marx, *Capital*, 1, pp. 454,463-65, 780.
50. *Ibid.*, p. 476.
51. Marx, *Theories of Surplus Value*, 3, p. 216.
52. Marx, *Capital*, 3, p. 174.
53. Marx, *Grundrisse*, p. 174.
54. Marx, *Capital*, 1, p. 1051.
55. Marx, *Theories of Surplus Value*, 2, p. 94.
56. Marx, *Capital*, 3, pp. 742-43.
57. Marx, *Theories of Surplus Value*, 3, p. 465.
58. *Ibid.*, p. 464.
59. Marx to Engels, April 2, 1858, in Marx and Engels, *Selected Correspondence*, Moscow: Progress Publishers, 1965. p. 104; Marx, *Grundrisse*, p. 275.
60. Marx, *Capital*, 3, p. 192.
61. Marx, *Capital*, 2, Moscow: Foreign Languages, 1957, p. 182 and *passim*.
62. Marx, *Capital*, 3, p. 494.
63. *Ibid.*, pp. 361, 394.
64. Marx, *Capital*, 1, p. 780.

65. Marx, *Grundrisse*, pp. 657-658; Marx-Engels, April 2, 1858, *op. cit.*, p. 104.
66. Marx, *Capital*, 3, p. 428.
67. *Ibid.*, p. 431.
68. *Ibid.*, pp. 380, 427.
69. *Ibid.*, pp. 205, 156.
70. Marx, *Grundrisse*, p. 530.
71. Cf. G.W.F. Hegel, *The Philosophy of History*, New York: Dover, 1956. pp. 22,54,57.
72. Sweezy, *op. cit.*, p. 65; also, see John Weeks, *Capital and Exploitation*, p. 167.
73. G.W.F. Hegel, *The Phenomenology of Mind*, New York: Harper and Row, 1967, p. 76.
74. Weeks, *op. cit.*, pp. 167-68.
75. Marx, *Grundrisse*, pp. 414, 310.

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IS "ANALYTICAL MARXISM" MARXISM?

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G. A. COHN, JON ELSTER, JOHN ROEMER — without question, these are prolific writers with an impressive series of articles and books, who have become a significant presence in commentaries and discussions of Marxism in recent years. My first inkling, though, that more had emerged on the scene came from a 1983 article by John Gray (passed on by a skeptical friend); for, the article hailed the emergence of "a powerful new school of Analytical Marxism, by such outstanding figures as G. A. Cohen, Jon Elster and John Roemer, with whose works the future of Marxism, if it has any, must henceforth be associated" (Gray, 1983, 1461).

Is there indeed such a school? The evidence of the existence of some such self-defined group is overwhelming. In his *Making Sense of Marx*, Elster indicates that Cohen's *Karl Marx's Theory of History* came as a "revelation": "Overnight it changed the standards of rigour and clarity that were required to write on Marx and Marxism." Accordingly, he notes, a small group of like-minded colleagues formed and began a series of annual meetings in 1979. Their discussions were decisive for the shaping of Elster's book — and, in particular, the contributions of Roemer (subsequently stated in his "path-breaking" *A General Theory of Exploitation and Class)* were "crucial" (Elster, 1985, xiv-xv).[1]

In turn, Roemer begins the latter book (Roemer, 1982) by noting his particular indebtedness to Cohen and Elster, indicating among those who were helpful several others who also appear

1 Elster especially thanks Cohen and Roemer for their comments. He does not identify other group members but, included among those thanked for prepublication help are Pranab Bardhan, Robert Brenner, Leif Johansen, Serge Kolm, Adam Przeworski, Ian Steedman, Robert van der Veen, Phillippe van Parijs and Erik Wright.

on Elster's list.[2] Mentioned on both lists, Erik Olin Wright corroborates the existence of the group, its annual meetings and its orientation toward "Analytical Marxism" in the preface to his recent book, *Classes*; as well, he testifies that its "new ideas and perspectives have had a considerable impact on my thinking and my work" (Wright, 1985, 2).[3] Finally, definitively embracing the self-designation of "Analytical Marxism" is Roemer's new collection by that name — a collection which includes three essays each by Roemer, Elster and Cohen plus individual efforts by several others (Roemer, 1986).[4]

So, what do the adherents themselves see as the constituent elements in Analytical Marxism? For Wright, the central intellectual thread is the "systematic interrogation and clarification of basic [Marxian] concepts and their reconstruction into a more coherent theoretical structure" (Wright, 1985, 2). Similarly, as noted, Elster identified "rigor and clarity" as the underlying principle in the formation of the group. The most explicit self-description of Analytical Marxism, however, comes from Roemer in the Introduction to his collection: "Analytically sophisticated Marxism" is pursued with "contemporary tools of logic, mathematics, and model building" and committed to "the necessity for abstraction," to the "search for foundations" of Marxian judgments, and to "a non-dogmatic approach to Marxism" (Roemer, 1986, 1–2). An impressive set of elements, to be sure. Where do we apply for candidate status in this analytically correct fellowship?

More than rigor, however, sets Analytical Marxism apart — as John Gray's praise for this "powerful new school" makes clear. For, hailing the early Austrian criticisms of Marx by Böhm-Bawerk, von Mises and Hayek (and that of right-wing U.S. economist Paul Craig Roberts) and genuflecting before "the prodigious virtuosity of capitalism" and the marvels of the market, Gray was far from a sympathetic commentator on Marxism ("the first world view in human history that is genuinely self-defeating"); his praise for Analytical Marxism occurs in the context of a lengthy anti-Marxist polemic ("The System of Ruins").

2 These include Lief Johansen, Serge Kolm and Erik Wright.

3 Wright identifies among the members of the group: Cohen, Roemer, Elster, van Parijs, van der Veen, Brenner, Przeworski and Hillel Steiner.

4 Included in this collection are essays by Bardhan, Brenner, Przeworski, Wright and Allen Wood.

The practitioners of Analytical Marxism can not, of course, bear the responsibility for what others (like Gray) write about them. They bear responsibility only for their own work. But consider that work. Included by Elster as "dead" in Marx (in his most recent book, *An Introduction to Karl Marx*) are the following: "scientific socialism"; "dialectical materialism"; Marxian economic theory — in particular, its two "main pillars," the labor theory of value ("intellectually bankrupt") and the theory of the falling rate of profits; and, "perhaps the most important part of historical materialism," the "theory of productive forces and relations of production" (Elster, 1986, 188–94). Similarly, in a long march through Marxian economics in his *Analytical Foundations of Marxian Economic Theory* (Roemer, 1981), Roemer left intact only the Marxian theory of exploitation; he then proceeded in Roemer (1982) to find even this final survivor inadequate. Exploitation, Roemer now informs us, is simply inequality. But what, then, is the difference between the Analytical Marxist position and that of non-Marxist philosophers such as Rawls? Roemer answers that "it is not at all clear"; "the lines drawn between contemporary analytical Marxism and contemporary left-liberal political philosophy are fuzzy" (Roemer, 1986, 199–200).

One must wonder what really is left of Marxism in Analytical Marxism. In what follows, we will examine some of this work (especially that of Elster and Roemer) in order to explore the extent to which it can be considered "Marxist." The conclusion is that Analytical Marxism is not Marxism — and that, indeed, it is in essence *anti*-Marxist.

"Neoclassical" or "Rational Choice" Marxism?

There are several alternative labels which have been attached to Analytical Marxism and its practitioners; they include Neoclassical Marxism, Game-Theoretic Marxism and Rational-Choice Marxism. Consideration of these labels themselves provides a good point of entry into an examination of Analytical Marxism.

"Neoclassical Marxism," as Patrick Clawson described Philipe van Parijs' article on the falling-rate-of-profit controversy, would appear on its face to be an oxymoron (Clawson, 109). How could such a construct exist? After all, neoclassical economic the-

ory begins from the atomistic individual conceived as ontologically prior to the whole, the particular society. This is the "Cartesian" heritage, so well analyzed by Richard Levins and Richard Lewontin, which it shares with methodological approaches in other spheres:

> The parts are ontologically prior to the whole; that is, the parts exist in isolation and come together to make wholes. The parts have intrinsic properties, which they possess in isolation and which they lend to the whole. (Levins and Lewontin, 269.)

In neoclassical analysis, we have atomistic individuals who, with exogenously given assets and techniques, enter into relations of exchange with each other in order to satisfy exogenously given wants; and society is the sum-total of these arrangements of exchange.

Nothing could be further from Marx's perspective. To begin with the isolated individual for whom the various forms of social connectedness are a "mere means toward his private purposes" was simply "twaddle" (Marx, 1973, 84). "Private interest," Marx emphasized, "is itself already a socially determined interest, which can be achieved only within the conditions laid down by society and with the means provided by society." To be sure, it is the interest of individuals, of private persons; "but its content, as well as the form and means of its realization, is given by social conditions independent of all" (Marx, 1973, 156).

Thus, in the dialectical (in contrast to the Cartesian) perspective, parts have no prior independent existence as parts. They "acquire properties by virtue of being parts of a particular whole, properties they do not have in isolation or as parts of another whole" (Levins and Lewontin, 273, 3). Marx's starting point, accordingly, is to develop an understanding of society as a "connected whole," as an organic system; it is to trace the intrinsic connections and to reveal the "obscure structure of the bourgeois economic system," the "inner core, which is essential but concealed" on the surface of society (Marx, 1968, 65; Marx, 1981, 311). Only then does Marx proceed to explore what is real *within this structure* for the individual agents of production and how things necessarily appear to them.

Having developed, for example, "the general and necessary tendencies of capital" on the basis of the concept of capital (capital as a whole), it was then possible to demonstrate how "the immanent laws of capitalist production" were manifested through the actions of individual capitalists in competition (Marx, 1977, 433). As Marx noted repeatedly in the *Grundrisse*, "competition executes the inner laws of capital; makes them into compulsory laws towards the individual capital, but it does not invent them. It realizes them" (Marx, 1973, 414, 552, 651, 751–2). To *begin* analysis, on the other hand, with those individual capitals (and with the connections as they appear in "the phenomena of competition") produces a distortion of the inner structure because "in competition everything always appears in inverted form, always standing on its head" (Marx, 1968, 165).

From this perspective, there is absolutely no compatibility between the atomistic approach of neoclassical economics and Marxism. "Neoclassical Marxism" is either not neoclassical or it is not Marxism. Can we say the same, though, about "Game-Theoretic" or "Rational-Choice" Marxism? In a recent essay, Alan Carling has proposed "Rational-Choice Marxism" as the label most characteristic of the work in question, describing its distinctive presupposition as the "view that societies are composed of human individuals who, being endowed with resources of various kinds, attempt to choose rationally between various courses of action" (Carling, 26–7). But, is this just neoclassical economics by another name? Roemer's description of rational choice models (in an essay entitled "Rational Choice Marxism") as "general equilibrium theory, game theory and the arsenal of modelling techniques developed by neoclassical economics" might seem to suggest as much (Roemer, 1986a, 192).

However, it is critical not to confuse particular techniques with their original emergence or the use which has been made of those techniques; to do that would be to repeat the unfortunate experience of Marxian economics with calculus, rejected as "bourgeois" despite Marx's own significant explorations of this technique (Gerdes; Struik). In short, if it is a question of the appropriation of these techniques within a Marxian framework, then Analytical Marxism may have much to offer.

Consider game theory and game-theoretic approaches. Characteristic of both Elster and Roemer is a very strong emphasis on "game-theoretic" modeling; indeed, Roemer's general definition

of exploitation is explicitly game-theoretic. Does this approach have a place in Marxist theoretical work? If we insist that Marxist analysis must begin from a consideration of the "whole," the establishment of the inner structure of society, before examining the actions of individuals within that structure, it is not obvious that game theory as such is inappropriate here.

Game theory begins with the specification of the "game"; that is, it explicitly sets out the set of relations within which the actors perform. (For an introduction to game theory, see Bradley and Meek.) On its face, there is nothing inconsistent with Marxism in an approach that begins from the specification of a given set of relations of production and then proceeds to explore how the particular actors will behave rationally, giving rise to dynamic properties (the laws of motion) inherent in the particular structure.

The key, of course, will be the specification of the game and the actors. A game, for example, in which the actors are identified as the competing sellers of a common commodity, exploring their rational strategies, inhabits the terrain of the competition of capitals which, for Marx, executes the inner laws of capitalism but explains nothing about them. By contrast, a game in which the parties are a capitalist and "his" wage-laborers (and which proceeds to explore the strategies and actions of each party) would appear to correspond closely to Marx's own approach. In this latter game, the relations between capitalist and wage-laborer are identical with those of the coalition of capitalists and the coalition of wage-laborers; that is, the relation of the capitalist to his own workers is the "essential relation" of capital and wage-labor (Marx, 1973, 420).

Similarly, a game which explores the relation between the feudal lord and his peasant tenants (or, between the coalition of lords and that of peasants (the two approaches are seen here as identical so long as neither introduces matters appropriate to intra-coalition relations) would seem to permit an examination of the essential character of feudal relations of production. What does the lord want, what are the strategies available to him, what are the potential gains (and risks) from each? What does the peasant (peasant community) want, what are the potential strategies and returns? What (in a continuing game) is the "appropriate" solution or outcome to the particular game — and, significantly,

what aspects of the behavior of the parties in this particular interaction tend to undermine (rather than preserve) the existing solution/outcome and, indeed, the particular game itself?

Stated in this way, there appears to be nothing at all inconsistent between game theory as such and a Marxist approach; indeed, not only may we speculate that Marx would have been quick to explore its techniques but we can go further and suggest that Marx's analysis was inherently a "game-theoretic" perspective. See, for example, Maarek's elaboration of Marx's theory of surplus value using game theory (Maarek, 124–340).

However, the above description of the feudal "game" has a certain specificity; for it is a game which may best be designated as a "collective game." Its actors are classes (or class representatives, *trager*, the bearers of a relation). There is no place here for the autonomous, atomistic individual; nor have we introduced (yet) intra-class interactions. It is simply assumed that the coalition of lords acts in the same way as the Abstract Lord; that our examination of the latter in its specific interaction with the Abstract Peasant yields the essential insights into the coalition or class of lords in its interactions with the class of peasants.

In short, in the collective game, classes act. *The* feudal lord and *the* peasant interact, but individual feudal lords and individual peasants do not interact with each other. Similarly, in the collective game for capitalism, capital (the capitalist) and wage-labor (the worker) interact, but factors emanating from the posited existence of competing capitalists and wage-laborers are seen as secondary to the establishment of the essential capital/wage-labor relation. As Maarek indicates, in his discussion of Marx's theory of surplus value, "it is just as if there were a single center of decision in each class, a 'collective' capitalist and a 'collective' worker, with the two classes confronting each other like two autonomous blocks" (Maarek, 132).

The collective (or class) game, thus, puts to the side any consideration of the ability of the particular coalitions to engage successfully in collective actions (i.e., the issues posed by Mancur Olson in his *The Logic of Collective Action*) in order to explore first in detail the character of the relation between classes as defined by the relations of production. All questions of whether individual agents will find it in their individual interest to engage in collective action (to achieve class goals), all matters

relating to "free rider" problems, etc., are not the principal matter of inquiry of the collective game. *Epistemological priority is assigned to the determination of the structure within which individuals act.*

Yet, intra-coalition matters are not outside the purview of a Marxian analysis (any more than the consideration of how a class-in-itself becomes a class-for-itself). The manner in which capital attempts to divide workers and to encourage competition among them in order to secure its own goals is an important part of Marx's exploration of a rational strategy for capital in the strategic game of capital and wage-labor (see Lebowitz, 1987a). And, his conclusion that when individual workers act in their individual self-interest, the result is the *worst* strategy for workers as a whole (Lebowitz, 1987b) is a critical statement about intra-coalition issues on the side of workers. As important as Marx's insights on these intra-coalition matters are, it is essential to recognize that they can occur only *after* the prior specification of the collective game.

In contrast to the collective game, on the other hand, what we may designate as the "individual game" has a different starting point. Beginning from the position that there are no supra-individual entities which act in the real world ("capital" does nothing, etc.), it asserts the necessity to consider the behavior of the individual unit at a *pre-coalition* level in the war of all against all. Thus, no longer at the core of inquiry is the character of the class relation. Substituted is a different problematic, the neoclassical problematic: the outcomes which emerge from the interactions of atomistic individuals. At its best, the overriding question in the individual game becomes one of why coalitions emerge, why (and in what sense) there are classes-for-themselves.

Thus, a game-theoretic approach in itself can not be said to be inconsistent with a Marxist analysis. Rather than rigor as the dividing line between Marxism and "Analytical Marxism," the central issue is the nature of the problematic within which such techniques are employed. It is precisely in this context that "Analytical Marxism" should be considered.

Methodological Individualism and Microfoundations

At the core of Analytical Marxism is the categorical imperative: *there shalt be no explanation at a level above that of the individual unit.* Thus, Elster opens his *Making Sense of Marx* by announcing that he will begin "by stating and justifying the principle of methodological individualism." The doctrine is quite uncompromising: "all social phenomena — their structure and their change — are in principle explicable in ways that only involve individuals — their properties, their goals, their beliefs and their actions."

To explain, Elster proposes, it is necessary "to provide a *mechansim,* to open up the black box and show the nuts and bolts, the cogs and wheels, the desires and beliefs that generate the aggregate outcomes" (Elster, 1985, 5). Accordingly, methodological individualism leaves the macro level for the micro, and rejects an explanation which does not proceed from individuals; it stands in opposition to methodological collectivism, which "assumes that there are supra-individual entities that are prior to individuals in the explanatory order" (6).

As Elster is well aware, however, Marx's discussions about "humanity," "capital," and especially "capital in general" as collective subjects are inconsistent with this doctrine of methodological individualism. Citing one of Marx's statements on competition in the *Grundrisse,* Elster indeed comments: "One could not wish for a more explicit denial of methodological individualism" (7). He immediately, however, invokes an alternative authority — John Roemer.

In this respect, it is important to recognize that Elster has read Marx closely, and that not the lack of familiarity with relevant passages (although his interpretations are rather questionable at times) but, rather, the *rejection* of these as grievous errors and as "near-nonsense" underlies his argument. What is to be rescued is the Marx who makes "sense," the Marx who sounds like a methodological individualist. Elster's project, simply, is to get rid of the bad Marx and preserve the good — the separation of the "misguided framework" from what he sees as valuable in Marx.

The very same themes can be found in Roemer's essay on method in *Analytical Marxism.* Roemer asserts: "Marxian analy-

sis requires micro-foundations" (Roemer, 1986a, 192). How, he asks, can we say that the entity, capital, does anything (e.g., divides and conquers workers) "when in a competitive economy there is no agent who looks after the needs of capital"? When Marxists argue in such a manner, he proposes, they are guilty of "a lazy kind of teleological reasoning" (191). Again, the identified project is the necessity to find micro-mechanisms: "What Marxists must provide are explanations of *mechanisms*, at the micro level, for the phenomena they claim come about for teleological reasons" (192).

The logic behind this Analytical Marxist position can be seen most clearly in Phillipe Van Parijs' response to the description of his position as one of "Neoclassical Marxism." Noting the contrast between "*rational man* (or individualistic) and *structural* (or systematic) explanations," Van Parijs indicates that structural explanations which refer to a structural imperative (e.g., a requirement flowing "from the system itself") are "unambiguously rejected by 'neoclassical Marxism' " (Van Parijs, 119). Why? Because "no explanation of B by A is acceptable unless one specifies the *mechanism* through which A generates B."

Yet, "mechanism" has a rather specific meaning for Van Parijs here. For example, the propositions that can be derived from the structured collective game of capital and wage-labor would fail his test for acceptability. This is clear from his subsequent proposition: "Or, equivalently, no explanatory theory is acceptable unless it is provided with *microfoundations.*" (How Proposition II is *equivalent* to Proposition I is something that Van Parijs considers so self-evident that it need not be mentioned!) Clearly missing from his discussion is a critical proposition — one which states that "the *only* mechanism by which one can explain is one with microfoundations." This, of course, is the only mechanism by which one *can* get from I to II, and it is the core of the matter. For, if we do accept that missing proposition, it of course follows that "Marxism needs microfoundations" (120).

But, *why* should we accept the proposition that microfoundations are the only mechanism by which one can explain? All we have are assertions. But where is the proof? Where is the demonstration that "methodological collectivism" cannot provide a valid (and, indeed, better) explanation? Where is the basis for describing it as misguided, near-nonsense, disastrous scientific practice (Elster, 1985, 4)? Are we to assume that the point, drawing its force from neoclassical conventionalism, is self-evident?

Even if the Analytical Marxists are able to find examples of functionalist or teleological arguments conducted at the supra-individual level, it would not prove that methodological collectivism *necessarily* leads to functionalist or teleological argument. (While noting that a methodological collectivist explanation "frequently takes the form of functional explanation," Elster admits "there is no logical connection" (6).) Indeed, Przeworski, Brenner and Elster themselves all explore collective games in essays in *Analytical Marxism.*

Further, an acceptable methodological individualist (or micro) explanation *would not constitute a sufficient refutation* of an explanation of social phenomena based upon the concept of supra-individual entities. Marx's argument that the competition of capitalists executes the inner laws of capital is a rejection of methodological individualism and micro*foundations* — but not of the real existence of individual capitals and micro-phenomena. The conclusion that only microfoundations can explain aggregate outcomes thus requires far more demanding proof than Analytical Marxism offers.

Ultimately, of course, the proof of the pudding is in the eating. So, rather than criticizing the Cartesian reductionism of the above arguments abstractly, let us consider specifically Elster's answer to Marx's explicit denial of methodological individualism — Roemer's "pathbreaking" work on exploitation. Elster describes this centerpiece of Analytical Marxism as an approach "generating class relations and the capital relationship from exchanges between differently endowed individuals in a competitive setting. . . . The overwhelmingly strong argument for this procedure is that it allows one to demonstrate as theorems what would otherwise be unsubstantiated postulates" (Elster, 1985, 7).

What, however, is *wrong* with the so-called "unsubstantiated postulates"? Recall that Marx's procedure was to begin his examination of capitalism from the postulate of capitalist and wage-laborer in which the relation is specified as one in which the worker has sold the property right over labor-power with the necessary result both that the worker works under the direction of the capitalist and that the worker has no property rights in the product of labor. Marx, in short, begins from the specification of

a particular set of relations of production.

Now, we may ask: where did those unsubstantiated postulates come from? And the answer is obvious: from history, from real life, the real concrete. The sale of labor-power, work under the direction of the capitalist and the absence of workers' property rights in the product of labor are the historical premises of the discussion; and they are brought to the theoretical discussion of capitalism as the exogenous point of entry. So, there is indeed a theoretically unsubstantiated postulate, the capital/wage-labor relation. What is critical, too, is what Marx proceeds to *do* on the basis of this premise. He explores the nature of the interaction between capitalist and workers in the collective game and generates the dynamic properties inherent in that structured relationship.

Now consider what Elster has said about Roemer's approach: Roemer will generate the class relationship from individuals; he will demonstrate the capital/wage-labor relation as a "theorem." An immediate response might be: but, this is a *different* theoretical object; what Marx takes as his starting point, Roemer sees as his result. Yet, it is important to remember that, in Marx's dialectical analysis, a central requirement will be to demonstrate that what was a mere premise and presupposition (an unsubstantiated postulate) of the theory is itself reproduced within the system — i.e., is also a result. In this respect, both Marx and Roemer have the *same* object — to demonstrate the production of the class relation. But, their starting points are different: Marx beginning from the observation of the concrete relationships and Roemer from . . . . Roemer from *where*?

We will put that question aside for the moment. Let us ask first: what are we to conclude if both Roemer and Marx, having started out from different places, arrive at the same destination? Are we to conclude that Roemer's successful arrival (the derivation of the class relation from atomistic individuals) proves that you can't get there from Marx's starting point? Obviously not. To conclude this would be to confuse explanation and necessitation. At best, Roemer's arrival will have demonstrated Marx's argument that competition executes the inner laws of capital — i.e., that many capitals, the necessary form of existence of capital, manifest through competition the inner nature of capital. On the other hand, if we have Roemer's derivation, do we *need* Marx's?

But, there is a begged question in all this: does Roemer *really* arrive at that same point, the point which for Marx is both premise and result — the historically given capitalist relations of production? Now, we will consider Roemer's starting point. Elster has already told us: "differently endowed individuals." But, let Roemer explain more fully. Responding to the criticism by Nadvi (1985), he indicates that his model "has 'explained' some phenomena, in deriving them from logically prior data. In GTEC [Roemer, 1982], the data are: differential ownership of the means of production, preferences and technology. Everything is driven by these data; class and exploitation are explained to be a consequence of initial property relations" (Roemer, 1986b, 138).

We see, not surprisingly, that Roemer *also* starts from "logically prior data" which are not the subject of his analysis (i.e. "unsubstantiated postulates"). It *happens* to be the same logically prior data with which neoclassical economics (in particular, neoclassical general equilibrium theory) begins. And Roemer proposes that, on the basis of those same neoclassical premises, he has succeeded in demonstrating the existence of exploitation and class — a classic case of hoisting neoclassical economics by its own petard.

Let us think, though, about these logically prior data. (This particular success may be a poison draught for Marxism.) Where do they come from? Roemer answers: history. "The historical process which gives rise to the initial endowments where my model begins is not a subject of my analysis. That is a topic for an historian" (Roemer, 1986b, 138). History thus has yielded a set of individuals who, with given preferences and technology, have differential property endowments. *Is that it?* Has history presented us with a group of atomistic individuals who have no prior connections, no prior interactions — individuals who are ontologically prior to the society?

Obviously not. What we have, rather, is that an analyst has decided to model the individuals *as if* they were initially outside society and then entered into society to exchange. The starting point, then, is not history, but history mediated by an ideological assumption, one identified by Marx as early as 1843 (Marx, "On the Jewish Question," 1975). Now, it is easy to understand such an operation when conducted by a neoclassical economist — but a *Marxist*?

Roemer's instrumentalist response, however, would be that if the model succeeds in explaining the desired phenomena, then clearly the "model has made the right asbtractions: it has ignored things which are not crucial to its topic and has focused our attention correctly" (Roemer, 1986b). Methodologically, this is not objectionable practice; Marx similarly engages in abstraction and puts aside questions pertaining to the members of the set or coalition. Many Marxists, however, will find the idea that "society" is an appropriate victim of Occam's Razor rather troublesome. Nevertheless, rather than debating this issue, it is more pertinent to consider whether the model has indeed succeeded in its object — whether, in short, Roemer's model makes "the right abstractions."

Roemerian Exploitation

In discussing Roemer's success in generating as theorems both classes and exploitation within capitalism, we must limit ourselves to selected aspects of his theory as developed in his book and subsequent articles. (Some other issues are raised in my review of the book; Lebowitz, 1984.) We will not concern ourselves, for example, with the exploitation that Roemer discovers in his linear production model of an economy of simple commodity producers with differential asset ownership since the inequality that Roemer finds here is manifestly "rent," and its designation as "exploitation in the Marxian sense" would necessitate holiday pay for his words; nor, for similar reasons, will we consider Roemer's "socialist exploitation."

The core argument in Roemer (1982) occurs when Roemer introduces a labor market into his model of individuals with differential endowments of productive assets. He demonstrates that, as a consequence of optimizing behavior, those individuals with low endowments will end up selling labor-power and will be exploited (perform surplus labor) whereas those who have high endowments will hire labor-power and will be exploiters. The argument, generating the classical Marxist proposition, appears quite powerful.

Roemer proceeds, however, to introduce a credit market (rather than a labor market) and reveals now a functionally equivalent result: those with low endowments hire capital and are exploited (perform surplus labor) while those with high endowments rent capital and are exploiters. Exploitation is, indeed, the same in both cases. Accordingly, Roemer offers his "isomorphism theorem" that "truly it does not matter whether labor hires capital or capital hires labor: the poor are exploited and the rich exploit in either case" (Roemer, 1982, 93).

Now, this theorem (whose clauses successively skewer Marxian and neoclassical economics) is central to all that follows. Roemer himself draws the robust inference that "the fundamental feature of capitalist exploitation is not what happens in the labor process, but the differential ownership of productive assets" (94-5). *Yet, precisely the wrong conclusion has been drawn from the isomorphism theorem: rather than revealing the power of Roemer's analysis, it exposes its weakness.*

Consider what has occurred. Logical priority has shifted from specific relations of production to property relations; their connection has been inverted. Rather than seeing capitalist property relations (KP) as the product of capitalist relations of production (KRP), Roemer argues that differential ownership of productive assets necessarily yields capitalist relations of production, exploitation and class. Since, further, this can be demonstrated to occur with *either* a labor or credit market, it follows that unequal property endowment plus a factor market are sufficient to generate "class relations and the capital relationship" (as theorems).

Let us, however, stress what Marx saw as critical elements in capitalism. These are: (1) the sale of the property right over labor-power by the person who owns no means of production; and, (2) the purchase of this property right by an owner of means of production whose goal is valorization (M-C-M). The two elements here clearly *presuppose* capitalist property relations (KP) — the specific inequality in property ownership. However, KP is not sufficient to yield these two elements — since (as Roemer himself demonstrates) it is obvious that KP can *also* support: (1a) the hiring of means of production by someone who owns only labor-power and (2a) the renting of the same by the owner of means of production. *KP is a necessary but not sufficient condition for capitalism (KRP).*

In short, two quite distinct regimes can be generated on the basis of Roemer's logically prior data, the initial property rela-

tions. A simple question reveals that difference: *who owns the product of labor*? In 1/2, property rights in the product of labor belong to the owner of means of production (who also purchased the property rights over the disposition of labor-power); in 1a/2a, on the other hand, it is the owner of labor-power who possesses the property right over the product. It is not difficult to establish that Marx's analysis of capitalism refers to 1/2 — but *not* to 1a/2a.

For Marx, the situation in which the purchase of labor-power did not occur was explicitly *pre-capitalist*. Where there is formal subsumption of labor by capital (the initial form of the capital relation), "the relations of capital are essentially concerned with controlling production and . . . therefore the worker constantly appears in the market as a seller and the capitalist as a buyer" (Marx, 1977, 1011). In contrast to formal subsumption, on the other hand, was the case where capital is to be found but "where it has not emerged as the direct purchaser of labor and as the immediate owner of the process of production" (as with, e.g., usury and merchant capital). "Here we have *not yet* reached the stage of formal subsumption of labour under capital" (1023).

Characteristic of pre-capitalist relations was precisely the credit-market case that Roemer presents. Thus, in the *Grundrisse*, Marx commented that the relation in which the producer, still independent, faces means of production which are independent "forming the property of a particular class of usurers . . . necessarily develops in all modes of production resting more or less on exchange" (Marx, 1973, 853). Here, the worker "is not yet subsumed into the process of capital. The mode of production therefore does not yet undergo essential change." There is, *of course*, exploitation — indeed, the "most odious exploitation of labor." In the mode of production itself, capital is still "materially subsumed under the individual workers or the family of workers. . . . What takes place is exploitation by capital without the mode of production of capital. . . . This form of usury, in which capital does not seize possession of production, hence is capital only formally, presupposes the predominance of pre-bourgeois forms of production" (853). Marx similarly observed that "capital arises only where trade has seized possession of production itself, and where the merchant becomes producer, or the producer mere merchant" (859).

In short, specifically capitalist relations of production (KRP) as examined by Marx require more than unequal distribution of property in means of production (KP); *they also require that capital has "seized possession of production"* (true for 1/2 but not 1a/2a), that capital directs the process of production, that production is subordinated to the goals of capital. *Only* with this second element do we necessarily have two essential characteristics of the capitalist labor process: that "the worker works under the control of the capitalist to whom his labour belongs" and "the product is the property of the capitalist and not that of the worker, its immediate producer" (Marx, 1977, 291-2). Only here is it characterisitc that, rather than the worker employing means of production, means of production employ the worker (a metaphor that captures Marx's conception).

Thus, Roemer's "logically prior data" cannot select between capitalism and pre-capitalism. Does it matter? Consider what follows from 1/2 which does not follow from 1a/2a. The performance of surplus labor will be compelled (given by M-C-M and the sale of the property right over labor-power); i.e., there will be exploitation specific to capitalist relations. The capitalist — but not the worker — will gain by increasing the intensity of labor; the capitalist — but not the worker — will be the direct recipient of gains resulting from increased productivity and thus has an incentive to alter the production process. Capitalist exploitation will be the basis of capital accumulation; KRP will be a sufficient condition for the reproduction of KP, for capitalist distribution relations.

By contrast, under 1a/2a (the credit market case), it is the *producer* who gains from increased labor and productivity and who decides over the process of expanded reproduction. (Consider how this collective game would differ from the capitalist game.) Potentially, this producer *may* succeed in securing means of production for self as the result of intensive efforts. Unlike the case of 1/2, the credit market case is, in fact, a "transitional" relationship. The dynamic properties, the laws of motion, inherent in the two structures clearly differ.

What "phenomena," then, have been derived from Roemer's logically prior data, unequally endowed atomistic individuals? What theorems have been successfully demonstrated by means of this prime example of methodological individualism? We find

that there is no distinction between a capitalist and a pre-capitalist relation, no distinction between specifically capitalist exploitation based on capitalist relations of production and pre-capitalist exploitation based merely on unequal property endowments. Roemer, of course, is entitled to call anything he wants capitalism (as is Milton Friedman) — *but it should not be confused for a moment with Marx's (and a Marxist) concept of capitalism.*

Thus, Roemer does *not* arrive at the same destination as Marx. Rather than strengthening the case that we can proceed from individuals with differing property endowments to generate capitalist relations of production and capitalist exploitation, the very indeterminacy apparent in his model (the isomorphism theorem) undermines his argument. Still, it might be responded that all this simply proves that Marx was *wrong* to distinguish between capitalist exploitation (where 1/2 holds) and pre-capitalist exploitation based upon unequal property endowments (1a/2a) since exploitation is the same in both cases. To answer this argument, we must briefly consider Roemer's model.

One of the critical problems in Roemer's model is his assumption of a common production function for all regimes. Precluded, then, *by definition* is any effect of particular relations of production on the production function. By assuming, for example, in his linear production models that a unit of labor-power exudes a certain quantity of labor (i.e., the quality and intensity of labor are presumably given technically), he not only effectively assumes away the content of the Marxian distinction between labor-power and labor, but also leaves us with production considered merely as a technical process transforming inert inputs into final products. Thus, the distinction Roemer once acknowledged between the neoclassical and Marxist approach — that the Marxist asks "how hard are the workers laboring?" — fades away (Roemer, 1981, 143-5).

What is the implication? Consider the difference between the credit market model and the labor market model. In the former, the producers secure the fruits of their own labor (i.e., own the product). They choose whether or not to select leisure on the job. Presumably, there are no inherent problems of shirking, no necessary costs of surveillance and monitoring, etc., which would be reflected in the production function. To assume the *same* production coefficients in the case of the labor market model, however, is to presuppose that workers who have no property rights in the products of their labor will behave in the same way as those who do. (Nor should we ignore the likelihood, in the latter case, that the choice of technique and the division of labor will be determined not solely by technical efficiency but also by the need to monitor easily and to reduce the ability of producers to engage in coalitions.)

Although Roemer concludes that capitalist exploitation does not require domination at the point of production because "the class and exploitation relations of a capitalist economy using labour markets can be precisely replicated with a capitalist economy using credit markets," his models generate these results only because of his hidden assumptions (Roemer, 1986a, 268). In a model in which producers wish to maximize leisure (which includes leisure in the "pores" of the workday), the assumption of unchanged technical coefficients in the two cases amounts to assuming the existence of an efficient (and costless) capitalist monitoring process — without acknowledging the assumption! One can only abstract from the requirement of capitalist domination by assuming (as Roemer does explicitly) that the delivery of labor for the wage is "as simple and enforceable a transaction as the delivery of an apple for a dime" (269).

In short, Roemer's discovery that the labor market case and the credit market case yield equivalent solutions and that, accordingly, capitalist domination is not necessary reflects merely the ideological assumption he has imposed upon his model. Having *assumed* that productive relations do not matter, Roemer finds little difficulty in then "proving" that they don't matter; he is of course not the first to believe that he has proven what is merely embedded in his assumptions.

"Just" Exploitation

For others in the Analytical Marxism camp, Roemer's discovery that capitalist exploitation requires neither labor-power as a commodity nor domination in production has been most persuasive. Wright, for example, initially resisted the argument that capitalist domination was unnecessary for exploitation but then yielded — maintaining, however, the importance of a link

between domination in production and class relations (Wright, 1982, 331). Subsequently, he succumbed on this latter point as well (accepting Roemer's theory as the framework for his own empirical work) and announced, "I now think that Roemer is correct on this point" (Wright, 1985, 72). Elster, too, is unequivocal; after presenting Roemer's conclusion, Elster characteristically declares, "I believe that Roemer's argument is an irrefutable objection to the 'fundamentalist' view that exploitation *must* be mediated by domination in the labour process" (Elster, 1985, 181).

Once the specific characteristics of capitalism and capitalist exploitation have been obliterated (leaving only unequal endowments), however, can meditations on "just" exploitation be far behind? Posing the question "Should Marxists be Interested in Exploitation?", Roemer responds with his "verdict . . . that exploitation theory is a domicile that we need no longer maintain: it has provided a home for raising a vigorous family who now must move on" (Roemer, 1986a, 262). Having emptied the house of all its contents, Roemer's up-market move is to "the modern concept" of exploitation as "an injustice in the distribution of income resulting from a distribution of endowments which is unjust" (Roemer, 1986a, 199). Exploitation, in short, is simply inequality — "the distributional consequences of an unjust inequality in the distribution of productive assets and resources" (Roemer, 1986a, 281).

The obvious implication is that exploitation/inequality is not unjust if the original inequality in property endowments *itself* was not unjust. While this point is indeed explored by Roemer (1986a), it is Elster who most clearly draws out the logic of the Analytical Marxist argument. We judge exploitation unjust, he proposes, because "exploitation in history has almost always had a thoroughly unclean causal origin, in violence, coercion, or unequal opportunities" (Elster, 1986, 99). But, what if there were a "clean path" of original accumulation? What if people differ in their time preferences? What if some people choose to save and invest rather than consume (thereby building up a capital stock)? "Could anyone object if they induce others to work for them by offering them a wage above what they could earn elsewhere?" (Elster, 1985, 226). Here, Elster notes, is a "powerful objection, that must be taken seriously by anyone who sets out to defend Marx's theory of exploitation" (227).

Thus, as counterexamples to the view that exploitation is inherently unjust, Elster and Roemer each present a two-person case where, as the result of the patterns of capital asset ownership and leisure preferences, the asset-poor person "exploits the rich person" (Roemer, 1986a, 274–7; Elster, 1986, 98). Elster's conclusion from this example is that "it demonstrates, I think conclusively, that exploitation is not inherently wrong" (98). In a second example ("more relevant for real-life problems"), Elster posits two people with the same skills and capital but a different orientation toward present consumption. One postpones consumption and thus accumulates capital — enough ultimately to pay the other to work for her — at a wage that exceeds what he could gain by himself. "True, he will be exploited — but who cares?" From this, Elster concludes that "the example suggests that exploitation is legitimate when the unequal capital endowments have a 'clean' causal history" (99).

All that is left to exploitation, thus, is the contingent character of original accumulation. Since exploitation has been severed from any connection to the capitalist process of production and rests solely upon the pre-existence of unequal endowments, all that remains is the question as to whether property rights were violated in the formation of those differential endowments. Having begun by inverting the connection between property relations and relations of production in an organic system, Elster and Roemer find from their apocryphal stories of original accumulation that "exploitation is not a fundamental moral concept" (Elster, 1986, 99).

Sadly, it is as if the distinction between "original capital" and that which emerges from specifically capitalist exploitation had never been made; as if Marx never pointed out that even if capital were originally acquired by a person's own labor (the cleanest possible path to accumulation), "it sooner or later becomes value appropriated without an equivalent" (Marx, 1977, 715, 728). The inherent injustice of exploitation is just one more element that disappears in the course of making "sense" of Marx.

Conclusion

It would be quite easy (but, at the same time, quite wrong) to conclude from the above discussion that Analytical Marxism has

little to offer Marxists. In fact, these writers pose important questions and challenges. They reject, in particular, teleological reasoning in Marx; it should be rejected. Similarly, functional explanations are viewed as suspect. They are — and, where they appear, they should be scrutinized. Analytical Marxism, in this respect, can keep us on our toes.

Further, there are aspects of the work of these writers which can be incorporated easily into Marxist analysis. Roemer's examination of exploitation as an implicit counterfactual proposition (Roemer, 1982) points to a way around the neoclassical objection that the very sale of labor-power proves that the wage-laborer benefits from the exchange (compared to the existing alternative of non-sale). Elster's early discussion (Elster, 1978) of the "fallacy of composition" (what is possible for one member of a set is not necessarily true for all members simultaneously) strikes directly at attempts to reason from the position of the isolated individual (and all such Robinsonades of neoclassical economics). And, Cohen's "locked room" parable, in his "The Structure of Proletarian Unfreedom," dramatically poses the contrast between the individual worker's ability to escape the status of wage-laborer and the structural inability of the class as a whole to do so (Cohen, 1986).

These last two examples, in particular, provide powerful arguments against neo-classical conventions. I regularly introduce them in the first week of my class in Marxian economics — as an introduction to the question as to why Marx saw the necessity to begin from the consideration of an organic whole (which is, of course, precisely *contrary* to the methodological imperative of Analytical Marxism).

Nevertheless, not only is there not much of Marx left in Analytical Marxism, but its essential thrust (as traced above) is *anti*-Marxist. So why do these writers wish to retain their connection to *any* kind of Marxism? The answer, it appears, is that they consider themselves socialists and that the Marxist "label does convey at least that certain fundamental insights are viewed as coming from Marx" (Roemer, 1986, 2). As Elster puts it, "if, by a Marxist, you mean someone who can trace the ancestry of his most important beliefs back to Marx, then I am indeed a Marxist" (Elster, 1986, 4).

Yet, if selected beliefs and insights detached from a Marxian framework were sufficient for designation as Marxism, then the term would lose all integral meaning. For, situated in an alternative framework, those selected beliefs acquire quite different properties. The transformation, within the neoclassical framework, of Marx's theory of exploitation (one of Elster's "most important beliefs") into a conception of distributive justice which accepts the possibility of just exploitation illustrates this fundamental dialectical principle quite well. What makes Analytical Marxism anti-Marxist is that the beliefs and insights once absorbed from Marx have been incorporated within an anti-Marxist framework, and the parts have acquired properties from that whole.

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A NOTE ON LEFT-WING NEO-CONSERVATISM

by

Alain PARGUEZ and Mario SECCARECCIA *

* The authors wish to thank Tom Ferguson (Massachusetts), Marc Lavoie (Ottawa), Juliet Schor (Harvard), and Irene Spry (Ottawa) for their valuable comments. However, the usual disclaimers apply.

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In an attempt to counter the abuses and general consequences of Reaganomics, there has emerged during the last decade a specific form of 'supply-side' radical economics, particularly in the United States, whose advocates seem to accept some of the basic precepts and results of conventional economic theory.[1] One current of radical thinking explains unemployment and the associated productivity slowdown by the high growth of real wages and the ensuing 'profit squeeze',[2] while others have analyzed the wastefulness of Reagan's military Keynesianism by pointing, almost in the style of Hayek and contemporary neo-conservative ideologues, to the supposed negative effects of high federal budget deficits!

In the last issue of Studies in Political Economy, dedicated to a critique of the neo-conservative agenda, the article by E. Shaffer on military spending and the economy is representative of this latter current of radical neoclassicism. Shaffer's article points basically to two critical reasons for the rejection of military Keynesianism. The first, with which we are undoubtedly in full agreement on both economic and moral grounds, is that such government expenditures could and ought to be better used for public investment purposes, such as health and education, rather than for the planning of human destruction. Also, the diversion of a growing share of employment in the defence industries may slow down economic growth, since military production absorbs resources that could be better employed in improving the community's future productive potential.[3]

Shaffer's second reason for opposing military Keynesianism is, however, totally unacceptable and smacks of Hayek and Mises. Depicting it as the principal cause of large budget deficits, Shaffer points to the growth in military spending as being responsible for economic stagnation since it crowds out private productive investment, creating higher interest costs. For instance, the author says:

> "A policy of large deficits forces the government in a capitalist economy to borrow more and more funds in the money market. If the private sector is at the same time expanding its activities, it will seek funds in the money market. This pursuit of funds puts upward pressure on interest rates. The government can counter this pressure in one of two ways. One is to increase the money supply. The problem with this is that it is inflationary. (...). The second way is to reduce economic activity in the private sector. This would reduce the demand for funds in the money market, and therefore mitigate the upward pressure on interest rates. This is apparently what is now happening in the United States, where economic activity has slowed down considerably during the last year."[4]

Shaffer's article thus seems to join the litany of contemporary high priests of neoclassical orthodoxy who, in their crusade against 'wasteful' state spending, identify the budget deficit as the principal evil. The search for further support and legitimacy to its criticism of existing policies has taken the Left full circle in rehabilitating bankrupt theories that were discarded over one-half century ago and has resulted in a new united front against government deficits, which now includes progressive peace activists and neo-conservatives obsessed with balanced budgets.

Are political economists still familiar with the writings of Marx and Keynes, and particularly with the latter's criticism of the neoclassical theory of capital? One of the fundamental contributions of Marx's analysis

of the circuit of money-capital and Keynes's rejection of the loanable funds theory of interest was in setting political economy on a firmer basis than that provided by both classical and neoclassical fundist principles. Marx criticized vulgar political economists, such as Senior, for accepting the concept of a wage fund. Keynes rid political economy of the ridiculous idea of a neoclassical capital market that equilibrates the demand for and supply of financial funds through variations in interest rates by showing that the flow of investment and savings are always identical. While standing on the shoulders of such intellectual giants, many on the Left still fall prey to this fundamentally erroneous conception of a so-called 'capital market' in a capitalist economy.

For expository purposes, it may be argued that there have evolved historically two general models of systems of accumulation. The first model of primitive accumulation, pertaining more to a feudal than to a modern capitalist economy, is one in which accumulation must take place through the prior extortion or appropriation of a capital fund that is needed for the system's expanded reproduction. Classical and neoclassical models, in which a savings fund is first required in order for investment spending to proceed, are descendant from this general approach. The second model more properly depicts the modern system of capitalist accumulation and, in contrast to the first, allows advances of money-capital to be made to firms for investment purposes regardless of any previous accumulation of funds in a monetary economy. Such investment spending is itself a causal

factor in determining the fluctuations in the rate of growth of the community's stock of savings. This view of the accumulation process crystallizes a synthesis of Marx's and Keynes's analyses and has been further elaborated in recent years by researchers who work within the modern paradigm commonly described in France as la théorie du circuit.[5]

To believe, as Shaffer apparently does, that to finance the government deficit the state must compete for funds with the private sector in a so-called capital market is to confound the American economy of the 1980s with some primitive agricultural economy before the Industrial Revolution. One of the great scientific achievements of modern macroeconomics along the lines set out by Keynes and Kalecki has been to show how, in an economy operating normally at less than full capacity, the budget deficit automatically creates the flow of savings with which the deficit is supposedly to be financed. Instead of the disastrous consequences of budget deficits on private investment suggested by Shaffer, the opposite is nearer to the truth. Government deficits arise merely to permit those who control financial capital to accumulate relatively liquid assets in excess of the amount private firms are willing to hold in the form of private debt.[6] It can, indeed, be said that government spending provides an outlet for private financial capital that exceeds private investment intentions. Thus, this is a means of meeting the macroeconomic exigencies of finance capital in preventing a cumulative deflation of capital assets during recessions.

Analysts on the Left have nothing to gain in sticking stubbornly to

the conventional neoclassical theory of capital. Ignoring Keynes and Kalecki while, at the same time, presenting one's views as being more orthodox and virtuous than those of the neo-conservative Right, is a self-destructive strategy for the Left. The critique of Reagan's military Keynesianism, according to some primitive and discredited principles of 'sound finance', is a turn to an outdated Right in economics; and, as shown by Ferguson and Rogers, this merely becomes the starting-point for a further "Right turn in American politics".[7]

FOOTNOTES:

[1] For instance, in their recent book, Democracy and Capitalism, New York: Basic Books, 1986, S. Bowles and H. Gintis write: "Missing from the Marxian model is the notion of choice. (...). A consequence of this denegation of individual action as a conceptual category has been a lack of interest among Marxian economists in developing the microeconomic logic of even their most fundamental propositions." (p. 146).

[2] This literature on the 'profit squeeze' goes back to the early 1970s. Just to quote S. Bowles and H. Gintis (1986) again: "Profits were squeezed by a pincer that was in part the creation of the postwar accomodation itself—namely, cost pressures from labor that could not be passed on to consumers because of the increasingly competitive and open world economy."(p. 60). For an excellent summary and critique of this approach, see M. Lavoie, "Pourquoi faut-il recommander la lecture de Keynes de préférence à celle de Marx et Friedman aux chefs syndicaux", La 'Théorie générale' et le keynésianisme, ed. by G. Boismenu and G. Dostaler, Montréal: Editions ACFAS, 1987, pp. 163-78.

[3] This is the view also promoted in various studies on the arms race, such as those presented in M. Kaldor, D. Smith and S. Vines, eds., Democratic Socialism and the Cost of Defence, London: Croom Helm, 1979, and it remains the vision behind the current Development and Disarmament Initiative (DDI) launched by the Bertrand Russell Peace Foundation.

[4] E. Shaffer, "Militarism and the Economy", Studies in Political Economy, No. 24 (Autumn, 1987), p. 102.

[5] For further discussion on the distinction between these two models of accumulation, see A. Parguez, "La dynamique de la monnaie", Economies et sociétés, Vol. 18, no. 4 (avril, 1984), pp. 83-118; and A. Parguez, "Au coeur du circuit ou quelques réponses aux énigmes du circuit", Economies et sociétés, Vol. 20, nos. 8-9 (août-septembre, 1986), pp. 23-39. These views, on the circular nature of credit-money held by the French 'circuit' school, broadly joins the fundamental work of American institutionalist economists. For a clear statement of these links, the reader may wish to consult the two articles by G.P. Foster in the Journal of Economic Issues (December 1986, and March 1987 respectively). For an application of this general 'circuit' approach to the Canadian experience, see M. Seccareccia, "Systemic Viability and Credit Crunches: An Examination of Recent Canadian Cyclical Fluctuations", Journal of Economic Issues, Vol. 22, no. 1 (March, 1988), pp. 49-77.

[6] As it has been stated elsewhere, and as the post-October 19, 1987 experience confirms, the public debt has become a depository for all those investors who, as Keynes described them, have lost their 'animal spirits' and have acquired a strong liquidity preference. See M. Seccareccia, "La stratégie de reprise économique et le budget fédéral", Bulletin de l'Association d'économie politique, Vol. 8, no. 1 (avril, 1987), pp. 2-4. In recent discussions over the problem of financing the U.S. federal deficit, and as a way of defending their fiscal conservatism, neo-conservative economists have emphasized the necessity of attracting external savings to pay for the deficit. Their argument, however,

is just as misleading. Japanese and German banks and corporations are part of those foreign rentiers who are subsidized by the U.S. budget deficit. Through its increased indebtedness, the U.S. Treasury merely allows Japanese and German rentiers to save in excess of what their respective national economies are willing to increase of their own domestic debt. It should be clear, therefore, that while Japanese and German excess savings appear as claims against the U.S. Treasury, never can there exist a shortage of savings that would require an automatic increase in the level of U.S. interest rates. For further discussion on the role of the monetary authorities under the Reagan administration, see inter alia W. Greider, Secrets of the Temple, How the Federal Reserve System Runs the Country, New York: Simon & Schuster, 1987.

7 See T. Ferguson and J. Rogers, Right Turn: The Decline of the Democrats and the Future of American Politics, New York: Hill & Wang, 1986.

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THE COMMUNIST PERSPECTIVE

New Studies in Socialism and Revolution

Lucien Sève

edited with an introduction by Carl Shames

Translated and adapted from *Communisme: Quel Second Souffle?*
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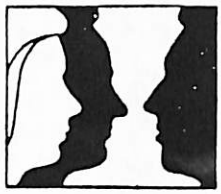

Sidney J. Gluck
ASSOCIATES

8/27/92

Dear :

I am taking the liberty of sending you a copy of translations of some philosophical papers of the French Marxist Lucien Sève because it deals with a subject of great interest, especially since the demise of E. European and USSR Communist regimes

His thesis - that Socialism is defined in time and place - as a transition period between the era of dominance of private property (Capitalism) and the social goal of public property (Communism).

The cost is $5.00
mailing $2.00
$7.00

Please send your remittance in the enclosed envelope Best,

Sidney

About This Text

This text is based on the first two sections of Lucien Sève's *Communism: Quel Second Souffle?* (Communism: a second wind?), published in 1990. A text based on the third section, pertaining to theory and practice of a party, will be made available later. This is a combination translation, abridgement and paraphrase. My aim has been to bring this work to English-speaking readers in a way that is as accessible and affordable as possible. I have approached the text not only as translator but as ruthless editor, charged with paring it down to basics. While some passages are translated faithfully, others, such as illustrative examples and elaborations, are shortened, summarized or eliminated altogether. Material primarily of interest to a French audience has been deleted. A number of sections on Perestroika are now out of date and have been omitted. Quotations, which Sève uses copiously, may be left out, integrated into the text or reproduced in translation; references with volume and page numbers are not included.

While this creative relation to the original would not be accepted in standard publishing or scholarly circles, I believe it is the most effective and efficient way of making this text available. I believe I have rendered Sève's ideas and modes of expression thoroughly and with a high degree of precision.

I plan to publish more material from Sève and others on issues of Marxist theory and philosophy and the social-historical understanding of the individual. If you would like information please write to the address on the inside front cover.

A note on the translation: the French "depasser," translated from the famous Hegelian and Marxist "Aufhebung," meaning to preserve, negate and supersede, has been rendered as "supersede." Invaluable assistance in the translation was provided by Carol Ghinger.

Contents

New Thinking for Marxist Theory: The Contribution of Lucien Sève

Carl Shames

Progressives and leftists today, whether Marxist or not, who envision a better world, are faced with the task of coming up with new, bold and creative analyses, visions and ways to reach people. Marxists, who base their beliefs and actions on an understanding of the inexorable need to change property relations, have the challenge of breaking unconditionally with limiting beliefs and attachments from the past and venturing into new territory guided by a deeper understanding of Marxism. The ideological, programmatic and theoretical disarray today is the culmination of many years in which the shortcomings of socialism and the distortions of Stalinist Marxism were apparent to many.

As Lucien Sève points out in his most recent book, *Communism: quel second souffle?* (A second wind for communism?), it has been one thing to reject the old; it is quite another to build something new. The many years of social democracy, of anti-Stalinist "western Marxisms" of various "new left" formations, have produced neither a coherent left nor a coherent theory and ideology.

A renewed Marxist movement must inevitably overcome its past dualities and bring together the "New Left" concerns with identity, with life as it is experienced, with meaning, the effects, potentials and perils of technology, and the "Old Left" understanding of the centrality of economic determinations and class struggle. For Sève, they will not be re-united eclectically, externally, but at their root, their point of true unity, which is to be found in a deeper understanding of Marxism itself as a global, human-economic conception of a humanity alienated from itself. This theoretical unity establishes the basis for a new level of programmatic, strategic unity.

The central contradiction of capitalism and the guiding concern of a revolutionary movement, according to Sève, is the alienation consisting of dispossession of social powers and human capacities, the inverted relation of person to thing, the dominance of conditions of labor over labor itself, the fragmentation and meaninglessness of human life. The center of our struggles is the effort to reappropriate our social powers, express our latent capacities, overcome the fragmentation and re-unite the human community. This human meaning of the struggle for socialism and communism must never be lost: it must be a guiding star for our visions of the future, and the basic criteria for immediate practices. Guided by this human-economic interpretation, a revolutionary movement weaves together its attention to imme-

diate struggles and contradictions with a communist perspective, a vision of the ultimate resolution of these contradictions. In this way, apparent dilemmas between a revolutionary and reformist perspective can be resolved.

This shift, or rather broadening and deepening of Marxist analysis from exploitation of workers to alienation of human beings can only have great significance for revolutionary strategy. We approach people not only on the basis of their economic exploitation or national oppression, but in terms of the contradictions of capitalism as they experience them in their life and self. For instance, does a movement against capital have anything to offer the tens of millions of American women whose eating disorders reflect a crisis of the self in consumer society, and the even greater numbers of addicts of various sorts whose inner emptiness forces them to be attached to various "recovery" programs? Are they potentially part of the constituency of a revolutionary movement? Are they not manifesting a crisis of a separated, fragmented individuality that will sooner or later overtake everyone? Similarly, recognizing the social forms of oppression suffered by homosexuals is a first step, but we must go far deeper to a revolutionary analysis of gender and sexuality itself, of the true nature of human connections, the significance of sexuality, and the transitory, historically developing relationship of identity to the body. At that point we will see the gay and lesbian rights movement as an early avatar of everyone's struggle for liberation of identity from the body altogether and of sexuality from its social and biologically imposed limitations.

Today organizational and strategic problems facing a movement against capital, for fundamental social change, cannot be solved without the solution to fundamental theoretical questions that will allow true new thinking. What is our most basic understanding of processes at work in the world today? How is the level of people's everyday consciousness- their feelings, motives, needs and beliefs - related to economics? What is the relation between struggles for reforms and a comprehensive revolutionary perspective? What do we mean when we assert the belief in socialism, or communism, and how can this be intelligibly conveyed to people as something other than a pie in the sky or a dogmatic attachment to failed forms? What are the various forces that can come together under the rubric of a revitalized left to struggle for common goals? What would be the nature of their unity and how can divisions be approached? How are we to address the specificities of the modern world - the fragmentation people experience, the effects of new technologies on life and labor? These immediate and long-term strategic questions require real advances in our ways of thinking.

The new will be built not simply by rejection and critique of the old; it requires a searching more deeply into the causes of the tragic difficulties of socialist societies, understanding the nature of distortions in Marxist thought, both at the hands of the Stalinists and those who opposed them, and creatively developing Marxism to guide new analyses and new strategies. We need "new thinking" that is truly new.

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One of the principle divisions within Marxism, and one of central concern today, has pertained to the understanding of the nature and role of the individual, the person, in historical change. There has been a general dichotomy between focus on social structures and historical determinations on the one hand, and on active, freely determining human subjects on the other. Each view has considered one side at the complete expense of the other. Similarly a focus on economics has been opposed to a focus on culture, ideology and issues of personal life and consciousness. Either social-historical structures and processes determine in some impersonal way, or we are free agents, the center and ultimate decider of historical motion. Isn't it these very dualities, defining the course of 20th century Marxism, that Marx himself set out to overcome?

These theoretical dualities have been reflected in political splits, for instance, between socialists and communists, or perhaps they reflect these splits, or perhaps the theoretical and political together reflect the inability, so far, to overcome certain limitations on thought and action in capitalist society. For instance, why it worked out that one side of this distortion represented a Marxism that had come to be a state power, and the other side represented forces that have never maintained significant power, is a question we might well address. Perhaps the distortions in theory and politics were not simply a product of erroneous thinking or narrow interests, but represented some deeper reality in the dynamics of power in the world.

Sève's contribution can be traced along the path of these and other dichotomies in Marxist interpretation and practice. Joining the PCF in the early 50's, a graduate of one of France's elite academies of philosophy, Sève found himself immersed in, but estranged from, the dominant intellectual currents. Throughout the '50's and '60's intellectual life on the French left was dominated first by the "humanist" existential and religious Marxisms, each claiming to be the legitimate opposition to Stalin, and later, by the structuralists, led by Althusser, who, in the wake of Levi-Strauss' decisive critique of Sartre, believed that coherent social theory was possible only if the myth or illusion of the person were eliminated altogether. Humanism was replaced by antihumanism. A view that held onto an individual outside of history, confronting it and oppressed by it externally, was replaced by a view of history outside of living individuals. Preaching their new-found insight into life's illusions with the devotion of true believers, the structuralists and post-structuralists have dominated left intellectual life in Europe, South America and the U.S. for years, with ultimately destructive results. While liberal humanism in its various forms, including "socialist humanism," has inevitably let away from Marxism, this antihumanism can only lead to the dead ends of cynicism and nihilism, and it has. Marxist social thought has yet to recover from this split, that, incidentally,

has reproduced the very dualities central to bourgeois social thought.

Sève's work in these years is of course inseparable from these currents. With both, he acknowledged the advances over traditional readings of Marx, while critiquing the deviations from Marxism that these steps involved. Our task, for Sève, is to bring Marxism to life, absorbing these advances while maintaining its essence as a conception of human, historical development and transformation (see Shames, "The Scientific Humanism of Lucien Sève," Science and Society, Spring 1981). His *Marxisme et Theorie de la Personnalité*, appearing in 1967, is a thoroughgoing critique of both Althusser's antihumanism and Marxist humanism, demonstrating that when we re-place the human at the center of Marxism, not as the isolated individual of psychoanalysis or existentialism or other forms of liberal thought, but as the nexus of human activity that is the very substance of history, the actual meaning and essence of Marxism becomes clear. The apparent dichotomy between the "early," humanist works, or the later, economic, scientific work is overcome: Marxism is a coherent, scientific human-economic whole. Sève places the category of alienation at the center of Marxism, again, not as an existential or psychological condition of an abstract individual, but as the fundamental contour of the human-economic schism that capitalism has engendered. The core of Marxism is a human meaning: the inverted relationship of person and thing, the domination of alienated social power over active subjects. The task of a revolutionary theory is to overcome this schism, not to succumb to it.

The central thesis of Sève's work since then has been that Marxism must be understood as a conception of human life and evolution. Not a single category of Marxist philosophy or political economy has any meaning outside of human activity, its development and transformation. His *Introduction a la Philosophie Marxiste*, 1980, is an encyclopedic review and discussion (over 700 pages) of the philosophical concepts that make up Marxism and their distortion by Stalin and Western Marxism A key overall is his demonstration that Marxist categories are not metaphysical building blocks of a static dogma or closed theoretical system but are interpenetrating aspects of a living, open and developing system. Marxist dialectical categories and modes of thought have a qualitative novelty, a different form from those of bourgeois thought. The failure to fully grasp this has led to many a return to pre-Marxist thought by the interpreters of Marx.

One of the central contributions of this work, for instance, is the identification of the common philosophical basis for both the distortions of the Stalinist version of Marxist philosophy, which considered the "base," raw economic power, to be the sole reality, and the limitations of "Western Marxisms" that raised the "superstructure," civil society, culture, etc., to the primary concern. This theoretical difference has corresponded to many political differences - between an economic versus cultural strategy, between a fatalism or a

voluntarism. Sève shows that in all cases, the tendency has been to understand categories such as "forces" and "relations," "base" and "superstructure" in metaphysical terms - as though they are "things" or "places," rather than in dialectical terms, as interpenetrating moments of an integral human process.

It should not be surprising that a variety of dualities and one-sided conceptions has resulted from this general split. For instance, while Gramsci's effort to integrate civil society, culture and ideology into Marxist concerns is to be applauded, he did so at a great theoretical expense. Stalin had raised the concept of productive forces to a supreme level - it is their development, taking place outside of people, that ultimately determined all; consideration of contradictions in social relations, culture, people's ways of life were secondary; the person was eliminated altogether as effective social agent. Gramsci went to the other extreme, viewing social relations as a realm in themselves and eliminating their relation to the laws and determinations of historical motion and to the development of productive forces. In both cases, forces and relations are divorced from one another, resulting in an impersonal determinism on the one hand and an indeterminate relativism on the other. This split is simply a return to the pre-Marxist, particularly Kantian, severing of the realm of the human from the realm of necessity. This is only one of the problems that Sève tackles in this work that I believe stands as one of the major contributions to Marxist philosophy of several generations.

In the *Introduction*, Sève demonstrates, conclusively in my opinion - against any possible future distortions by another Althusser or "socialist humanists" who set the "young" idealist Marx against the "old" economist one - through the most thorough and copious references to Marx, that the concept of an alienated humanity is at the center of Marx's project. Marxism has a thoroughly human meaning: the reversal of alienation and the overcoming of fragmentation in the formation of an entirely new individuality and collectivity.

Sève's analysis of time is at the center of his interpretation of Marxism and at the deepest level of analysis where human and economic are fully merged in one process. The alienation at the core of capitalism in the inverted relation of person and thing is ultimately to be understood as the inverted relation between person and time, since the thing is frozen time, objectified labor. It is unfortunate that the term "free time" has, in readings of Marx, been interpreted in its superficial, everyday sense, as though the duality between time for labor and "personal" time continued to exist in communism. Since, in communism this duality is overcome, "free time" has another meaning. For Marx it refers to the liberation of "disposable time," time over which we may have control. It is a freeing of time and inversion of the relationship to time. This, in my opinion, is the very center of Marxism and the point from which the Marxist vision will be scientifically fleshed out. It is the basis for the Marxist absorption and supersession of all idealist philosophies, religions and spiritual quests, where

humanity's deepest yearnings for re-integration and transcendence are shown to have a material base and a historical resolution.

In *Communism: quel second soufflé?* Sève has brought his philosophical studies to the political issues facing us today, demonstrating at the same time the mode of linkage between theory and politics. He argues that a revolutionary movement must maintain the communist perspective - the understanding of the fundamental contradictions of the capitalist era and a view of their ultimate resolution. Ill-defined advocacy of "socialism" only weakens our strength and credibility.

Written at the height of the early Gorbachev years, the book exudes a certain optimism that characterized that time. For a moment, it seemed that the forces of socialism might stabilize and find new strength, moving in the direction of a new, democratic form, and that world politics would be characterized by a new equilibrium between this "improved" socialism and a chastened capitalism. It seemed that the people of Eastern Europe were taking their destiny in their hands to struggle for an advanced democracy. By the time the book appeared, though, I no longer shared its optimism regarding the potentials of Perestroika to engender a democratic socialism. My initial tendency to give Gorbachev and Schevardnadze the benefit of the doubt when they appeared to abandon Marxism had turned to a certainty that theirs was not the way toward a more enlightened Marxism or world order, and that, considering the tenacious strength of capitalism, and the lack of sufficient social development in the socialist countries, a democratic, market socialism was not on today's agenda. Two years later, there is no "socialist camp," Gorbachev is consigned to irrelevance, his "new world order" has been handed over to Bush and the option of "democratic socialism" is once again on the distant horizon.

There is an emphasis in this book, on human universality, on our common needs and destiny, that also characterized Gorbachev's "new thinking." With Sève this not proposed at the expense of an understanding of the antagonisms at the heart of capitalism. We have only begun today's discussion of the relations between human universals and class divisions, between economic and "superstructural" struggles, between present conflicts and global contradictions, between reforms and a revolutionary vision of a new civilization, between the demand for democracy and for transformation of property relations. Sève has cleared new ground for much needed theoretical-political discussions.

Sève is a founding member of "Refondations," a grouping of French communists, socialists, ecologists, feminists, labor leaders and others who are working together and in the context of their own organizations to find new modes for left thought and action.

Socialism

How are we to define or understand socialism; was "real socialism" really socialist? Marx challenged the utopian view that saw socialism as the voluntary implementation of a pre-conceived idea and identified it instead as the real movement of history. Once the construction of socialism was begun in the Soviet Union, the concept could only be validated, rectified and enriched by experience, something to which Lenin devoted himself from the start. By the end of the 1930's Stalin declared the construction of socialism to be complete and thus the identity of the real and its concept to have been achieved. Today, the real being markedly unsatisfactory, socialism is reproached for not having been what it was supposed to be. Concept and reality are ever further apart. But this is a schism that Marxism set out originally to overcome. After a half century of official historical materialism, if Marxism has difficulty finding itself in the real, how can the real find itself in Marxism?

As Marxists, if we want to base our reflections on the effective movement of history, we must state from the start that socialism has ceased to be a clear idea. In principle, we should know that it cannot be a model, but rather the concrete response to concrete problems within each country. How then to define it? Generally it has been defined as the social ownership of the means of production and exchange, and the political power of the workers, of which the working class is the dominant force. But what does historical experience show? This ownership, under the pretense of being social, has been identified with a state-controlled centralization run by a bureaucratic management. It displaced rather than abolished the gap between the direct producers and the means of production, inevitably failing, from this alone, to fulfill the promise of socialism.

We must therefore put back on our agenda the issue of self-management, an idea, we must note, that has been generally relegated by Marxists to the distant communist future. This would be a decisive advance, but one that would necessarily relativize the value of the previously supreme criterion - the social ownership of the means of production. This latter would become not so much a pre-condition for the achievement of self-management, but rather a variable requirement for it, and a variable component of its growth through a conflictual mixture of modes of ownership. This is a theoretical difference with tremendously different implications for practice.

Similarly with regard to the criterion of political power of workers and the working class. What does historical experience show? That when this power is exercised in their name and place by a ruling stratum, the domination of decider over performer is reinforced rather than

replaced. Once again, the promise of socialism is betrayed. It is therefore necessary to stress the endless deepening of democracy, another theme that had been relegated to communism. But what then becomes of the criterion of power for the working class? This has been taken as the *sine qua non* of the transition to socialist democracy. But here the apparently simple formula, 'socialist democracy', raises a multitude of problems.

How is someone, waiting to be convinced of communist ideas, and to whom the ideas of self-management and democracy sound fine, to be assured that social ownership will not bring with it the contradictions it has in the past? How can he or she be convinced that the power of the working class will not turn into the disastrous hold of a bureaucracy over the workers? Is the political will and good intentions of a political party sufficient? Putting it this way disregards the objective criteria essential to historical materialism and relies instead on the level of subjective determinations, obliging us to simply place our faith in a certain socialism that has no precedent. If we are to have credibility at the mass level, we must first discuss this further among ourselves.

An Ambiguous Notion: "the project of society"

The spectacular failure of the notion of socialism held by the communist movement exposes the fundamental problem of all transformational practice that depends on an anticipatory view of history: how to reconcile the non-arbitrary freedom of our choice with the non-determinist necessity of history's course. On the one hand the development of social formations resembles a natural historical process. Despite what one wants or chooses, in the end the massive pressure of objective logic leads to something else. The most serious of subjective goals is foolish if it has not correctly appreciated the constraints of the reality. This is an unimpeachable truth of historical materialism. However, in that we are actors playing an integral role in events, nothing happens without us. Nothing in history, large or small, happens without us. How can we connect these two givens? This is a complex question, and not only for Marxists.

The notion 'project of society' (in the PCF program, - ed.) suggests that socialism is something we can preconceive and then proceed to 'build' in successive stages. A more dialectical notion would replace preconceived projections onto the future, deduced from an all-purpose theory, with a mobile horizon of a concrete politics starting with the specifics of each situation. A strategic approach cannot be based on hierarchic relations of a pre-established goal and a movement that derives from it as the means toward it. Goal and means are rather two interacting aspects of the same revolutionary enterprise. The result of this way

of thinking strategy is that politics must be constructed entirely on the basis of the singular present. In this view the concept of scientific socialism would no longer have an object: this would dissolve itself instead in ongoing strategic considerations.

In the final account, what do we mean when we claim to maintain the perspective of socialism? The entire notion must be reconsidered from the ground up. Another difficulty in the traditional way of posing socialism as a strategic goal is that for the sake of exigency it projects only into the intermediate future, at a supposedly realistic distance. This then leaves as a remnant the notion of a more perfect world, further in the future. This is what has been called the 'communist ideal'. A world without arms, war, classes, injustices, with the possibility of full development for all people, and so on. As it stands, this notion is vacuous from a theoretical, ideological and political point of view. It is an ethical assertion with limited use in convincing anyone. In fact, it resurrects the very utopianism that Marx left behind.

At the root of all these problems is a practice wanting at the same time to be transformational and realistic. How do we reconcile the creative anticipation of the possible and the theoretical understanding of the necessary? In other words, how do we construct a *political perspective*, a credible battle plan to attain short and medium term goals, within a *historical perspective*, a vision of long term motion of the whole which gives us the general sense of emerging transformations? What Marxist can forget that this is the general problem Marx treated in the *Communist Manifesto*? It is timely to take another look at Marx's method.

Marx on the Socialist Perspective

An extraordinarily radical passage from the *German Ideology* proclaims this method in a few sentences: "communism is not for us a state of things to be created, nor an *ideal* to which reality must conform. We call communism the *real* movement which abolishes the present state of things. The conditions of this movement result from the preconditions that currently exist." Here already is the whole spirit of scientific socialism - an expression in which "scientific" meant, for Marx, critical and materialistic, as opposed to the idealist speculation of even the best utopian socialism of the time. Having initiated his own method, in the *German Ideology*, *The Poverty of Philosophy*, and the *Manifesto*, Marx, along with Engels, consistently declined to imagine a better social state. He endeavored instead to critique the existing state of things: beyond the mystified consciousness that society has of itself, to reveal its true reality; beyond the false reality of surface phenomena to rationally grasp the fundamental relations; beyond ephemeral constructions of a future world, to bring to light the

inexorable tendencies of historical development. Marx and Engels ceaselessly opposed the eternal tendency to project our dreams onto the future, and emphasized that it is not a question of inventing an ideal society but of studying real conditions.

How then could Marx anticipate the future in the pages of the *Grundrisse*, *Capital* or The *Critique of the Gotha Program*, with a boldness that retains its visionary strength? He is able to because he has invented nothing; he has instead inventoried the *contradictions* that constitute the essence of bourgeois society. For instance, between the internally unlimited potential for the development of objective productive forces and the intrinsically restricted capitalist mode of production of wealth; between the alienated forms in which the social growth of human capacities functions, and the possibility and necessity of their appropriation by all individuals resulting from this very growth. Through the workings of such antagonisms, we grasp how the old relations present an obstacle to the new tendencies which they have created. It is therefore capitalism, the most progressive and radical form of class societies, that creates in negative, -"standing on its head," as Marx liked to say - the presuppositions of its own supersession in classless society - presuppositions without which all revolutionary attempts would be "nothing more than Don Quixotism." Thus, when we have identified scientifically the essence of capital, we foresee the future, not by inventing it, but by exhuming the present (Grundrisse).

How do we reconcile the necessity of history and freedom of choice, extricate the realizable from the real in order to realistically tackle the possible? Marx's materialist answer is that the only successful approach is the work to identify the fundamental contradictions of the present which themselves show us the necessary dialectic of their supersession. *The figure of the future in Marx is the resolved contradiction* - a virtual figure because although the contradiction will not resolve itself without us, the general conditions of its resolution are already prescribed by its logic. Is this a fatalistic vision? History is indeed to be made, complete with setbacks, errors and failures and all unforeseen and imaginable scenarios. As we make history we find that though nothing is resolved in advance, the premises and contours of the solutions are implied in the very nature of the problem.

To be sure, while outlining the *most general* logic of social development and nothing more, such an approach can neither claim to predict a singular course of events nor to describe in particular the future that awaits. Marx's anticipations are the very opposite of the naive, detailed utopian plans for a society that exists nowhere and at no time. What they do point to is a social form that will, in its fundamental character, be freed from the antagonisms that constitute the capitalist age, because when we know the *essence* of a contradiction, we know the *essence* of its solution. The fact, for example, that the universal development of the productive forces, as it occurs in capitalism, is in opposition to that of the workers who are

denied real control, tells us neither when nor how this antagonism will end. It does tell us that the supersession of this opposition requires a mode of organization in which these universally developed forces have come under the control of free producers. Anticipating the course of things that will resolve capital's contradictions, Marx outlines the necessary perspective within which the possibilities of real movement are to be found. Thus Marx is able to take on the formidable project of a visionary yet not arbitrary comprehension of an entire period of history, one that is still far from its end.

This approach does away with one of the truisms of prospective thought - that the future is more uncertain over longer projections of time. On the contrary, we are often mistaken about the near future. But once we have grasped its basis, we cannot be mistaken about the overall perspective of long range development nor about the essential traits of the society that relegates capitalism to prehistory. This paradoxical reversal of common sense is decisive for practice. We ordinarily believe that the uncertainties of history are cumulative so that as we look further into the future we progressively replace factual statements with theoretical hypotheses. To be realistic is to plant our feet in the concrete present, while looking into the distant future only with abstract ideals. Marx's method is the opposite. While all *politics* must begin with the concrete situation, when it comes to *historical perspective*, this procedure can only lead to an empiricism. This perspective is determined by the concrete present only to the extent that it is devoted to discovering its deep-lying contradictions beneath the deceitful appearances. This can be attained only by rigorous theoretical analysis. From there we are taken directly to the end of the foreseeable future, defined as the complete resolution of existing contradictions.

In other words, having grasped the source of the necessary motion of reality, Marx takes the problem by the end, the only fixed land-mark for prospective thought at the level of an entire historical period as defined by a mode of production. And from there, working backwards, as opposed to the method of 'common sense', an informed practice orients itself toward the long term, knowing *where* it must go. For a Marxist, nothing is worse than the pretensions of a political realism always inclined to skimp on historical perspective. Not only is its discourse weakened, its very practice, deprived of a perspective, is left without foundation. For Marx, once reality is correctly analyzed, the historical perspective is decisive. In the grasp on the present, in the overcoming of opportunism, it refers directly to the future goals of the movement as a whole.

Marx of course was always closely concerned with the progress of current struggles and didn't ignore the need for immediate analyses and intermediate term projects. He is concerned with the programmatic elaboration of a revolutionary movement, on the basis of critique, always reminding us that "all real progress is worth more than a dozen programs." But as it

is necessarily adapted to the circumstances, a political project has meaning only as an evolutionary mediation between a critique of the present that goes to the base of its contradictions, and a perspective of the future that goes to the end of their resolution. It is not the ideal that is joined with the real, but the real joined with itself in its two determinations - actual and virtual. This is Marx's materialist method. If, then, we come back to the question of what, exactly, is socialism, our job has become to define our historical perspective as a whole, an endeavor that in my opinion holds in store some surprises.

Rediscovering Communism

First of all, since the supersession of capitalism is still an open task, in conditions completely different than those in which *Capital* was written, can a Marxist think about the present without sorting out what is living and what is dead in Marx's ideas? What was for Marx the perspective organically linked to the epoch of capital and the final resolution of its contradictions? It was what he characterized his whole life by the name *communism,* a future social form in gestation. Astonishingly, French communists, for over a quarter of a century, haven't produced a single work devoted to the exposition of what Marx meant by communism.

Aside from a few formulas, such as "withering away of the state," "to each according to his needs," the basic answer on this question has been "no opinion." Most would be surprised to learn that by communism, Marx meant, among other things, the "abolition of labor." If we wish to maintain the historic perspective, and rationally anticipate a "new civilization" we can begin by assembling the numerous points throughout Marx's work with the aim of restoring the grandeur of his misunderstood vision of communism.

But why do we have to assemble them? Marx appeared to avoid outlining a picture of communism in order to maintain his distance from utopianism. Engels later dropped the word altogether and referred only to socialism. Following Khruschev's announcement that the Soviet Union was on the brink of communism, the word has been obliterated altogether.

Communism, "the real movement which abolishes the current state of things," is a social formation to be born in this movement It's defining characteristic that we can know is that the basic contradictions of capitalism are therein resolved. And where are these basic contradictions to be found? In the type of growth that is imposed on a form of productivity in which living labor, the "principle productive force," is ever more crushed by the dead labor in which it is objectified; in the general law of capitalist accumulation which produces the inversion of person and thing; in a process that strangles itself by subordinating the development of

multiple social riches to the profitability of capital. This is the law of the tendential falling rate of profit, the most important law, which manifests the destructive subordination of ends to means. These antagonisms of capitalism extend to each activity in all areas of social life and become all the more acute because their logic becomes universalized, penetrated in return by all the distortions they have externalized.

The root of this contradiction is to be sought where we find the "hidden foundation of every social edifice": in the immediate relation between the ownership of the means of production and their direct product (*Capital*, Book III). In capitalism, the final form of class society, "the conditions of production, as things, are attributed to the non-workers as capitalist property, while the masses only posses the personal conditions of production, labor power." Everything derives from this possession and dispossession in which relations of ownership are only the juridical form. But this relation becomes more incomplete as the importance of knowledge in production expands, as well as powers whose effective appropriation by people requires conditions other than the ownership of things. This is the basic problem with a definition of socialism in terms of ownership of means of production and exchange. Once the presuppositions of capital are assembled, "the objective conditions of labor acquire an ever greater autonomy that confronts labor externally," as a "foreign and ever more dominating power": this is an "extreme form of alienation" where is created however, upside down, the material conditions for the great development of human productive forces. Communism is the historic movement which, on this basis, "restores the primitive unity in a historically new form."

A more evolved mode of the relations which bind people to their conditions of production and life, communism is a flowering of individuals as well as their social relations. We cannot imagine a more complete incomprehension than to see in communism the dissolution of individuality in the community, when it is a question of the opposite, for associated individuals to finally subordinate alienated social powers which have crushed them since the dawn of class society. Marx never evokes the perspective of communism without the integral development of all individuals. For him the two ideas are identical. Communist society is the "only one in which the original and free development of all individuals is not an empty phrase" because "this development is conditioned by the interdependence of all individuals," by their "effective solidarity" in order to master the universally developed productive forces, and reciprocally, "the free development of each is the condition of the free development of all." Of course, in communism, individuality, like freedom or productivity, is no longer that of bourgeois society - first of all in the sense that it now develops unshackled. We can therefore characterize communism also as a new figure of individuality and a new form of sociality.

A New Form of Sociality

Capitalism tends toward the unlimited growth of productive forces, accumulating objectivized past labor on an increasingly vast scale and in an increasingly powerful form. The determining factor of this growth is the conversion of science, the most reliable source of wealth, into a direct productive force through its technological application. Science raises productivity to a previously unimaginable level, reducing at the same time the role of living labor. Capital profits by extorting ever more surplus labor, constraining humanity by ever more severely limiting its capacities. In the process, it overturns the very conditions on which it is based. Confronted by the "general productive forces of the social brain," a fantastic creative power objectified in machines, the "valorizing force of individual labor-power disappears as infinitesimal" and "individual labor as such no longer appears to be productive." At the same time, this individual labor, whose social character is expressed only in exchange, tends to present itself directly as such, as it evolves toward functions of overseeing and regulation of automated production processes, constituting a veritable "collective worker." This elevation of immediate labor into social labor appears in capitalism as the reduction of individual labor to powerlessness, confronted by the communal element represented in capital.

This whole process forms the conditions for a reversal of relations. It is capital itself, a narrow and archaic modality, which stops being productive and becomes a shackle to the mode of production which has matured under its domination. The hour of capitalist private property has tolled. "Individual ownership" by direct producers over their means of production is then re-established through cooperation and communal ownership for which capitalism itself has created the basis. With this real appropriation, human exploitation comes to an end: a new mode of production enters the scene.

In the *Grundrisse*, Marx explains it as follows: "In this transformation, it is neither immediate labor of people themselves, nor their labor time, but the appropriation of their own general productive force, the understanding and domination of nature by their existence as a social body which appears as the great pillar of production and wealth. *The theft of another's labor-time, on which wealth is based,* appears as a miserable basis compared to that, newly developed, which has been created by large industry itself. From the time that labor in its immediate form ceases to be the source of wealth, labor-time ceases to be its measure, and thus, exchange-value ceases to be the measure of use-value. Surplus labor of the masses has ceased to be the condition of development of general wealth while the non-labor of some has ceased to be the condition of the development of universal powers of the human brain. This signifies the overthrow of production founded on exchange-value, and the process of material

production itself loses the form of penury and contradiction. This is the free development of all individualities."

Here we are at the heart of the communist perspective. In a society where it is no longer by the path of detour, but directly, that individual labor becomes an integral part of community labor, the necessity for commodity exchange, the reign of money, loses its reason to be. In communist society, first of all, capital-money disappears along with its mystifications. A new mode of production and distribution appears in which the totality of the social product is rationally disposed in considerations of the expansion of wealth, satisfaction of social needs and the flowering of the individual. Along with the modality of capital goes also that of wage-labor. The two forms exist together and disappear together. Instead of a division of labor which engenders itself necessarily in the exchange of values, we have an organization of labor involving the participation of the singular individual in collective consumption, a consumption no longer based on anything but historically created needs. "In the hypothesis of collective production, the determination by labor time remains naturally essential." The more society economizes, "the more time it gains for other material and spiritual productions." "Economy of time and planned distribution of labor time between the different branches of production remain the primary economic law of collective production." Communism replaces the ruinous anarchy of capitalism by a higher social efficacity, one in which social quality is no longer determined by exchange value and labor-time.

The secular tyranny of money-capital gives place to a rational regulation according to human ends; human progress frees itself from these internal shackles. This is the perspective. "When the enslaving subordination of individuals to the division of labor has disappeared, and with it, the opposition of intellectual to manual labor; when labor is no longer merely a means to live but has become the primary vital need; when, with the multiple development of individuals, the productive forces have accrued until all the sources of social wealth are found in abundance, only then will the limited horizon of bourgeois right be definitively superseded and society will inscribe on its flag: 'from each according to his (or her — ed.) abilities to each according to his needs.'"

Thus will disappear all bases for the great divisions that tear apart class society, beginning with those of classes themselves. The movement of capital creates the presuppositions of this supersession. Positively by engendering productive forces and universal exchange, which could only be subordinated to individuals by being subordinated to all, so that their private appropriation finds itself abolished. And negatively, in producing the working class, a class without ownership of the means of production, for whom the conditions of existence of the old society are already abolished, and which is "already the expression of the dissolution of all classes." As Engels said, "the division of class is founded on the insufficiency of

production; it will be swept away by the full development of modern productive forces. Communism is the society without classes where the collectively governed appropriation of natural and social conditions is emancipated from historical antagonisms."

With the suppression of class differences, the social and political inequalities resulting from these differences vanishes (Engels). On this basis, the great social divisions can be resolved; between city and countryside which has led to urban conglomerates and a poisoned environment, and between the sexes. More generally, "everything that exists independent of individuals" is abolished, that is, the transcendent social powers, spiritual as well as material, which, in class society, have detached from individuals only to subjugate them. This involves first of all the State, which is the "organized power of one class for the oppression of another." In communism, with all production in the hands of associated individuals, public power loses its political character. There will no longer be political power as such.

On the international scale, when classes are abolished there is no longer a basis for hatred between peoples in exploitation of one nation by another. Here again, in the development of the world market and universal communications, capitalism has created, in negative, the material basis for a new world, where local histories are truly unified in world history. Communism is, in the strongest sense of the term, universal.

Along with these tremendous objective transformations, social consciousness is de-alienated. In a world where relations between people "appear in their immediate transparency," and have come under their common control, "the consciousness that people have of their reciprocal relations will have a completely different character." Strengthened by the universality of these real and ideal relations, the person in communism "knows that nature is his or her real body" (note from ed: once we get to this point, I doubt that social identity will any longer be tied to gender, if there are any, or biological nature: then we'll really need new pronouns, either one for each person, or the same one for everybody). Consciousness includes "comprehension of one's own history as a process," a consciousness open to the future where mysteries are resolved one by one "in a human practice and in the comprehension of this practice."

A New Figure of Individuality

Communism, as Marx understood it, is as much a superior form of individuality as it is of sociality, each of these organically linked to the other. The real movement towards communism therefore necessarily consists of a "whole series of historic processes in which circumstances and people are completely transformed." A product of history much more than a natural given, individuality can only flower in communism. Reciprocally, communism is

only realizable on the condition of the free development of all individuals.

This is true first of all for the material mode of production of communism, because the human being is the principal productive force. "Private property can only be abolished on the condition that an omnilaterial development of individuals is realized; those who find themselves in the presence of omnilateral productive forces and exchange, individuals whose development is the free activity of their existence." The appropriation of these forces is nothing other than the development of individual faculties corresponding to material instruments of production. "The appropriation of the totality of instruments of production is already the development of a totality of faculties in individuals themselves." By imprinting the productive forces with the tendency to universal growth, capitalism engenders the basis for a new humanity. But since the supreme law of of capitalism is the growth of productivity and accumulation of wealth at the expense of living labor, people have become simple means of production, rather than ends in themselves, or goals of production. Capitalism creates the objective conditions for a humanity of the future, while turning its back on the subjective conditions. The reversal of the historic relation between production of things and the flowering of people is therefore the major task of communism. This is its radical novelty as a mode of production.

The fundamental condition of this transformation of individuality is the "abolition of labor." An enigmatic formula at first: how to understand what appears to be either the height of utopia or inconsequential altogether in the thinking of Marx who identified labor as the very essence of humanity? We must not confuse *productive or creative activity*, by which people have always produced themselves, with its *exploitative forms*, which have come to be called *labor*. This would be the same as confusing productive forces as the eternal basis of human social life, with their historically transitory form as capital. Marx never ceased to see the activity of labor as the basis not only of social wealth but the personality as well.

Labor is freed by communism in putting an end to its alienated forms, its material and intellectual manifestations in class society, and particularly wage labor, the "ultimate servile form taken by human activity." Labor in capitalism is that of the individual, subordinated to conditions of existence and social divisions, separated from objective means, locked within fragmented functions, stripped of the very fruits and goals of activity. Labor, people's only true link to the productive forces and their own existence is in this sense a power over individuals, a means to earn a livelihood, forced labor in which people, rather than manifesting themselves, are deprived of the real content of their life. It is this labor that is well to be abolished.

The true suppression of alienated labor is the free manifestation of the self through the creative appropriation of objectivized forces of the human race. When individuals have fully developed their capacities and are no longer subject to an archaic division of labor, each will

be free to move through the course of life in new forms according to goals he or she has set. When this activity is immediately social, involving consumption according to human needs, activity is stripped of its contradictory form. It becomes "self-realization, the objectivation of the subject, real freedom whose action is precisely labor." It is the effort of a "rich individuality as polyvalent in its production as in its consumption and for which labor, consequently, no longer appears as labor, but as full development of activity itself" and in this sense the principal vital need." (*Grundrisse*)

This superior form of activity presupposes an entirely new form of education, technological, theoretical and practical, for the "totally developed individual for whom diverse social functions are modes of activity which follow one another." "Large industry obliges society, under the penalty of death, to replace the fragmented individual, bearer of detail functions, by the integral individual who can handle the most diversified demands of work and who expresses, in these diversified functions, the free growth of natural and acquired capacities." This puts an end to the old "fixation of social activities." The variety of tasks and the rotation of functions in a society freed of the despotism of deciders over executors gives body to the individual in the full sense of the term - universal by virtue of its "real relations," singular in its contribution to the community.

Polyvalence of capacities and alternation of responsibilities go hand in hand with a fundamental recomposition of the relationship to time, putting an end to the abstract opposition between labor time devoted to earning a living, and free time devoted to reproducing and maintaining the workforce. The epoch of human fragmentation is over. Having become the time of manifestation of the self in contact with productive social forces, it calls for the maximum development of all faculties in disposable time, true measure of social wealth, which itself ceases to have a contradictory existence. It is not only its duration, but its quality which is transformed: it becomes, in the true sense of the term, *free* time in which the actor of communism is formed. Free time, which is leisure time as well as time destined for superior activity, has naturally transformed its possessor into a different subject and it is as such that this subject enters into the immediate process of production," having become "the greatest of productive forces." In this interpenetration between highly cultivated productive activity and highly socialized personal culture is composed a new figure of humanity.

While in class societies most individuals are frustrated in relation to human life, as "historical development, politics, art, science pass far above them," in communism, the reduction of labor-time no longer serves only to posit surplus labor, but rather provides for the development of capacities in art, science, etc. This is the great flourishing of social wealth,

because "once its limited bourgeois form has disappeared, what is wealth if not the universality of needs, of capacities, of pleasures, of productive forces of individuals, a universality engendered in universal exchange? If not the full development of the human domination over the forces of nature as well as over human nature? If not the absolute elaboration of creative aptitudes without any presupposition other than the previous historic development which makes the totality of this development an end in itself? (Grundrisse)"

Asking of each according to his capacities and offering to each according to his needs, communism forms capacities and needs according to a new logic. These need to be thought of in entirely new terms. Communism is in no sense the culmination of consumer society which threatens to exhaust the two sources of wealth, the earth and the worker. Today's consumer frenzy is a product of a social form which makes productive activity the "sacrifice of the end in itself to an end completely external to it," and therefore has nothing to offer the person as a goal but consumption where the person is lost in the fetishism of the thing possessed. "Private property has rendered us so limited that an object is only ours when we possess it," producing a quest of the self oscillating endlessly between a trivial satisfaction and apathy, in which the person within can only find his or her "total vacuity." In communism, to be "rich" is to be "richly human" through the multiplicity of activities and relations where needs themselves become truly human, producers of humanity. By declaring "to each according to his needs," communism doesn't propose an exhaustion of needs, thought of in today's alienated sense, but rather that needs have become an inexhaustible wealth, those of "a social being having the maximum of needs by virtue of being rich in qualities and open to everything (*Grundrisse*)."

In reviving the plenitude of relations of people among themselves and with nature that characterized primitive communities, but at a higher level, the movement toward communism marks ultimately the reversal of a millennial tendency: the sacrifice of the many for the well-being of the few, a barbaric social philosophy that people in coming centuries will be astonished could have dominated ours. "It is by the enormous waste of the development of particular individuals that the development of humanity in general is assured and realized in the epoch which immediately precedes the conscious reconstitution of human society." With communism, "the development of the human species at the expense of the majority of individuals and of entire classes, is finished, by surmounting this antagonism and by coinciding with the development of the particular individual." The development of all human capacities and the humanization of all social forces have become the sole "end in itself" of history. This is what is meant by the real movement toward communism.

The End of Prehistory

Whoever reads these texts for the first time, or re-reads them without yet understanding that they are referring to the most essential historical necessity, would vacillate between enthusiasm and disbelief. Isn't communism unimaginable, a revived myth of the "golden age," a pleasant formula about a society where money has disappears, a secular annunciation of "heaven on earth," a curious notion based on religious imagery but certainly not on Marx's materialist method? This has nothing to do with faith: Marx never claimed that communism would bring the end to all personal unhappiness or collective tragedies or even social contradictions, taken together as an absurd "end of history." In reality, it is *prehistory* that ends there, class antagonism and human oppression; in other words the transition to a truly human history, the dawn of humanization itself, the appearance of an effective freedom.

In reducing the direct dependency on nature through the tremendous growth of productivity, and with respect to society through the dissolving of traditional personal ties, capitalism has already limited the field of immediate necessity and extended that of contingency, that is, the possibility for the individual to choose within un-chosen conditions: the capitalist is free to decide where to put his money, the worker, where to look for work. From this point of view, capitalism offers complete personal liberty. But while individuals are far freer in capitalism than in previous forms, by virtue of the greater role of contingency in their conditions of life, they are also deeply less free by virtue of a subordination to an objective power - the blind domination of capital. This type of individual freedom is therefore the complete abolition of all individual freedom. We find at the same time, freedom, and the crushing of individuality under the yoke of social conditions that take the form of impersonal powers. It is the disposition of the self in the alienation of all. Re-inverting the relation between person and thing and of ends to means, communism confers on freedom a completely different content than the eternal conflict of an individual desire and a social power, both dominated by the soulless logic of money (*Grundrisse* and *German Ideology*).

Here also is the resolution of the contradiction that has characterized all of history until the present: "We begin with personal relations of dependence (completely natural at first) which are the first social forms, in which human productivity develops weakly and at isolated points. Then, personal independence based on an objective dependence: it is the second great form, in which is constituted for the first time a system of universal social intercourse, of universal relationships, of multiple needs and universal capacities. Finally, individuality founded on the universal development of individuals and the subordination of their collective, social productivity insofar as this productivity is their social power. The second stage creates the conditions for the third (Grundrisse)." Real liberty for individuals is achieved only once their social powers come under their common control. Liberty ceases to be the simple

enjoyment of contingency, to become the effective mastery of necessity, limited only by the human capacities already collectively mastered. Liberty for all and for each are completely inseparable. "It is only in the community that personal liberty is possible." Communism is the free community of free people who have relegated economic exploitation and political oppression, along with individual alienation, "to the museum of antiquities," in Engels' words referring to the disappearance of the State. Hobbes' war of all against all is over. "The struggle for individual existence ceases. For the first time, man separates himself from the animal kingdom, passing from animal to human conditions of existence (*Anti-Dühring*)." It is in this sense that the "prehistory of human society" comes to an end.

We must ask in all sincerity: at this time of planetary accumulation of endless perils coinciding with unparalleled possibilities in the urgency for reorienting history, can we conceive of an outlook more visionary while more in touch with our real problems than this supreme perspective of communism? Are we looking for a civilization that will allow the human species to develop its powers and responsibilities without catastrophe? Here it is.

Of course, examining Marx's views on communism in no way takes the place of our own prospective effort, nor would it exempt us from the critical work in their regard. Here I don't mean the "critics" who defend the eternity of capitalism and social antagonism on the basis of some unchangeable "human nature." When I refer to critique, I have in mind the rigorous questioning of the coherence and pertinence of communism as Marx envisioned it in relation to the real contradictions of his time and even more in relation to these contradictions in our own time.

For a Critical Evaluation of Communism According to Marx

An extensive study of Marx's analysis would be well beyond the scope of this work. But two questions come up. While Marx's economic analyses and anthropological insights gave his conception of communism a force still intact today, isn't there within this conception a very uneven analysis of the areas that communism includes, leading to certain careless extrapolations, especially in the *German Ideology* and *Communist Manifesto*? Did Marx proceed too quickly from the idea of the disappearance of the State to the prediction of the end of politics, seeming to subscribe to Saint-Simone's formula that in place of government would be substituted a non-political administration of things? In fact, this administration would not be an end of politics because it presupposes the concerted piloting of the collective destiny. Hasn't he also, from the formation of the world market and the movement towards universal history, drawn an overly simplified picture of a unified humanity? Isn't the concrete universality of communism rather the flowering of national personalities, of regional specificities, of ethnic originalities in the plural unity of a re-united, cooperative and interdependent world? The practical stakes of such questions are immense.

Uneven at the start, the Marxist perspective of communism has grown more uneven up to the present. For example, Marx had prodigious foresight with regard to the today's unparalleled effects of the technological revolution. He anticipated the introduction of science into production and its social consequences. He demonstrated that the logic of capital would lead to an enormous development of scientific powers, fluidity and mobility of labor, and the replacement of brute labor in the production process with the scientific overseeing

of automated production. Finally he foresaw the resultant emergence of the "integral individual" capable of mastering a process of which the final end is the abolition of the old division of labor.

Nevertheless, his analysis doesn't seem to consider certain aspects of the technological revolution that have since become decisive. For instance when he discusses, in the *Grundrisse*, the increasing weight of objectified labor in relation to living to labor, that social wealth is expressed more and more in the conditions of labor, rather than immediate labor itself - this is the basis for the tendential falling rate of profit - he bases his analysis on the logic of accumulation of the large-scale capitalist industries characteristic of that time, and that continue to some extent to ours. But he couldn't envisage the tremendous economy of material made possible by the computer revolution, nor the rise of "non-productive" labor, or the importance of information in all areas of social life. Even here, he had glimpses, in the *Grundrisse*, or better yet, in Book III of *Capital*, of the development of diverse methods to counter the falling rate of profit, through new inventions and the application of scientific advances.

But while it was possible for Marx to anticipate the necessary development of social relations by envisioning the progress of contradictions and their resolution, this is far from predicting the course of contingent scientific discoveries and technological innovations, that it, the concrete productive forces. Here, Marx could only extrapolate from his own time. To put it perhaps too briefly, he had a communist vision, in a sense, for the industrial age, while today we need to update this to the information age and beyond to a new technological age in which a vast expansion of services and connections provides fundamentally new opportunities and risks for the humanity as a whole. Far from refuting Marx's perspective, this only bears out that from the moment of the possibility and necessity to economize on the excesses of capital, social development necessarily comes to center on the development of people - a reversal which is the very essence of the movement towards communism. No doubt we must ask ourselves whether in failing to foresee fundamental characteristics of this technological revolution, Marx hadn't underestimated the possibilities this would offer capital of once again postponing its day of reckoning in a new, drawn-out cycle of development. This doesn't invalidate the essential fact that it is not economic contradictions that toll the funeral bell of capitalism but political struggles.

Struggle is in a sense the primordial requirement for communism, as Marx attested beginning with the *German Ideology*. Despite all objective necessity of historical movement, all the accumulating of presuppositions of communism, no passage from these presuppositions to communism can be made without us, our awareness and practical initiatives.

But Marx did point to specific conditions without which communism could not be achieved. The first is the universal development of the productive forces, without which

"scarcity" and the struggle for necessities would prevail (*German Ideology*). The second is the formation in the masses of a communist consciousness so that not only is the rule of the old class overthrown, but the overthrowing class is capable of laying the foundations of a new society. The third is that communism win on a global scale - in an age of global exchange there can be no local communism. This is why he initially imagined a universal uprising in sudden and simultaneous actions of many groups and nations and later he questioned whether a revolution in a "little corner" like Europe wouldn't be crushed if in a world where bourgeois society was still ascendent. Hasn't the history of socialism borne out Marx's "conditions" in the dramas of insufficiently developed productive forces, the magnitude of change needed in outmoded attitudes and mentalities, the hazards of coexistence with a far more powerful capitalism?

The Question of Socialism

Certainly much more can be said in this regard. But before going further to consider the conditions for the communist perspective especially in the developed capitalist countries, let us return to the implicit point concerning categories in the preceding analysis by returning to our initial question: what, exactly, is socialism?

What makes this question enigmatic from a theoretical point of view is that the answer is obvious in advance: socialism is the transition from capitalism to communism, or more concretely, it is the ensemble of singular forms taken or to be taken by this transition. This banal formulation contains a decisive idea: there can be no separate or isolated definition of socialism; it is in its essence a transition and thus it has no definition of its own. While we can refer to a transitional phase in itself, this can only have meaning in that it is a break with capitalism in the movement toward communism. If this is true, socialism and communism must be based on the same new mode of production.

What, then, is the difference between them? We have tended to limit our thinking to the famous formulations - to each according to his work, or needs. Unfortunately, among other weaknesses, these formulas, derived from utopian socialism, refer only to a difference in mode of distribution, as though this could be separate from a difference in mode of production, something Marx explicitly argued against. Marx's answer here is that socialism and communism, while based on the same mode of production, are substantially different historical moments of its development (*Critique of Gotha Program*).

This distinction is based on Marx's analysis of two successive moments of "subsumption," formal and real (see *Grundrisse* and *Capital*). Briefly, like all modes of production, capitalism requires a type of productive forces, social relations, individuality, etc., which

then constitute the necessary bases of its functioning and development according to its own logic. However, at the start, it doesn't find them ready, but rather the very different ones corresponding to the previous mode of production. It must then, in a first phase, submit itself to these bases in order to gradually adapt them to itself - it *subsumes* them externally or formally.

It was necessary, for example, for capitalism to liquidate small agrarian property to create a mass of proletarians with nothing to sell but their labor, capable of producing surplus-value. This phase of "initial accumulation" and "formal subsumption" required centuries of expropriation and violence, "blood and fire" right up to the great anarchist convulsions of 1900. Once its own bases have been established, capitalism is able to begin to dominate from within in more "civilized" and effective forms. This is "real subsumption," where all the false appearances flourish and internal antagonisms are given free rein. It is a capitalism with this long past full of atrocities, skillfully exploiting its own workers, strangling the Third World, that portrays itself as the epitome of democratic humanism and lectures the world about human rights.

But this dialectic of a mode of production which must first of all formally subsume bases that are not its own before acceding to another phase in which, having now created its own bases and truly subsuming them, it is able to show what it is made of - this applies as well to communism. From a purely theoretical point of view, a "first phase of communist society" is inevitable "insofar as it has just issued from capitalist society and is a society which from in all respects bears the stigmata of the society from whose womb it emerged" What we call socialist society can only be a transition to communism insofar as the communist mode of production has not yet created its own base. It is still marked by capitalism and even pre-capitalism. This is well worth keeping in mind when considering the history of "real socialism" and its relations with capitalism.

The problem of definition is not solved when we take refuge in more "concrete" characterizations, such as social justice or democracy. Socialism has no essence other than as a transition. *The true prospective category of Marxism is communism.* Marx was very reticent to adapt a periodization in which inferior phase and superior phase are referred to by different labels. One runs the risk here of a disconnection and reduction of the earlier phase with incalculable consequences. Marx used the term communism to refer both to a future anticipated as a goal and to the real movement in that direction. This is the ambiguity of a true dialectical vision. Communism as a social form, having fully created its own bases and resolved previous contradictions presupposes a whole transition - taking much longer than Marx supposed - during which it does not yet exist. However, at the same time, insofar as this transition is a real transformation of bases and social relations in the direction of communism, communism already exists concretely, although in an inferior, limited and contradictory

form.

Here we should analyze the theoretical and political history of the words communism and socialism themselves. In his preface to the English edition of the *Manifesto,* in 1888, that is, at a time when *socialist* parties were forming everywhere, Engels felt the need to explain to his readers why the Manifesto was titled *communist* and not socialist. The fact is that in 1847 socialist referred to disciples of Owen or Fourier, sects losing their influence, or charlatans of all sorts outside the workers' movement. In 1847, socialism signified a bourgeois movement, communism a workers' movement. Yet, by the end of the 19th century, the notion of "socialist society" had won out over that of an "inferior phase of communist society" in the theoretical and political vocabulary of workers' parties. Anxious to make himself understood, Engels speaks the same language in the famous third part of *Anti-Dühring* - a language which the notion of *scientific socialism* came to support.

However, history has shown that the habit formed at the time of the Second International to keep to the notion of socialism, with the prospect of communism going unsaid, was linked to the opportunistic drift that solidified in the notion of social-democracies, which Engels himself began to criticize in 1894. Engels reminds us, in the introduction to a collection of his articles, that he never identified himself as a social-democrat but as a communist. "For Marx as for myself, it was absolutely impossible to use such an elastic expression to designate our own conception." Grudgingly accepting the use of the term, he maintains that it doesn't correspond to "a party whose program is not only socialist in general but directly communist."

It was exactly to oppose this drift that in April 1917 Lenin proposed to change the name of the Workers' Social-Democratic Party of Russia to that of the Communist Party, for, if "humanity can pass directly from capitalism only to socialism," our party sees further: socialism must transform itself gradually into communism." In not openly avowing our link to communism, he adds, "we are afraid of ourselves." Having lost on that proposal, he returns to the attack, this time successfully, during the 8th congress of the party in 1918. We must break, he says, with this "old official socialism." "At the time when we commit ourselves to socialist transformations, we must clearly define the goal they aim for, that is, the creation of a communist society.... This is why the designation of the Communist Party is the only one that is scientifically exact."

Advanced Capitalism and the Communist Perspective

It is in rediscovering the meaning of its long course that communism will find its second wind. Universal deployment of productive forces, real appropriation by associated producers of their objective social powers, an end of human exploitation, elimination of class

antagonisms, abolition of labor, integral development of all individuals, recomposition of the use of time, disappearance of the State, elimination of hostility between nations, de-alienation of social consciousness, transition from contingency to real freedom: if in the milieu of the last century, Marx could already see in these great historic reversals the necessary meaning of post-capitalism, don't they figure even more strongly today, when so many presuppositions of a new civilization appear at an accelerated rhythm, heightening the old antagonisms to the point of untenability? Isn't our future more than ever communism?

We insist again: the *virtual* traits of communism being the *actual* contradictions of capitalism posited as resolved, these indicators of the future are as much the analyzers of the present and the tasks it demands of us. The question of communism is that of tomorrow only by being that of today because only this vast perspective can encompass the crisis of capitalism and the ambition to get out of it. We can see what to transform in the social whole only when we can project its future supersession. A stunted view of the future means a stunted understanding of the present and a narrow practice. Isn't the question of social justice posed differently when we have in mind the necessary supersession of wage labor? Or questions of democracy when we anticipate the disappearance of the State? It is important to break with the non-Marxist conception which sees communism as a future ideal rather than as the real movement which begins today to lead us there. The communist perspective is not a matter of propaganda, but of real politics.

Aren't these immense reversals that Marx foresaw at work today in the developed capitalist countries? Let us look first at the fantastic growth of the sciences and of technology. Just in the number of scientific articles, the volume of scientific knowledge is doubling every ten years. It will be multiplied by a thousand in a century. The acceleration of technology is on the same order. Of every four commonly to be used objects by the year 2000, three were unknown in the mid-eighties. These are the early signs of a transformation of human knowledge and abilities whose breadth contrasts with the narrowness of social relations. Beginning to overturn from top to bottom the current technical division of labor, it already calls into question the social divisions basic to class society. The crucial reconciliation of intellectual and material activities, their interpenetration in a new collective laborer in formation, both in the factories and services, is already shaking up the age-old split between deciders and executors. Creative activity and responsible management for all become practical demands. Humanity is caught in a dilemma between its enslavement to rapidly expanding objective powers, or their appropriation by the workers themselves. None of this should divert attention from immediate issues and demands, but isn't it necessary to know the extent to which this long term process is already at hand?

In this process the newest and most dynamic tendencies pose the most radical challenges to capital. The irresistible growth of "non-productive" activities, not incarnated in products,

tends to destroy the commodity-form, basis for all capitalist valorization. The growth of high technology renders obsolete the unlimited accumulation of dead labor (objectified as products and conditions) at the expense of living. The objectivation of operations of the human mind in computers, coupled with the monopolization of knowledge and management prefigures a general breakdown of a system based on optimization and waste. The vast economies in material, permitting and calling for the greatest deployment of individual capacities and responsibilities signal the conditions for a totally new productivity, an unprecedented social flexibility, increase of free time, universal communication and co-operation for the good of all. Wealth based on human exploitation and subjugation already appears as a"miserable" form. Aren't the direct presuppositions of communism already appearing, albeit "upside-down"?

This acceleration poses a problem, unforeseen by Marx: the *universal* development of productive forces is only possible in concretely *universalizable* forms. But today there is a question of their viability. For instance, if the rate of utilization of energy in the developing world equalled that of the developed world, the world-wide use of energy would be increased five-fold. But this is a situation our ecosystem can't bear. There are numerous similar examples. Without a doubt many have technical solutions, but in general the qualitative transformation of progress brings it into conflict with its old criteria. The very type of development founded on profitability is becoming visibly more self-destructive. Culture is being killed by its own commodification. The reification of the human body is becoming fatal to the human race. The very plethora of capital for profit is exhausting its useful applications. The world must basically change.

Here too it is in these most vital questions of our time that we see the urgent necessity to put an end to the rule over human destiny by money-capital. Proliferation of the unconscionable arms industries, pillaging of the environment, proliferation of the mafia and drugs: these monstrosities are not excesses, they are the very face of capitalism itself projected on the big screen of modern technologies and market strategies. Marx's prediction is more true than he could have imagined: in a system where money is everything, the unchecked accumulation of technical power leads to the dehumanization of millions of people, to the denaturation of the planet and to a final catastrophe if humanity doesn't decide upon an entirely new course. Isn't the demand for regulations to bring these processes under the control of human needs the basis for any credible perspective?

This fundamental crisis of money-capital corresponds to a crisis of wage labor of the same historical magnitude. The Taylorist organization of the labor process, financial criteria for the production process, capitalist logic for the increase of productivity, and more - where the very meaning of labor has become a problem in people's souls, especially youth. Not only a crisis in *forms of labor* but a crisis in *form-labor* itself, an iron collar imposed by class relations on

human activity striving to free itself. To the extent that real wealth depends ever more on the objectivation of science in production and services, the immediate labor of the individual becomes non-productive, and the massive extortion of surplus labor becomes obsolete. Labor itself is living a crisis of the sterility of its forms. This is linked to crises in other areas - in school, for instance, organized to prepare people for an alienated, fragmented life in the service of capital when it should be a place of joy and preparation for the blossoming of multiple capacities and masteries.

At the time of the most universal expansion of wage labor there is already the movement towards its abolition. Unemployment, instability, hyper-exploitation, lack of training are met with the demand for training, culture, responsibility, cooperation, self-expression - for the central value to be upon living labor. The capitalist use of new technologies is lagging an entire era behind the revolution in human capacities. Presuppositions for communism are shackled in capitalist forms. How far will this go? That is an open question. Capitalism may prove for a long time capable of digesting progress that is ultimately fatal to it, through hyper-modern technology and computerized neo-servitude. History is to be made, and to predict without constructing is meaningless. But the magnitude of the perils must be met by the breadth of our perspective, not of a half-way socialism, but of an entire communism.

Squatters on an Under-occupied Communism

We would arrive at the same conclusion starting with other aspects of the crisis, such as major mutations in individuality, the political crisis, the demand for international cooperation, the rise of ethical preoccupations. To what extent are societies in crisis today beginning to reveal the ultimate meaning of their antagonisms, and thus becoming transparent to the future in its very radicality?

Even traditional supporters of the capitalist system are forced to recognize these fundamental crises at a certain level, while at the same time proclaiming the "death of Marx." Let us not forget, liberal philosophy has never ceased to fear the vitality of Marxism and busies itself with trying to obfuscate and deflect its critique. Is money historically obsolete? Every attempt is made to have it appear as having taste and a heart. Is alienated labor in trouble? Concessions are made to labor's participation in management, to flexible work schedules, and erasing the boundaries with free time through use of home computer work-stations. Is individuality affirming itself? The floodgates of individualism and permissivity are opened, with apparent personalization of wages and careers according to "merit." Is the State in question? An anti-state ideology calls for elimination of bureaucratized public

services in a new mix of privatized functions. Growing aspiration for a new world order? The "free world" is touted as the future of the planet, where nations are superseded by a supernationality, where finance abolishes borders, where the human species communes with the universality of human rights. Determined to subordinate the productive forces that foreshadow communism, capitalism spares no effort to appear capable of an alternative to its revolutionary promises, while ceding nothing of its class basis. And in fact, capitalist ideologues have devoted far more effort to addressing these issues than have communists themselves.

Let us turn our attention to the ecological themes and neo-utopian alternatives promoted by the Greens who are able to seduce the youth and other audiences that escape the communist parties. To speak of their most general positions, they remain neutral with regard to capitalism as a whole, they oppose productvist gigantism, of which nuclear power is the emblem, they promote technological economy, decentralized democracy, reasonable consumption, social equality. They appeal ethically to humanity as a whole to take the side of nature and humanity in peril. We can see right away the relation of this position to the Marxist perspective. It is not concerned with a mode of production as a whole, but only with a certain type of productive forces considered in its relation with nature. Class relations are not called into question.

But at the same time they have raised an essential question considered by Marx himself. The universal development of the productive forces at a certain point necessitate the transition to a qualitatively new form of growth in productivity. It was the Greens who raised this issue in today's context, while the communists weren't paying enough attention to their own perspective. In fact, it is the very evoking of communist aims that gets the most attention for the Greens. The call for a new civilization, for grass-roots initiative, the reversal of endless accumulation, the reassertion of political power, restructuring of convivial social relations in a planetary solidarity with nature. While their message is widely received, there is only silence from the overall perspective of communism. At a time of a housing crisis, someone not occupying their house may well find squatters there.

An Adequate Notion of Socialism

This should be sufficient to allow some conclusions, some strategic reflections and some considerations for political practice. Placing the global outlook for revolutionary struggle on the clear perspective of communism seems to us to be doubly justified. From the theoretical point of view only the analysis of the antagonisms of capital and their resolution permits a clear historical perspective. On the practical level, in confronting today's antagonisms in

ideological struggle with non- and anti-Marxists, the halfway perspective of is not socialism sufficient We must show the roots of today's disorders to lie in capitalist alienation and offer a communist perspective of their radical supersession.

I have been struck with the vigorous objections these arguments have met. Is this due to the decades of inexperience in speaking of communism, or of practicing politics from this perspective? There are other bases for objection. Isn't communism so far from today's problems that speaking of it leads us away from practical action into futurist speculation? But we could just as well say this about calls for "French socialism." Marx himself, addressing the First International explained the limitations of "fighting the existing regime without working at the same time for its transformation." A problem here is in thinking of "socialism" and "communism" as two distinct social states, of which only the first, nearest to hand, should concern us. It is even an error to think of "socialism" as some fixed form, a general model, rather than a variety of paths to communism. We have seen the cost of this view.

It will take time for the communist parties to free themselves from this conception of socialism. Holding on to an idea of a model, or even of a model of models, denies us the ability to think of socialism at all and a secret utopianism haunts an apparent realism. The only real way to understand socialism is from within a communist perspective, as the concrete, variable path on the way to communism, the resolution of the antagonisms that beset present-day society.

We are here at the heart of the problem of credibility of the struggle against capital. It is objected that to speak of communism, far in the future, weakens our credibility, but the truth is the exact opposite. To speak of socialism without proper foundation in the epochal perspective of communism - this is what weakens our credibility, first of all by failing to place our divergence from the socialism of the USSR and Eastern Europe in a meaningful framework. It is this position that makes our project seem implausible. Even assurances of a national specificity - "French socialism" or "American socialism" are not enough. While attempting to create distance with the socialist experience of the past, it still does not raise our ambitions to the appropriate historical level required to address the conditions of the advanced capitalist countries and the realities of our times. Our "socialism" must be adequate to a history in an epochal transition.

If we disengage from the canonical idea of socialism as a model, what then of its content? The response in the PCF has been to *relativize* criteria that had previously been absolute: recognition of various forms of social property, rejection of collectivization in agriculture, acceptance of private property in small industry, non-monopolist conception of public services, allowing a mixed economy, etc. Then, a few ideas previously reserved for communism are mixed in -i.e. full democracy and self-management. But is it plausible to

separate out some dimensions of communism from the whole and place these in socialism? Can we think of self-management apart from the supersession of the criteria of the market, the abolition of servile labor, the recomposition of individuality? Can full democracy exist without a disappearance of the State? Trying to promote elements of communism without saying it, foreshortening our aims in an implausible mix of goals - this is what strains our credibility.

How can the revolutionary enterprise find a second wind? We must re-open the perspective of communism and the quest for new social forms at a level corresponding to the demands of our epoch. If we wish to change the world, the historic perspective is decisive. If we must have a categorial definition of socialism it can only be this: it is the open ensemble of singular and transitory historical forms through which it behooves us all to resolve to the end the antagonisms of class society, in passing progressively to the communist phase of human development. The phrase "it behooves us all" emphasizes that while presuppositions accumulate with the certainty of a natural process, it is nonetheless a human task with its full charge of subjective responsibility.

The relation between singular and universal in this enterprise become clear. Socialism is neither a general model nor a particular national phenomenon. The concrete universality of communism is approached not through an artificial organizational unity, but through an innovative community of inspiration. A community all the more timely today when geographical singularity confronts a universality of conjunctures. The earth has indeed become politically round.

Revolution

Revolution: for the communist movements of the developed capitalist countries, this is the most acute question. As an answer known in advance, following prescribed ideas, revolution is dead. Since the bloody end of the Commune in the last century, the history of France has not visibly involved the revolutionary mode. Even a repeat of the great social convulsion of 1968 seems more mythical than thinkable in the social consensus. It is said that the decline of the communist project is an inevitable part of this turn away from the notion of revolutionary action.

The deep reality is not so simple. Death notices for Marx and revolution are premature and are themselves hardly without motives. We must know of which Marx or which revolution we speak. Doesn't the fact that there are so many interpretations indicate an essential ambiguity of this notion? For many it raises images of blood, violence, irrationality; nothing is worth such a cataclysm. The general sentiment in France today appears to be that while revolution may remain as a symbolic reference, it should never become a political necessity.

History as it has been learned and lived by the masses has led to a double conviction: as justified as the motives may be, real revolution is bloody violence and blind destruction, a regression to barbarism under the pretext of progression to a more civilized state. It is a senseless carnage even when in the name of a good cause. Beyond this, experiences with the division of the world into two blocs, following the second world war, makes the idea of a revolutionary transition to socialism even more unthinkable in the large capitalist countries. Given the equilibrium and complex interdependencies of today's world, if attempted revolutions in Nicaragua or Afghanistan cause such a stir, what would be the response to an attempted revolution in a large capitalist country? Whether we like it or not, aren't we in a period in which new 1917's are out of the question?

Violence, meaninglessness, destabilization: there is a lot to consider in the imagery of revolution. This is a debate historically open but politically foreclosed. During the last decades, the communist parties of the developed capitalist countries have more or less broken with the old revolutionary visions in rejecting the main strategic concept - that of *dictatorship of the proletariat.* The image of revolution for the PCF, for example has changed substantially in the last twenty years: *pacifist* in principle, putting aside any idea of a grand insurrection or civil war in favor of social political and ideological struggles creating gradually a new balance of forces capable of bringing about progressive transformations; *democratic* not only with respect to the exigencies of pluralism, universal suffrage, choices of new governments

in case of failures, but more deeply founded on the procedure of self-management in which the actors bringing about change are guaranteed against a denial of meaning or dispossession of the goals of their action; *responsible*, finally, on an international scale, the socialist advance must surpass the logic of blocs and political-military confrontation to work towards detente, disarmament and a new world order.

Revolution as a Dialectical Category

Such a fundamental change of view raises major questions. In the first place isn't such a new conception of social transformation a break with Marxism, which has been attached, and not without good reasons, to the classical idea of revolution as necessarily sudden and violent, in which a people destroy the obstacles put in the path of their emancipation? And if this innovation presents itself as a valid development of Marxism, mustn't it justify itself on the grounds of scientific socialism even more than before? Finally, and especially, is this new concept of revolution realistic? Without any precedent, this path to socialism has yet to prove itself.

Let us admit at least that it is credible to want transformation to be peaceful, democratic and responsible. A third and most difficult question that arises then is, are we still speaking of a revolution? This is not a purely scholastic question but a strategic one. With such an approach to the problem the theoretical and political boundary between revolutionary and reformist attitudes is blurred. That more than one communist party today is attempting to see beyond the traditional opposition of communists and social democracy indicates that this problem must be addressed: aside from its diverse concrete forms, what exactly is revolution? Just as we had to sort out from its factual concepts the category of socialism in its relation to communism, we have to do the same with revolution in order to go more deeply into its dialectical relationships with reforms and reformism.

This same word refers to natural as well as social phenomena, in referring to a turning around, a reversal or overthrowing. Speaking dialectically, all revolution is a *negation of a negation*. It refers to the logical-historical movement of contradictions. In turning itself around, the contradiction is resolved. This is why the term refers essentially to more than evolution. In the field of science and technology, for example, the word is properly used only when it refers to some essential reversal of relationships, between the natural and artificial, for example.

These abstract linguistic and philosophical considerations are pertinent because, as a central category of political practice, the idea of revolution inevitably brings us to dialectics

and the potential reversal or overturning of contradictions. This categorial cleansing is even more necessary considering the decades of deformations it suffered under a vuglarizing Marxism that has left us with a deep malaise with regard to a new revolutionary culture. We must rescue ourselves from the Stalinist simplification according to which the transition from quantity to quality in nature - e.g. at a certain temperature, water boils - was transferred directly onto the terrain of political practice in concepts of 'qualitative leap', 'laws of development' and the 'necessity to be a revolutionary and not a reformist'. This is a parody of deduction, erroneous in its very form because no philosophical pronouncement can decide a concrete process, and illusory in its content because qualitative changes can be gradual as well as sudden. Water can slowly evaporate at room temperature. In truth, this Marxism begins with the dogma of violent revolution and transfers it onto philosophy to give this dogma a philosophical consecration - a procedure as destructive to politics as to dialectics.

Clearly, in all change, considered in isolation, there is always a rupture in which the quantitative progressivity is manifested, and in this sense the abrupt leap is always a virtuality in revolutionary transformation. But in all concrete reality considered as a vast ensemble of elements - stars, particles, individuals, social relations - qualitative change of the whole, the sum of numerous qualitative elementary changes, is a statistical phenomenon in which there may be neither a simultaneity of individual leaps or an abruptness of the general process, but rather a series of partial qualitative changes. Certainly, the abruptness may appear on a large scale through the effect of an external or internal obstacle capable of blocking, up to the point of explosion, premature qualitative changes. It is in this sense that violence is the classical form of revolution against a strong adversary. But in situations representing an advanced maturation of the contradictions, what had presented an obstacle may lose all or part of its capacity for blockage, and thus the internal necessity for explosion is eliminated. *Violence is not the essence of revolution* : it can take on forms that are peaceful and gradual as a whole from the moment when the relation of forces is in its favor.

The reversal of a contradiction is not necessarily violent any more than it is the destruction of the obstacle which opposed the old to the free development of the new. Certainly, in the resolution of an antagonism - for example, the irreconcilable contradiction between exploitative capital and exploited workers, to which the dialectic is limited in its impoverished vulgarization - the moment of abolishing negation is essential. But there are non-antagonistic contradictions, for instance between material and intellectual labor, the superseding of which consists of re-establishing in higher forms the unity of opposites which have also contained an identity. This is a process that creates as it negates.

In all contradiction, antagonism and non-antagonism interpenetrate in a complex way. Thus, capital is antagonistic to labor in the relationship of exploitation, but in this historically transitory form is also to be found the non-antagonistic relationship between objective social

wealth and the living labor that produces it. This duality of aspects of contradictions is inscribed in the ambiguity of the term "reversal" - it is to stand something on its feet, and also to put the head back on top. Revolution contains the inversion that produces a new meaning as well as the destructive subversion of an outdated meaninglessness in the name of a better future.

Furthermore, rather than think about a contradiction as something by itself, we must take into account the complex relations woven between contradictions in a concrete whole. Theoretical research on "macrodialectics" has barely begun. But we can state in any case: to the degree to which the different parts of a whole go through the same qualitative transformation - such as the 'transition to socialism' in a growing number of countries - not only are the external conditions for new transitions changed, but new internal logics can come into being, because what tends to revolutionize in one part can make an active contribution to the configuration of a new whole. We see this, for example, in the history of scientific theories when a new, more powerful theory shows itself to be more capable of integrating existing knowledge than the old, superseded theory, and succeeds in winning converts over to its cause, even the best proponents of its rival. The logic of reversal gains its strength to the extent that it demonstrates its greater *universality*.

By themselves, such elucidations of dialectics demonstrate nothing that can become law for political practice. But they do remove from the category of revolution all the extraneous images which alter its essence. They show that a revolution that is essentially non-violent and universalizing is at least thinkable. They establish decisively that the *forms* of revolutionary processes don't come from a dialectic logic in itself that can be imposed on an existing situation. Dialectical reflections establish that their objective relevance results from the *relation of forces* in revolutionary opposition, from the *specificity of relations* to be revolutionized, from the *level of universality* which defines the context of the revolution as a whole. Here, as we found in the previous chapter, the key question is that of *historical perspective* and its *contents*. The fact that the revolution against capital, in order to become credible, must successfully address the issues of violence, meaninglessness and destabilization, brings us to the theoretical analysis of major contradictions which underlie both its contents and perspective.

Dictatorship of the Proletariat and the Immaturity of Socialism

According to Marx, in his famous conclusion to the *Poverty of Philosophy*, it is only when there are no longer classes and class antagonisms that social evolution will cease to be political revolution. Until then, the last word in social science will always be "battle to the

death; bloody struggle or nothing." This is how the young Marx saw things on the eve of 1848. Twenty-five years later he clearly acknowledged the possibility of workers reaching their goals through peaceful means. According to Engels, he often played with the idea of workers buying the capitalists out. In his *Critique of the Gotha Program* of 1875, he spoke of socialism as the first phase of communist society, just emerging from capitalism after a long and painful birth. We see here that, peaceful or violent, revolution for Marx is, if not a sudden act, at least a marked break with the past in which a new social formation is born, and which requires the dictatorship of the proletariat both to repress the counter-revolution and to transform society.

It is only in 1895, in his introduction to the new edition of *Class Struggles in France,* that Engels, reflecting on the spectacular electoral progress of German social-democracy, defended for the first time a strategy of peaceful transition to socialism. While he does not rule out the possible need for revolutionary insurrection, it is also worth noting that he doesn't refer a single time to the dictatorship of the proletariat. He observed that history has completely changed the conditions of workers' struggles and that the mode of struggle of 1848 is now outdated; a conclusion that is the first step to a new revolutionary thought, and that was distorted by the opportunists of the Second international who reduced the meaning of struggle to the level of issuing demands and propaganda and waging electoral campaigns.

Still more remarkable, and underestimated, is the fact that Lenin, so tenaciously presented as the exclusive advocate of violent revolution, - even at the height of his confrontations with the "renegade Kautsky" - always remained attentive to the possibility of this peaceful way, particularly in the bourgeois democratic countries but even in Russia itself. The decisive question in all revolution is that of the majority - not simply the electoral majority but the political majority, that of ideas, positions and effective forces. Lenin understood that while there was a majority in favor of the goals of an agrarian-democratic revolution - for peace, bread and land - such a majority did not exist for a socialist revolution. Thus the necessity, in his view, for a dictatorship of the proletariat. The Bolsheviks would only rally the majority *after* conquering state power and showing the benefits of proletarian power in practice.

A power in favor of the majority temporarily without a majority - such in sum is Lenin's concept of dictatorship of the proletariat. We see here why, responding not to abstract universals but to historical concretes, he identifies revolution with the installation of a power founded on violence. Finally, it comes from the fact that, as the leaders of the Second International pointed out, Russia hadn't attained the degree of development of the productive forces necessary to institute socialism. Lenin found no argument with this thesis, but asked why couldn't the conquest of political power be the prelude to such a development rather than its corollary?

Lenin believed that the path of development of world history and revolutionary thought could not be put into a manual and at times labeled such attempts as 'imbecilic', but it was just such an attempt to condense living thought into a manual that Stalin undertook in 1924. In his *Principles of Leninism*, he presents as a general thesis that revolution only takes place through skin and blood of the workers, the dictatorship, a long historical era of violent revolutions and international conflicts. The possibility of peaceful transition is far in the future when the capitalist encirclement of the socialist world is reversed into a socialist encirclement of a dying capitalism. In his 1926 *Questions of Leninism*, he goes even further, transforming the situation of an immature socialism into a general law, obligatory for all countries without exception. Not only does the transition to socialism necessarily take the form of a violent *political revolution* installing a dictatorship of the proletariat, but this becomes necessarily a *social revolution* from above which creates a new economy from the ruins by socializing ownership of the means of production and exchange without regard to their effective degree of socialization. Stalin acknowledged that apart from cataclysms such as the Second World War, such revolutions would be difficult to start, an understatement at best. Nevertheless, even though such a model of revolution seems to have little or no chance at any time, it is in the name of this mythic future that the communist parties pursued the hope of conquering through non-socialist objectives a preliminary majority. The horror of the dictatorship of the proletariat rendered this impossible. Is it surprising that they haven't succeeded anywhere?

It is clear that in relation to bourgeois revolutions the advance in the direction of communism constitutes a deep historic transformation aiming to put an end not only to the domination of a particular class but to the entire era of class society. In this sense the forms inherited from the preceding social regime must be questioned all the more thoroughly. This task is placed the agenda by the internal movement of capital itself which creates - inverted - the objective presuppositions of classless society. In his great economic works, Marx dismissed in advance the concept of a socialism to be introduced from the outside by a demiurgic revolution: "if, in society as it is, we didn't find hidden the material conditions of production of classless society and the relations of exchange which correspond to them, all attempts at overthrow would be nothing but Don Quixotism (*Grundrisse*)." The working class doesn't set out to realize an ideal, we read even in *The Civil War in France*, but only to liberate the elements of the new society that the old bourgeois society carries within. This is an analysis appropriate to the developed capitalist countries of today: the subjective choice for a strategy of self-management is based on the objective maturation of presuppositions for a new world. that The term self-management refers here not only to a particular style of management but to a philosophy of revolution which does not postpone the appropriation by the social actors of their conditions of existence, but makes it, rather, the order of the day.

Self-management and the Revolution-process

At this point, both the content and the form of struggles begin to change. The issue becomes that of the partial qualitative transformations oriented directly toward post-capitalist objectives that can prove their advantage for workers and the country and thereby democratically create the strength necessary for profound transformations. For the barely credible sequence - prior acquisition of a majority, conquest of political power, revolutionary transformation of the society - we substitute the idea of continuous action in which the moments interpenetrate and are brought together, where continuous constructive struggle replaces violence, where the impulse toward self-management in all areas becomes the terrain of conflict in the formation of a directing majority, where dreams for tomorrow give way to decisions for today. The logic of the dictatorship of the proletariat is not only decisively abandoned but is replaced by another of far greater scope - the view of revolution not as a *thing* but as a *process*.

To make this transformation explicit, let us take the example of the economy in the broad sense that Marx gave it as it has been treated by the French communist movement. The interpretation of economics for a century has been based on Book I of *Capital*, devoted above all to the theme of the capitalist mode of production, the extortion of absolute and relative surplus-value, impoverishment and classical unemployment, along with a brief acknowledgement of the tendential falling rate of profit.

In this light, the central question is the *injustice* of capitalism, to be opposed by struggles for the re-direction of profit and the political *denunciation* of a system in which there can be no question of a class collaboration. The task of revolutionaries is to put an end to this system by assuming *political power* and instituting *social ownership*. We see how this conception goes along with the traditional definitions of socialism, seen as social justice in the transformation of the distribution of wealth - to each according to his work - and in which communism is relegated to the distant kingdom of abundance. This perspective at the same time accompanies the old strategy that sees the basic transformations as taking place only "after the revolution." With this view, while one may renounce violent revolution and the dictatorship of the proletariat, it is difficult to formulate a truly new strategy of self-management capable of replacing the old.

We free ourselves from this classical and limited vision by grasping the movement of *Capital* as a whole, as it proceeds from the functioning of the capitalist mode of production (Book I) to its development (Book III) in which the tendential falling rate of profit, dialectically understood, has us grasp not only surplus accumulation but the correlative de-valorization of capital. Let us continue Marx's incomplete procedure by analyzing the current concrete movement of this dialectic, the transformations that it induces in contemporary

capitalism and its relationship with the state. We see the fantastic excess of capital which accumulates at the expense of wage-earners, the ultra-powerful new technologies, the declining efficiency of a system that sacrifices human development for non-recyclable financial accumulation, the structural crisis constantly postponed and constantly aggravated. We are brought back to the deepest levels of Marx's inspiration and critique. The essence of capitalism is much more than the social injustice of a mode of production and distribution: it is the historic obsolescence of the type of growth of productivity in which the dead weighs on the living, where people are dispossessed of their social powers - tools, finance, relations, knowledge, abilities. It is not only in the private ownership of the means of production and exchange, but in the inhuman drive toward efficiency, in the general inversion of relations between person and thing, between ends and means, that we find the basis of the problem: it is the centrality of this alienation which the traditional conception has failed to recognize.

This new view of Marxist economics renders conceivable and practicable a strategy where it is no longer simply a matter of renouncing capitalist choices, but of questioning the criteria; not of fighting only for a more just distribution of wealth, but for participation in the management of production; not only calling for another future society, but for elaborating other issues in the present. This is a far more difficult task: instead of defensive battles against capitalism and programmatic propaganda for socialism - a strategy that may win skirmishes but cannot influence the course of events - it is a question of concretizing an alternative approach that seeks to form not 'islands of socialism', but initiatives challenging the system on all levels - in factories, public services, locally and regionally, nationally and internationally - breaking out of the dogma and the capitalist framework, showing that alternatives are possible and preferable, creating new cooperative situations in which we struggle to live according to new criteria and goals, in which we unite people because we touch what is essential and outline true solutions.

Ceasing to focus on the presumably liberating act of the conquest of power permitting the socialization of ownership, "revolution" becomes a progression of revolutionary changes. In the developed capitalist countries, the idea of a brief period defining "the revolution" is decidedly dead. The supersession of capitalism, from here on, assumes the form of a revolution-process, and in fact, we are already embarked upon it.

In overturning the old scenario which relegated serious change to after the revolution, this approach re-introduces the historical perspective into real movement, and real movement into the historical perspective. When we cease to see "revolution" as a thing, we do the same with socialism. They are process and transition. In this strategy the attack on the deepest antagonisms of capitalism and the outlining of their resolution are one and the same undertaking: the aim of communism thus appears on the scene. The demand for training, information, responsibility, initiative, culture becomes a force in production in the struggle

against servile labor. The struggle for alternative uses of technologies and services, to overcome the split between planner and executor, place on the order of the day the recomposition of time as well as social space - from labor to outside of labor, from private to public, from regional to international. To promote cooperation without domination, to seek to modify the drive for profit so that other criteria can be found than the requirements of capital, isn't this challenging the system at its roots, taking the first steps to superseding the civilization of the commodity value? We see here what can be meant by *doing politics with a communist perspective.*

This change of perspective of historic aim and its strategic contents sheds new light on the question of political power. How to take power when the domination of capital is so overwhelming, when in all areas of "civil society" its monopoly seems to have no limit? This is the traditional conception of revolution, linked to a narrow perception of politics, but if there is not *a* power *to take*, to overthrow the state can only consist in a processes of taking the powers, to transform them and create new ones, a process where the success "at the top" presupposes not only new relations "below," but the transformation of procedures at all levels, from daily activities to institutional designs. To prepare the workers to govern the state is no longer a distant ideal, but a concrete task that begins by questioning the very split between governors and governed.

I hope this is not interpreted as overestimating our accomplishments. Without a doubt we are only at the beginning. The easy path would be to hold on to the traditional schemes of Marxism and struggle, but it is a new Marxism and new struggles that are needed.

Productive Forces and Communist Finalities

This basic renovation of the approach to economics poses in a new light the related question of productive forces. Are we speaking of a "cultural revolution"? Let us review Stalin's Marxism on this question, which he changed a number of times to accord with political exigencies. In 1924, Stalin still maintained the position of Lenin for whom the revolution had succeeded *despite* the backward character of the productive forces. But in 1938, in his popular treatise on dialectical and historical materialism, he contradicts the previous conception, now supporting the opposite, that the productive forces are "the most mobile and revolutionary element of production," the "determining element" as a function of which the relations of production are transformed. This is what he baptizes, the "law of necessary correspondence." Productive forces, seen as things, are the true motor of history and it is *because* in Russia they take on "a social character, notably in industry," that Soviet

power could transform the relations of production to bring them into agreement with the productive forces. A dizzying turn that also allows us to see the function of the great repressions. If there is perfect agreement between productive forces and relations, contradictions in society and politics could only arise from internal and external class enemies and must be treated accordingly. Later, in 1949, Stalin relativized this "perfect accord" between forces and relations. Thus, the Marxism of several generations has been characterized by a primitive determinism in which the course of history is ruled "in the final instance" by the development of "material" productive forces, taken in themselves, the ultimate guarantee of a socialist future. To this was opposed, no less unilaterally, the leftist voluntarism of the 70's for which "class struggle decides everything."

The elaboration in the last decades of a more dialectical conception in which technical, social, cultural and economic factors are inseparable, constitutes one of the principal advances of Marxist research, particularly in France. In this conception the development of objective productive forces is no less fundamental for being seen in its connections with other components of the mode of production within a social formation, rather than as something in itself. Is it possible in this way to avoid the quarrel between proponents of the "primacy of productive forces" and of the "primacy of class struggle" which encased Marxism within a simplifying causalism? Are all basic problems now resolved?

Has the concept of productive forces become too narrow to encompass the great expansion of objective means required by human activities? The development of human forces are no longer only to be found in material production - although this remains fundamental - but also in services, information in the broadest sense of the term, non-productive activities, in the capitalist sense of the term; in other words, in technologies where technical factors, human actors and the social organization of activities combine to go beyond the sphere that is classically referred to as production? If the notion of productive forces can remain the legitimately integrating concept of all these objective means, it must be on the condition that we understand "productive" as referring not only to the production of things, but, much more broadly, to the activities by which people assure the social production of their existence (*Contribution to the Critique of Political Economy*).

But if the concept of productive forces is extended in this way, the current distinction between "material" and "human" forces becomes irrelevant, as much in terms of its object - what we produce - as in terms of its subject - who produces. This dichotomy fails to grasp the growing interpenetration of the production of things and of people. It remains paradoxically linked to the obsolete capitalist distinction between productive and non-productive labor, where the criterion of productive is profit. Finally, it is based on a conception of materiality that has become far too narrow. We will come back to these questions.

The elaboration of a truly dialectical conception of productive forces makes it possible to go beyond the simplistic view of the crisis of capitalist societies in which the technological revolution represents the "good side" of the contradiction, and that of the creative dynamisms and capitalist relations, the "bad side." Capitalism has not only wrought destruction and the thwarting of human aspirations, it has created the new technologies and social forms that are presuppositions for realizing extraordinary human possibilities. We must move from a defensive politico-economic attitude based on denunciation, to an offensive mode that looks toward the construction of alternatives.

As to the first side, the productive forces under the domination of capital are far from neutral: they intermix potentially universal solutions for technical problems with choices that serve class interests. We denounce the use that capital makes of the productive forces but fail to confront the fact that their very conception, one that we have mistakenly accepted, is penetrated by the exigencies of financial utility, making them accord with a certain type of productivity, division of labor, and a monopolization of powers where technological progress threatens to destroy us. A whole new domain is opened up to critical and transforming initiatives by this renewed understanding of productive forces. We no longer see ourselves as spectators to their development, interpreted as a natural-historical process independent of class realities, but we instead extend the terrain of cultural and political interventions from the very start. Seeing revolution as a "great moment" severely narrows the field of political activities; as "revolution-process" it never ceases to expand.

Let us give an example of questions which arise from a strategy of self-management. A question of principle: if the technological changes in process are given, from which arises the necessary supersession of capitalism, mustn't we consider them as revolutionary in themselves? Some say no, in view of their general subservience to capital; others say yes, considering the depth of antagonisms between the logic of capitalist utility and the new type of efficacity called for by the informational revolution - from the rapid growth of non-productive human activities, to the urgent development of people themselves.

The problem is with the way the question was posed: seeing the productive forces as something *in themselves*, is an abstraction that inevitably generates these dilemmas. The problem is to know up to what point capitalism can subordinate productive forces in which the objective conditions of communism are pre-figured, without yielding to the great contradictions which result from it, and the corresponding struggles capable of revolutionizing their use and their very conception. This becomes, finally, a practical question: the new technologies, in their close connection with forms of management, become a strategic focus of the highest importance.

This question leads to another: what technological innovation do we need to advance to a post-capitalist civilization? What informational system, what type of telematic network (a telephone-computer system being implemented in France) - centralized and distributive or decentralized and interactive? What biomedicine - with a view toward commodification or personalization of care? What services - based on the norms of profitability or the goal of a higher social efficacity for all? Here, as elsewhere, isn't it the historical perspective of a regained predominance of person over thing and the universally human end over the means, which provides the central thread? Technological advances such as objectivation relentlessly push for higher operations of the human brain in informatic systems; fantastic technical accomplishments and the immense economies in capital at the same time bring about an unprecedented need and potential for development of all individuals: communism is no longer a dream. But the logic of profit is the inverse - dispossessing individuals of living knowledge and higher responsibilities, forcing a divergence between an exponential growth of objective capacities and a development of the masses of people dramatically insufficient for their concerted mastery. This is the profile of a nightmarish civilization where the likelihood of catastrophic scenarios progresses along with technical aptitudes. Isn't it here that the revolutionary movement must take its place as the authentic historic avant-garde?

A related, and no less fundamental question: what must the scientific and technical revolution be made to respect in order that the planet remain habitable and the human condition livable? This crucial question, anthropological as well as ecological, unleashes a new quarrel about progress: the adherents of an aggressive technologism for which the supreme criterion of all value is profit are opposed by the adepts of a catastrophist moralism for which man must urgently renounce. This quarrel derives from a view in which the prodigious growth of human knowledge is fetishized as a *process in itself*, holding out little hope of altering its course. But science itself is not neutral, and its local autonomy partakes of the general alienation. It avoids the human to the degree that money-capital is its object and the reasonable end can't dominate over the unprincipled means except at the price of a "revolution of knowledge" in which individuals are progressively put into a position to appropriate its exigencies and procedures so that all social bodies become democratically responsive to their prospectives and choices. What humanity do we want to be? This ethical-philosophical question is already at the heart of a political debate, at a level where a revolutionary party must aim to place itself. As a question of the conception of technology, of the role of humanity or the future of science, the development of productive forces comes to the foreground of strategic problems. With this extension of the area of theoretical and political confrontation, the class dimension of all struggles leads, without dissolving itself, to historic stakes of universal import that a revolution-process must fully take on.

A Reformist Revolution?

These last observations require a further questioning of the content and form of a revolution-process. Before we come to that, let's come back for a moment, as in the last chapter, to a categorial analysis and ask what exact place a transforming process occupies in relation the classical conception of revolution, reforms and reformism.

In regard to the objective social bases of a possible achievement of a majority for postcapitalist objectives, doesn't the problem pose itself in entirely new terms in countries where wage workers constitute ninety percent of the population? To the radically optimistic thesis of the *Manifesto* that the bourgeoisie inevitably produces its own grave-diggers, and the victory of the proletariat is inevitable, the dominant ideology opposes an evolution which seals the decline of the working class and the advent of a two-tiered society in which a growing mass is excluded from historical initiative and the factors deciding our future have nothing to do with class struggle. This ideology proclaims not only that "communism is dead" but that the very meaning of history points to the antiquated nature of revolution along with the success of capitalist modernity. To which the communists have replied: the socio-technical changes don't put an end to material production and its actors; the new socialization of the productive act expands the contours of the working class to include technicians and engineers of production. But to this we must add even more novel considerations. As the historic crisis of capitalism becomes more global, it is not only a matter of exploitation of one person or class by another, but the structures of class society as a whole - mode of growth, means of power, forms of knowledge, inversion of person and thing, means and end. Capitalism has come to mean an unbounded alienation. It is not only the working class, albeit expanded, who can have a direct motive to supersede it, but, tendentially at least, the working and creative forces as a whole. This is the global basis of a possible revolutionary majority

But the revolutionary movement must not confuse a sociological majority with a true majoritarian force. Going from one to the other is the whole problem. A strategy for self-management must reach a certain threshold in order to be operative. Without relinquishing its links with the working class, it must internalize all conditions to become the concern of the collective worker in gestation. Without sacrificing its defense of those crushed by the system, it must center its efforts on the living force of the concrete aspirations for change on the part of the working and thinking nation as a whole. At a time when the crisis is spiritual as well as material, when intellectual activity tends to become dominant everywhere, can a politics could speak to the vast majority, going beyond needs and claims, unless it concerns itself with its modes of thought, cultural identifications, life's values? Isn't it in knowing how to address the whole human being as well as all human beings that the revolution-process can

gradually become majoritarian? Should we fear that working class consciousness will be lost in such an approach? But if, as Marx said, the working class expresses in itself the dissolution of all classes (*German Ideology*), and if it is this dissolution that we are beginning to live, wouldn't we be remiss if we were to delay it in either thought or practice? Here we are at one of the essential conditions of credibility for a majoritarian revolution: to understand that the class point of view begins to lead, without being abolished, to a universalist perspective where it presents itself less as that of one part of society against another than as that of a new social whole in revolution against its own archaic fragmentation. The revolutionary project ceases to appear as an oppositional movement, but is identified instead with the collective will for access to a new social order. These considerations call for clarification of the central dialectical question of particular and universal.

Is revolution thus understood identical with the traditional reformist positions? Lenin put it this way: before the revolution, reform is the "accessory product" of revolutionary struggle; after the victory it can constitute an "indispensable truce" if the forces are lacking to go further. Today, it is not so simple. Reform has become the major form of the revolution-process, a reform that is deep, transforming, structural, demanding the most intense struggles. Reform doesn't have to mean retreat, abandonment of Marxist analysis and revolutionary goals.

This ambiguity of the vocabulary of reform obliges us to return to basic categorial considerations. Reform and revolution are concepts at a different theoretical and historical level. As an upheaval that resolves fundamental antagonisms of a social formation, revolution is a *strategic category* bearing an *essential content*: the global perspective of a formation freed from these antagonisms, but not identified with any generic form, other than the struggle that any overturning of antagonisms implies. A practical concept on a subordinate level, reform does not contain in itself either its content or meaning: in essence it is a form for all ends. This is why a revolution can consist of an extended series of reforms, while just any series of reforms may not constitute a revolution. This is the false alternative between revolution and reformism: reform, no matter how systematized, is not necessarily raised to the level of a strategy of transformation. There is no third way between revolution and preservation, however reformed, of capitalism.

This is not to say that the reformist critique of the old concept of revolution is worthless, or that a dialogue between communists and social democrats has no point. Until now this has consisted of a reformism resigned to not transforming anything, and a revolutionism incapable of carrying it through. Both reflect symmetrical impotencies of forces dominated by capital, culturally and materially. Beyond this, the real historic task is the transition to a revolutionary combat of a new type, in which the protagonists think and act as dominating

forces, although still in a minority, firm in the perspective of the ultimate resolution of the antagonisms of existing society, politically assertive on all major questions, strong in what Marx termed "the theoretical understanding of the historical movement as a whole" (*Communist Manifesto*). Forces that want to deter us proclaim: first, this theoretical understanding is not the correct one; second, the movement of history doesn't have an overall logic; third, in any case history has ceased its movement with the triumph of 1789 over 1917. Barely had the proclamation of the end of history crowned this ideological edifice than the year 1989 marked the re-entry on the scene of its movement, instigated by the "labor the negative." The mole of history burrows more than ever and the materialist dialectic has not finished serving as its radar.

Class Struggle, Materialism and Subjectivity

Violence, meaninglessness, destabilization - these are the crucial problems that must be resolved for a revolution against capital to be plausible. While it is clearly possible to disavow violence without sacrificing the intensity of the necessary peaceful struggles, can we say the same with regard to meaninglessness? Indeed, yes. We must do away with the old revolutionary ideas that relegated the realization of their proclaimed values to a "millennial future." Today's revolution can't ask for a blank check but rather must strive to imbue each step with the meaning it is directed toward.

Do we grasp the question of meaning, understood as the direction of historical motion, solely in terms of social, economic, technological or institutional objectivity? We have already shown, in discussing the historical perspective, that the thrust of the revolutionary enterprise should be toward the meaning of communism; it must have meaning for human subjects called upon to be the actors in an initiative with which they can identify in feelings, thoughts, wishes, i.e. their motives. Today's revolutionary struggle, then, must be theorized not only in its objective orientation, but its subjective composition as well. A whole new set of questions appears that we have yet to study and incorporate into revolutionary practice.

We see in everyday life and politics the power of the symbolic, the space-time of subjectivity. Tool and sign were the original and on-going mediators of humanization. Vygotsky saw the word as the tool of consciousness, a microcosm of humanization. Politicians well understand the power of the word. Who can change the objective world while leaving the subjective world unchanged?

But doesn't this go against the most basic ideas of Marxist materialism - the primacy of matter over consciousness, the objective over the subjective, that "it is not consciousness that

determines life but life that determines consciousness?" In fact, this formulation is not as clear-cut as it seems, even from the point of view of Marxism itself. Considered gnoseologically, matter is what exists outside of consciousness: we should not mistake our ideas for actual things. But ontologically there is no such dualism: consciousness is internal to matter (Lenin, *Materialism and Empirio-criticism*). Consciousness is not immaterial; it is only by virtue of alienated relations that it has appeared as an abstract entity, a separate power.

According to Marx, "spirit is always attached to matter," and "consciousness is nothing other than conscious being" (*German Ideology*). But the followers of Marxist materialism have habitually and disastrously confused the ideological sense of matter, which they reduced to a tangible materiality, with the philosophical category of matter, which embraces all forms of materiality, and which doesn't always take the form of "things." Materiality is not reducible to "things," objectivity to "objects." Marxist materialism obliges us to think in terms of an expanded materialism that recognizes the complex dialectic between different forms of materiality and ceases to place the symbolic, the subjective, the ideal, outside of matter. In the very pages of the *German Ideology* that present the theses of historical materialism, where he is underlining the basic role of material production, Marx adds that "productive force, the social state and consciousness" are "three moments" which have "coexisted since the beginning of history": consciousness, the ideal, the symbolic, are among the "material presuppositions" of history. Without this vision, historical materialism becomes a determinism by things, philosophically bankrupt and politically disastrous.

It is urgent to understand the revolutionary opportunities missed because of decades of such vulgarized materialism. The technological revolution is crossing a threshold to the objectivation of intellectual operations, perceptual functions, and other mental processes such as creativity and decision-making. We are experiencing a tremendous expansion of objective materiality in the very area of consciousness, the symbolic, the subjective. This is not at all an irruption of immateriality, but the exact opposite: activities until now seen as outside matter are reclaiming their latent materiality in becoming objective forms, even objects. This is the beginning of a disconcerting technico-anthropoligical shift: not simply the phenomenal extension of the passive supports of signifying consciousness, but the onset of a rapid reversal where *meaning itself begins to function outside of consciousness*. Meaning and consciousness become separable, with potentially positive and negative consequences: positive if this objectivation is subordinated to its conscious subjects as a whole for even higher signifying productions; negative if it becomes a generalized alienation of meaning, that is, its death, because meaning without consciousness is the destruction of meaning.

The logic of capital forces to an extreme in the second direction, reifying meaning as another product because the support of all capitalist valorization lies in the incessant

objectivation of living labor in commodities. In its striving to force the technological revolution and development to submit to its insatiable thirst for things at the expense of human subjects, capital threatens humanity with an unlimited decertification of meaning. Does this sound extreme? There is already a commercialization of communication, television has the mission of selling the public to its sponsors, artificial intelligence, without biography or subjectivity, is posed as an alternative to the intelligent human act, politicians can buy media images: capital is already forging a world where meaning is torn from the subject. The creators of these developments themselves warn of the menace of meaninglessness.

These extraordinary disturbances in the symbolic order force a revolutionary movement to re-examine its forms and contents. To mobilize against the disaster of capitalist management, the potential of nuclear war, and ecological catastrophe are formidable tasks. Doesn't the holocaust of meaning have its rightful place in this list of perils? Shouldn't we turn our attention to the changes in culture, the life of knowledge, creation, ideas, daily life including sport, civic activities, relationships, legal and ethical concerns? Shouldn't the freeing of meaning be brought into a revolutionary movement? These questions are secondary only from the point of view of an objectivist materialism. In fact, each problem brings us back to the massive subordination of person to thing. We must attend to ends as well as means, desires as well as needs, dreams as well as reality: at the close of the twentieth century in the developed capitalist world, the importance of objectives is equalled by the decisive question of motives.

Biography in Revolution

These remarks have been necessary to approach the central question for a communist movement, that of human development. The most essential characteristic of capital's logic is the subordination of the masses of human beings to its own accumulation. This is the definitive obstacle to a new civilization. To supersede capitalism is to reverse this tendency, giving free course to the "integral development of all individuals." This is why the communist struggle is essentially humanist in its vision. We have seen the tragic results of a Marxist doctrine that saw people as merely the support of all-powerful social relations, the last link in a chain of objective determinations, or as simply the product of a new society.

Marxist thinking is completely antithetical to this simplistic objectivism. The basic idea of historical materialism is that history is based on "real presuppositions" in which all individuals find themselves. But these presuppositions are themselves people, "real active people, conditioned by a determinate development of their productive forces and correspond-

ing mode of relations (*German Ideology*)." The primacy of things over people is not a principle of historical materialism; this is a product of capitalism that must be subject to critique. The material relations that form the basis of history, the "sum of forces of production, of capital, of forms of relations" are "nothing but the forms in which (people's) material and individual activity is realized." Thus, the "social history of people is nothing other than the history of their individual development." We can't think of social formation without individual formation, historical forms without biographical forms. I disagree with Marxists who separate "material" from "human" productive forces, placing people outside of social materiality. Marx never used such language. While he did distinguish between "objective" and "subjective" productive forces, he maintained that people are the principle productive force, the true actors of their history.

The idea mistakenly attributed to Marxism that to change people it is only necessary to change the economic structure, is completely bankrupt. Marx maintained the exact opposite: if we want to change the world, "a massive transformation of people is necessary for the creation of a communist consciousness...." This theme deserves further philosophical study. People's development encounters thousands of obstacles in capitalism - conditions of wages, labor, housing, health services, and others - and demands thorough objective transformation. It is an error to think of human development simply as an imperative task from "above," posing problems of *objective means* without seeing that it is already a powerful force from "below," setting its own *subjective ends*.

The whole experience of socialism has been a sad confirmation of the historical reality of these questions. We see the results of a humanist "ideal" limited by a unilateral objectivist materialism, where people's development was planned and directed from birth to old age. For a large part it was this objectivist paternalism, perhaps inevitable at a certain point, but terribly anachronistic now, that ensured the eventual revolt of individuals. Throughout the socialist world, people clamored to be able to develop freely on their own - to be subjects, not objects. It is not just a question of democracy, but of knowing, as Marx said, that it is people who make their own history. A revolutionary struggle must deeply pose the question of its own meaning, and the need for individual autonomy.

To focus on the technological revolution while neglecting the veritable biographical revolution underway can have grave consequences. Today's vast changes in work organization, the community, education, information, communication, ethnicity and culture have affected personal and family life to the deepest levels. Biographical categories have revealed their essence to be historic and changing. All life's relations and stages have begun to take on new meaning. There has never before been such a massive change in such a short time. To fail to see these antagonisms both in their destructiveness, and as pre-requisites for a future

"integral development" of individuals that requires communism, is to be blind to the essential significance of our times.

If we had to identify the principal tendency in all these changes it would without doubt be the beginning of a crisis in the dependency of subjects with regard to symbolic powers that have ruled their public and private lives, an irreverence toward established order - domestic, social, political, religious and moral - and the growth of anti-authoritarian values in the family, school, church, factory, union, party and culture. This transition from heteronomy, where the individual submits to external law, to autonomy, where he or she chooses to act according to inner laws, entails a direct challenge to class society and all its relations. No doubt this transition is uneven and contradictory, with both forward and reverse aspects of its motion. The crisis of identity, the sense of loss of meaning and traditional identifications has been aptly termed an "implosion of subjectivity." This in turn motivates a conservative reaction. But even in this reaction we can see aspirations for recognition, for transparency, dignity. While it would be naive not to see the illusions here, it would be negligent for a revolutionary party to fail to look into the feelings and needs expressed here and offer its own alternatives, in its ways of speaking, being and doing.

In capitalism the affirmation of individuality coincides with individualism: each person advances at the expense of another. But it is as much a mistake to identify the individual with its bourgeois forms as it is to reduce democracy to its capitalist variants. While biological individuality has always existed, the social and personal individual has not. This is a purely historical reality embodied with a mode of production. The great advance of individuality in our times is linked to that of commodity production, based on the private character of property and labor, expressing its social essence only through exchange in which wealth takes the abstract form of money. Commerce between individuals has the character of comparison rather than true collectivity or universality (*Grundrisse*). The individual is a *particular* along with other particulars, in relation to whom *general* social powers are detached and dominating. This individuality, at its height, is characterized by abstraction and alienation, which capitalism forces to its extreme. But its reversal is no more the abolition of the individual than the disappearance of the state is the end of democracy. It is rather a superseding, where the abstract particularity of a conflictual individuality is abolished, and the concrete singularity of human beings - rich in their social relations, masters of their collective powers, free creators of their universal history - is born.

This is the core of the problems we are examining. Neither communism nor socialism has the least chance in the developed capitalist countries, if it appears to imply an end to individuality. At the center of the communist perspective we must find, more than ever, not simply a vague reference to "man," but rather the *individual*, freed from its antagonistic, pre-

historical forms, constituting the essence of social wealth. In the dialectic of social and individual formation, the first remains the objective support, while the second becomes increasingly the decisive moment. The multiplicity of objective forms of individuality produced by social relations in motion, is expressed, in its subjective totality, only through individual lives. It is here that the viability or non-viability, coherence or incoherence of a society is decided. It is here that we find capacities and motivations, critiques and rebellions, desires and innovations, the formidable motor of human progress. Isn't this already true? The demand for greater productive efficiency itself calls for renovation of the producers' experience of labor, of their education and training, and for self-management with new modes of decision and labor. Through thousands of contradictions, the immense reversal leading to the dominance of person over thing is already underway. To be a complete individual, to reconstitute one's relations to time, to master one's life in a truly liveable society - these aspirations await only their adequate political form to become a determining historic force.

The Reappropriation of Politics

Have communists overcome the limitations of objectivist materialism in practice? For objectivist Marxism, politics is restricted to the state and its apparatus, the seat of "power" and the confrontation of parties; state power is the organ through which the propertied class exercises its dominance. Political struggle is for state power. Under socialism, all that remains is to administer. Isn't it this vision that led, in the socialist countries, to the catastrophic loss of political activity in a party transformed into a state apparatus? This reductionism is understandable up to a point at a certain time and in countries in which political activities were not diversified and where political struggle was confronted by material constraints and repressive power. In this context, Lenin described the state as an "apparatus of violence." This conception leads to a strategy for an insurrectional conquest of power, leading to a dictatorship of the proletariat, and of revolution "from above."

But in today's highly evolved world, with long democratic traditions and complex political struggles, this orientation is wholly inadequate. In France, while Marxist economic theory has shown remarkable development, the conceptions of politics all too often remain limited. In this area, Gramsci's work, while somewhat dated, remains valuable for expanding our conception of politics. The state is not only the means for exercise of power but for actively obtaining the consent of the governed. Consideration of the state apparatus integrates with that of a vast realm of activities, modalities of a hegemony all the more effective by having obtained this assent. Politics includes not only forms of the state - parties, electoral

mechanisms, institutional structures - but an ensemble of structural and superstructural forms through which hegemony is both crystalized and dissolved, including private forms of "civil society" from the organization of labor to questions of sexuality, cooperative attitudes and cultural identity. Politics is the veritable "concrete totality" of a singular society.

This way of seeing things accompanies a completely different revolutionary perspective. For a movement to become the leading social force - the key to overall transformation - presupposes its having attained hegemony in the global area of political activities. This analysis was ignored, with tragic results, by communists in Eastern Europe. If we think of politics in terms of the relation of forces, the assurance that this relation, "in the last instance," is guaranteed by "objective materiality" is ruinous, precisely because in the absence of a large consensus, the coercive power of the state ultimately can't be employed without risk of damaging the governing powers even more. Signs of a strong state may indicate a weak power.

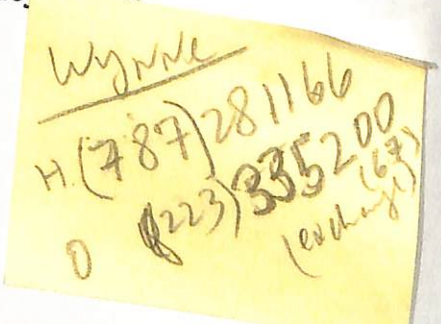
Like the state, politics is made up of diverse practices, representations, attitudes and values relating to the vision of the social whole in its national coherence and historical future. We see this in the electoral process, in the importance of ideological-symbolic mediations, symbolic organization, systems of social representation of beliefs, feelings related to destiny and existence. In the political order itself, the question of meaning manifests as a central element of the structuration of the real - a key point for the credibility of a strategy seeking to transform society.

A politics capable of seeing all these dimensions, the subjective as well as the objective, based on an "expanded materialism," is all the more opportune because - to the extent to which we can assign a general tendency to complex transformations - we can see a general retreat of meaning, along with a heightening of alienation in relation to human subjects. While the nature of state powers is to set themselves above and apart from society - intervening from the outside - we live at the height of a contradiction in which these powers are becoming ever more distant yet omnipresent. That is, there is a tendency to the externalization of the state in relation to the rest of society. We see a delegative democracy in which the effective power of the representatives is inversely proportional to the frequency of elections; no true choice between two dominant parties in essential agreement, centralization of authority in the executive, massive distancing of lines of decision toward the supranational - summit meetings, secret agreements; - unlimited instrumentalization of informational media and of ideological life: all conspiring to restrict critique, public debate and even with regard to citizens, - the part of free initiative being relegated to the market-place, to "civil society," to "social movements." A formidable diminution of the meaning of politics, consecrated with the post-modern proclamation of the "death of great narratives," and the pseudo-Hegelian prediction of the "end of history."

But while this distancing of power masked by a ritualized recourse to universal suffrage, this striking insignificance of official politics as it degenerates into a barrage of bombastic "communication" constitutes reassurance for the ruling forces of the permanence of their chosen class, it casts grave doubt on their system of domination by reproducing the crisis of society in the crisis of politics. It is this split-off form of political activities that is increasingly unfit for the resolution of large problems just as the abstract form of financial compensation becomes incompatible with higher social efficiency. Money and the state are seeing a nascent crisis of historical obsolescence, the demand for reappropriation of the collective human powers they have confiscated. No doubt, it is easier to manifest one's aversion to these forces individually than to achieve a real autonomy together. The crisis of politics thus abounds in negativities: electoral abstention, revulsion toward politics and politicians, disaffection from parties, growth of the extreme right. But this should make us see the vast positive potentialities within this critical state of politics. There is growing interest in problems of society and the common future, communal living, self-management, the struggle for direct democracy, for seeing the results of one's efforts and actions - all tendencies more progressive than regressive. Even in the most naive illusions we can see the strong desire for a new type of politics.

Don't the obvious limits of these movements - actions against injustices that fail to address the system which engenders them, militancy for isolated causes, each protecting its independence from others, with no perspective of the whole - call for a party capable of assisting them? They lack the overall coherence of an emancipatory politics, the ability to connect cause and effect, to put it all together, linking the partial and global, rejection and projection. But this coherence can't be pre-established or introduced from the outside. This reproduces the alienated form of politics that is itself what is being struggled against. The form of politics that brings together diverse elements as footsoldiers in a pre-established movement is dead. In this regard, the 23rd congress of the PCF proposed the novel idea of a strategy for self-management, for de-alienating forms of politics, expansion of struggles, building new relations, modes of intervention, a strategy to replace the ruinous notions of "seizing power" from above, in the hope of a revolution from below, in which the global meaning of the struggles is lost. The opposition between above and below will be surpassed by a form of struggle and government in which politics is reappropriated by its actors as a whole.

To appreciate this is not to underestimate the tasks before us. A perspective truly based on the goal of self-management must emancipate itself from traditional and dominant rules of politics. It is not productive to direct energy to pre-conceived struggles "from above," postponing deeper questions; shouldn't we rather stimulate consciousness and activity, expand all areas of political activity, deepen our historical perspective? In a word, the communist struggle must produce meaning, the motive of all human subj[illegible]ivity.



Political Practice for a New Generation

One of the key themes of these two chapters has been the omnipresent movement toward a concrete universality. Are we underestimating the complexity of reality? Isn't society divided, humanity sundered, history chaotic? The movement we're speaking of is born in these intense contradictions, and does not lead to a uniformization. Are we inventing these dissolutions of the particular experienced by individuals, classes, nations, the planet? Are we inventing the new openings for the struggle to replace an outmoded capitalism? The human species can no longer live within these antagonisms. We are at the beginning of a formidable process whose meaning cannot be doubted, and it is this that must define a revolutionary strategy for the real future, a new generation of politics.

Marxism for too long was considered as a theory in opposition to others - materialism against idealism, dialectics against metaphysics, transformation against interpretation of the world. This way of posing thesis against thesis, like class against class, camp against camp, while having its polemical functions, is severely limited in view of today's immense advances. In thinking only in these antagonistic forms, an approach that came to be identified with Marxism, we are led, against Marx's intentions, to think in terms of closed systems, rigid parties, partial truths. The revalorization of universality leads us not to an eclecticism, but to a materialism encompassing the ideal, a comprehensive dialectic of non-antagonistic as well as antagonistic contradictions, a transformation of the world based on its correct interpretation. A politics open to the universal calls for an integral Marxian culture where the "thesis against thesis" gives way to a plural unity and open totality of a universal theoretical consciousness. The pluricultural fact is not a trait of a nation or society - it is the global future of thought. The audience of Marxian culture of the next century enjoys the capacity developing today for a federative consciousness of all reality, putting all values into perspective, a full dialectic of identity and difference.

Aren't we getting away from questions of practice? Not at all; a political practice must be based on a culture. The key to success for a revolutionary strategy toward self-management is the ability to involve a majority. This is not a vague hope of uniting everyone on the basis of revolutionary objectives, but rather an understanding based on the movements toward concrete universality. This resolves the dilemma of quantity versus quality in which the broadest unity is achieved at the expense of goals and struggles, where a clear revolutionary identity must be enclosed and limited within a party. This dilemma is surpassed because the revolution itself frees the universal inclinations of all particular traits, to coincide with the autonomous movement of collective labor becoming conscious of its own ends and the conditions to achieve them. This presupposes a reformulation of the notions of practice,

the concrete, the everydayness of revolution, at the same time as its theoretical, cultural and ethical concepts, to find its true essence: the progressive resolution of today's antagonisms. If the left is to lead this movement toward a more just, free, humane social order, mustn't it redefine its concepts with a view toward the future it wants to build? Left thought must be on the cutting edge of a new civilization. A new alliance must be forged between a revived left and Marxian revolution conceived for the common good. Here is the basis for a recomposition of a majoritarian force that can truly change things.

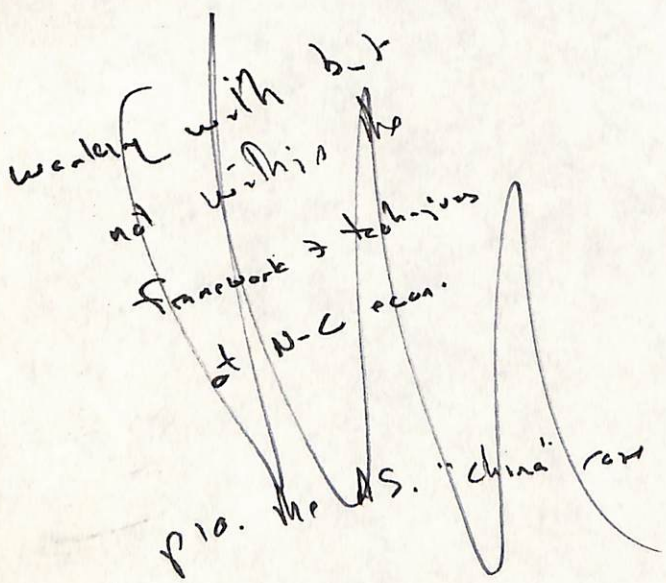
For a communist, this prospective future, even more than the difficulties of the present, calls for a critical self-examination; a strategy of self-management is in a constant state of exploration, or it doesn't exist at all. This is the whole meaning of the questions we have posed here - theoretical questions that can't be separated from practice - questions for the scholar as well as the militant. The depth of critique of the system goes hand in hand with the height of ambitions to struggle for alternatives, the breadth of conception of the struggle with the variety of ways of conducting it. If the technological revolution is central in the struggle for a new civilization, is communist politics sufficiently attentive to the immense problems that accompany the development of the productive forces, the gravity of the ecological threat, the modalities and finalities of the tremendous growth of science, the complex contradictions of progress?

If the working class is expanded to include new producers, if productive and non-productive, material and intellectual labor, interpenetrate, forming the contours of a collective laborer in the grip of a capitalism in global crisis, is communist identity sufficiently reconstituted and does it render eloquently enough for all the novelty of a revolution-process, the universality of objectives, the breath of the historic perspective with which it identifies itself? If the strategy for self-management reminds us of the intuition of the young Marx for whom to want to change the world doesn't consist of shouting correct slogans, but of showing why we struggle, mustn't we replace all pre-established objectives from above with their elaboration with the interested people themselves?

If the aspiration for meaning is a new fact in the evolution of social consciousness, mustn't we be concerned with today's turmoil in the realm of the symbolic, the subjective, the biographical? Mustn't we practice, in all struggles, the priority for actors as far as possible, to reappropriate politics? If human universal values are increasingly becoming material forces, mustn't we explore the new forms taken by the class view in international politics; take the initiative in all areas of ethics; mustn't we re-consider the relations between morality and politics in culture and communist attitudes? To submit these questions to militant examination is to raise the level of communist practice, a political practice of a new generation.

TO BE PRESENTED AT HISTORY OF ECONOMICS SOCIETY CONFERENCE - JUNE 1990

The Role of Community in Modern Classical Liberal Economic Thought



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THE ROLE OF COMMUNITY IN MODERN CLASSICAL LIBERAL ECONOMIC THOUGHT

INTRODUCTION

Modern classical liberal economic thought represents "community" as determined by the actions of autonomous individuals, motivated by self-interest (homo economicus), interacting in an interdependent environment.[1] I will argue that it is equally plausible and more fruitful to assume that individuals and communities are simultaneously determined.[2]

Individuals exist in the context of a multiplicity of communities. Any individual may be a member of multiple communities and any community may share an individual's loyalty with other communities. As a given community's values act on the emerging consciousness of an individual; so too that individual, drawing from experience that transcends that particular community, acts on the evolving values of that community.

The store of value, unit of account, and medium of exchange in this evolving society is language. It is language that gives the individual the ability to conceptualize and to communicate. It is community that is the source of an individual's language. By defining the terms of discourse, the community frames the consciousness of the individual. But to the degree that an individ-

[1] "The 'individual' is taken to be more real than any other social formation, be it the family, the firm, the nation-state, and so on." (Mirowski, 141)

[2] My analysis is somewhat different, but my conclusion is very much the same as expressed by Amitai Etzioni when he writes: "The individual and the community make each other and require each other. The society is not a "constraint," not even an "opportunity," it is us. (Etzioni, 1988, 9)

ual can act on a community's language, that individual can reshape the community.

The subject of this paper is a case in point. Modern classical liberal economic thought, NeoClassical Theory, has elevated homo economicus to a central position in the discourse about human behavior, simultaneously relegating "community" to a marginal role. This use of language constrains the discourse and isolates the Econ Tribe from its "neighbors, such as the Polscis and the Sociogs. Despite a common genetical heritage, relations with these tribes are strained - the distrust and contempt that the average Econ feels for these neighbors being heartily reciprocated by the latter - and social intercourse with them inhibited by numerous taboos." (Leijonhufvud, 327) Elevating the role of "community" in the economic discourse replaces barriers with bridges to our neighbors in related social sciences. Building such bridges encourages the exchange of ideas and we all benefit with the gains from trade.

Section one, "The Role of Homo Economicus in Modern Classical Liberal Thought," presents the current NeoClassical assumption about the nature of Being as represented in the work of Gary Becker. The sociobiological foundation of this conception of being is explored and problems inherent in this assumption are identified. In section two, "Robert Frank Endows Homo Economicus With a Conscience," Frank's efforts to improve on the traditional conception of Being are explored. Frank uses a sociobiological analysis to demonstrate that homo economicus would choose to have a conscience. His argument is a significant contribution to

expanding the conception of being, but it leaves one crucial question unresolved: Where do the values that make up a Being's conscience come from? In section three, "Values and the Coevolution of Individual and Community," we expand on Frank's work. Building on the same sociobiological foundation chosen by Becker and Frank, we demonstrate that the unique position of human beings vis a vis other species has led to a coevolution of individuals and communities. It is through this coevolution that the values necessary for the preservation of the species can emerge. In the "Conclusion" we demonstrate the value of adopting this expanded conception of Being as a foundational NeoClassical assumption: It replaces barriers with bridges to other social sciences, and it expands the empirical reach of the theory.

THE ROLE OF HOMO ECONOMICUS IN MODERN CLASSICAL LIBERAL THOUGHT

It is at the University of Chicago through the pen of Gary Becker that the homo economicus assumption has been most fully developed and most adamantly defended. Becker writes in his "Introduction" to The Economic Approach to Human Behavior:

> I have come to the position that the economic approach is a comprehensive one that is applicable to all human behavior.
>
> The heart of the argument is that ... all human behavior can be viewed as involving participants who maximize their utility from a stable set of preferences and accumulate an optimal amount of information and other imputs in a variety of markets. (Becker, 1976, pps. 8, 14)

Homo economicus is a "substantively rational" being, one for whom behavior is goal oriented and "[g]iven these goals, the rational behavior is determined entirely by the characteristics

of the environment in which it takes place." (Simon, 1982, p.425) The goal of homo economicus is to maximize his expected utility. Since the environment does not provide the resources necessary to satiate all of his desires, realizing this goal becomes a "constrained maximization problem." (Hogarth, p.S186). The coherence of the solution to this problem is assured by another characteristic of the rationality ascribed to homo economicus: "thin rationality". Thin rationality "leaves unexamined the beliefs and the desires that form the reasons for the action whose rationality we are assessing, with the exception that they are stipulated not to be logically inconsistent." (Elster, 1983, p.1)

According to Becker, "the beliefs and the desires that form the reasons for actions," are data. People make choices based on "a stable set of preferences" - "De Gustibus Non Est Disputandum." (Stigler and Becker, 1977) Appropriating for himself the mantle of keeper of the faith, Becker dismisses anyone who would suggest otherwise as not "committed to the economic approach." As is generally the case with one who knows Truth, Becker defends the faith with little tolerance. He dismisses the logic of those misguided souls who see more to human motivation than a "stable set of preferences" with a condescending flick of the pen:

> With an ingenuity worthy of admiration if put to better use, almost any conceivable behavior is alleged to be dominated by ignorance and irrationality, values and their frequently unexplained shifts, custom and tradition, the compliance somehow induced by social norms, or the ego and the id. (Becker, 1976, p.13)

This, according to Becker, is a black box approach to the analysis of human behavior. Stigler and Becker have opened up

the black box and found it empty ("tastes are stable over time and similar among people" (Stigler and Becker, p.76)), so the arguments about what's in the box are much ado about nothing.

Becker demonstrates the power of the model based on the traditional view of homo economicus by applying it to an array of behaviors that were previously considered to be beyond the realm of economic analysis. Included among these is altruistic behavior (Becker, 1976, pps. 253, 282).

An altruist, according to Becker, is one who "is willing to reduce his own consumption in order to increase the consumption of others." (Becker, 1976, p. 284). The source of altruism is represented in Becker's model (in its simplest form) as a nested utility function.

$$Ui=Ui[Xi,Gi(Uj)]$$

Where i is the altruist, j is a significant other (not necessarily altruistic), Xi is i's consumption and Gi is a monotonic function of Uj. (Becker, 1976, p. 270 fn) Thus the altruist maximizes his own utility by allocating his resources such that his marginal utility from direct use of his resources is equal to the marginal utility he derives from providing for his significant other's utility.

Building a more complex model on this basic framework Becker demonstrates that contrary to what a cursory analysis might suggest, "a fuller analysis shows that the consumption and wealth of

altruistic persons could exceed that of egoistic persons, even without bringing in social controls on the behavior of egoistic persons." (Becker, 1976, p. 284) This occurs because the presence of an altruist within a group creates an interdependence among the members of the group. The altruist acts as if the income of the group is his social income and he makes any transfers from his share of that income that are necessary to maintain the well being of each individual in the group. This in turn gives each group member an incentive to sacrifice in order to maintain the social income, because the altruist's transfers make each individual's income dependent on the social income. Thus, "[e]ach person in the group linked by the altruist's transfers has an incentive to maximize the group's total income, even if most are egotistical." (Becker, 1976, p.288) Under such conditions, even egoists would have the incentive to mimic altruism. Becker calls this the "rotten kid theorem." (Becker, 1976, p.287)

Becker's argument begins and ends with homo economicus. Altruism, like any other human behavior, can trace its roots to the substantively rational pursuit of utility maximization given thin rationality and standard human tastes. In order to drive home the point that this is the essence of human nature at work Becker pushes the argument one step further, into sociobiology.

Replacing

$$Ui = Ui\ [Xi,\ Gi\ (Uj)],$$

(Utility as a function of one's own consumption and the well being of others.)

with

$$Ui = Ui\ (fi,fj),$$

(Utility as a function of one's own fitness and the fitness of others.),

Becker transfers the logic of the rotten kid theorem into the context of sociobiology. He demonstrates that the altruist may, through this interdependence effect, improve his own fitness since "[t]he beneficiaries of his altruism are discouraged from harming him." (Becker, 1976, p.291) Furthermore, even when the individual is a net loser through altruism, if the altruism benefits those with close genetic make up (i.e., kin), the genetic selection advantage is maintained. Becker concludes: "I have shown how the central problem of sociobiology, the natural selection of altruism, can be resolved by considering the interaction between the utility-maximizing behavior of altruists and egoists." (Becker, 1976, p.294)

This is the ultimate triumph for his model. It demonstrates that the analysis extends with logical consistency back to the sociobiological origins of human behavior and forward to the actions of humans in a modern and complex society. It is, however, not a complete triumph. There are leaps of faith and limiting case problems with the model.

For example, there is the question of the stability of a model based on nested utility functions. Becker recognizes this issue and responds to it directly. He writes that "with appropriate restrictions on the magnitude of the interactions the infinite regress [of mutually nested utility functions] has a finite

effect, and the 'reduced forms' of Ui and Uj on Xi and Xj are well defined." (Becker, 1976, p. 270 fn) This is all well and good, but here he is resorting to the very kind of ad hoc assumption he criticizes in the work of others. Herbert Simon writes that "[c]ontemporary neoclassical economics provides no theoretical basis for specifying the shape and content of the utility function ...." (Simon, 1986, p. S213)

Consider also the limiting case of altruism: self-sacrifice. For example:

> BURR, ELMER J.
>
> Rank and organization: First Sergeant, U.S. Army, Company I, 127th Infantry, 32d Infantry Division. Place and date: Buna, New Guinea, 24 December 1942. Entered service at: Menasha, Wis. Birth: Neenah, Wis. G.O. No. i66, 11 Oct. 1943. Citation: For conspicuous gallantry and intrepidity in action above and beyond the call of duty. During an attack near Buna, New Guinea, on 24 December 1942, 1st Sgt. Burr saw an enemy grenade strike near his company commander. Instantly and with heroic self-sacrifice he threw himself upon it, smothering the explosion with his body. 1st Sgt. Burr thus gave his life saving that of his commander. (Sharp and Dunnigan Pub., p. 273)

Wherein is the expected utility of this action?

One explanation is that 1st Sgt. Burr was momentarily irrational. However, Becker must reject this as a resort to an ad hoc explanation for a phenomenon that is reported across all of recorded human history. In Becker's model the behavior is explained as a tradeoff within the altruist's utility function. But, as the tradeoff reaches the limit, your existence for mine, that logic seems to break down. If I am to enjoy the utility of your existence I must exist. There is no utility beyond death. Or is there? The Beckerian response is that such actions are

based on "afterlives promising individuals a net hedonic gain optimized over a longer period than their own immediate lives." (Campbell, p. S361)

However, this implies that only those who believe in an afterlife are capable of such heroic behavior. Just one counter example undermines the completeness of the model that Becker cites as the greatest strength of the model. (Becker, 1976, p.7) Furthermore, an "afterlife argument" raises fundamental questions about the "De Gustibus" assumption. Faith in an afterlife is not universal - thus tastes must matter. If an explanation of Burr's behavior must resort to an appeal to such a faith, it raises a question that Becker rejects as moot: From whence the faith?

There is yet another problem with the traditional homo economicus assumption that is of particular consequence for its application to NeoClassical theory. Homo economicus describes a necessary but not sufficient Being for the ideal classical liberal state envisioned by NeoClassical theory. In that ideal state, a NeoClassical General Competitive Equilibrium, self-interest drives each individual to exploit the resources at his disposal most efficiently. But in the absence of a system of ethics, autonomous self-interested individuals will also be driven to exploit power (economic, social, or political) most efficiently. In effect, a world of homo economicuses is not a world of constructive competition, it is a world of rent-seeking run amuck.[3] Becker's "rotten kid" altruism is insufficient to constrain such a debacle, because the power of such altruism is subject to an

[3] This is an insight about classical liberal economics that was first offered to us by Adam Smith. See (Evensky, 1989) for more on this.

inverse square law: the further from one's genetic base the exponentially less the effect of such self-interested altruism. Thus, if the traditional homo economicus is an accurate description of human nature then economic theory predicts a Hobbesian world of destructive competition, and the appellation "the dismal science" is well deserved.

The jury of empirical evidence is still out on this. There is certainly a great deal of rent-seeking going on in the world, but the fact that market economies have existed as long as several hundred years without self-destructing suggests that there must be at least some ethical constraints in place. Whether they are sufficient for the very long run remains to be seen.

In sum, while Becker's "DeGustibus" assumption with respect to the source of homo economicus' motivation explains a great deal of human behavior (e.g., the choice between chocolate and vanilla); there appear to be some behaviors (e.g., heroic) that reflect an attachment to values (e.g., religious values) that are defined and instilled in the individual by his or her community, and that cannot be assumed to be the same across all communities. While these ethical values may not have much bearing on a large percentage of choices individuals make (e.g., chocolate v vanilla), their significance is immense because they determine how individuals' choices meld with the conditions necessary for the maintenance of community. Robert Frank, recognizing the limitations of the Beckerian approach, has made a significant contribution to the discourse about values and homo economicus. We turn next to his "Commitment Model."

ROBERT FRANK ENDOWS HOMO ECONOMICUS WITH A CONSCIENCE

Frank writes in "If Homo Economicus Could Choose His Own Utility Function, Would He Want One With a Conscience" that "[t]he rational choice model takes tastes as given, and assumes that people pursue self-interest. The model performs well much of the time, yet apparent contradictions abound." (Frank, 1987, p.593) The contradictions he is referring to are apparent cases of behavior that transcend self-interest.[4] What he proposes is a model that "is at once in harmony with the economists' view that people pursue self-interest and with their critics' view that people often transcend selfish tendencies." (Frank, 1987, p. 602)

In effect Frank provides homo economicus with a moral capacity by assuming that his genetic endowment can include a taste for morality or, in other words, a conscience. Given this possibility Frank proceeds to demonstrate that, in the presence of signals which allow an observer to effectively discriminate between those with and without a conscience, having a conscience enhances genetic fitness.

The foundation of Frank's model is sociobiological and it is at this foundational level that his model departs from Becker's. Becker takes tastes as given and traces the sociobiological implications of utility maximizing behavior given tastes. Frank "treats tastes not as [given] ends in themselves, but as means for attaining important material objectives." (Frank, 1987, p.

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[4] He cites as examples: "Travelers on interstate highways leave tips for waitresses they will never see again. Participants in bloody feuds seek revenge even at ruinous cost to themselves." (Frank, 1987, p.593)

593) He goes on to note that "[i]n the biologist's view, tastes are no different from other characteristics. All are selected for their capacity to promote survival and reproduction." (Frank, 1987, p. 593 fn) Thus in Frank's model tastes are not given, they may change by mutation.

His model's starting point then is the appearance of a mutant trait: the taste for moral behavior or, in other words, a conscience. Specifically, he assumes "a population each of whose members bears one of two traits, H or D. Those bearing H are honest, those bearing D are not." (Frank, 1987, p. 595) He then represents a payoff matrix for interactive behavior that looks as follows (Frank, 1987, p. 549):

Payoff to A from interaction with B.

		B: H	B: D
A	H	X_3	X_1
	D	X_4	X_2

Here: X4>X3>X2>X1. This reflects his assumption that honest cooperation is more productive than dishonest cooperation (X3>X2), that exploitation can pay (X4 is highest), but that being exploited is to be avoided (X1 is lowest). Furthermore, he assumes that working alone has a payoff equal to X2. The payoff matrix makes it clear that person A will invariably benefit from choosing to work with a person B who is honest.

Frank goes on to assume that associated with one's genetic makeup with respect to conscience (one does or does not have one) is an observable genetic trait the presence of which signals whether one has a conscience or not. As genetic traits, conscience and its associated signal are beyond the choice set of any given individual, for the individual they are data. From a species perspective they are traits available for genetic selection. Frank's argument is that as long as the signal is effective and the cost of the signal acquisition ("becoming sensitized" (Frank, 1987, p. 599)) is greater than zero but not prohibitive, the population will reach an equilibrium at which a proportion of the population ($0<h<1$) will have a conscience.

He demonstrates this with his H/D model. First he shows that a "perfectly reliable" signal would lead to Ds' extinction. Next he considers the case of an imperfect signal and derives an equilibrium value of h (the proportion of the population with a conscience) that is between zero and one. Finally, "[t]he model [is] ... made more complete, and the existence of an equilibrium assured, ... [by adding] the assumption that resources must be expended to inspect" the signal of others. (Frank, 1987, p.599)

Note that while conscience and its associated signal are a genetic endowment and therefore are beyond a given individual's choice set, a homo economicus with such an endowment has an incentive to maximize the the expected utility that can be derived from it. This utility maximizing behavior takes the form of becoming sensitized to signals. In its most complex version the model represents homo economicus as actually expending

resources in order to cover the costs of investing in sensitization. This is pure homo economicus in action, but on a foundation of conscience.

With this foundation Frank's model provides a solution to what he refers to, following Thomas Schelling, as "commitment problems." (Frank, 1987, p. 549) Problems for which the "solution requires people to make ex ante commitments to behave in ways that will not be self-serving ex post." (Frank, 1987, p. 594) In Schelling's example, if a kidnapper gets cold feet, all the victim's protestations won't convince the kidnapper to let the victim go and trust that the s/he will remain silent about the crime, unless there is recognizable a signal from the victim that represents absolute honesty. Only then could the kidnapper release the victim on a promise of silence with no fear that the victim would violate that promise.

Frank's model is cleverly conceived and well developed, and in his book its implications for human behavior are explored in fascinating detail. (Frank, 1988) There are, however, two problems at the foundation of the model that require us to dig more deeply into human nature in order to identify the origins of commitment behavior.

The first problem has to do with the relationship between conscience and action. Frank's model depends heavily on the presence of genetically endowed, uncontrollable signals that reflect internal conflict between potential choice and conscience. Those with a conscience will sweat or grimace or have facial twitching[5] when they lie, while those without a conscience will not. Thus

[5] See (Frank, 1987, p. 595)

the attachment of conscience and signal assure that it is impossible for an individual with a conscience to deceive anyone when that individual considers doing an unconscionable act. However, one who is genetically endowed with a conscience would by definition never choose such an act in the first place. Given this perfect correspondence between conscience and action, these signals are evolutionary non-starters. They wouldn't serve any purpose so they wouldn't evolve. Without the signals, the model does not work. What is required for the signals to serve a purpose is some separation between conscience and action so that conflict is possible, for it is precisely such conflict that these signals reflect.

The second problem is that the model implicitly assumes that a conscience embodies a unique set of values which spring fully developed from genetic mutation. This assumption is necessary for even if the signals do reflect the presence of a conscience, that information alone is insufficient for judging the outcome of interpersonal interaction if the content of conscience is allowed to vary. Thus the model must, as it is presented, take the content of conscience -values- as given. This is a very strong assumption.

VALUES AND THE COEVOLUTION OF INDIVIDUAL AND COMMUNITY

In this section we expand on Frank's work by identifying the source of the values his model requires. The case is made that values are determined as individuals and their communities coevolve. We turn to sociobiology in order to see how and why a Being adopts a set of community values.

The sociobiological origin of community values lies in a mutation, a genetic gift, that set humans apart from the rest of the species. We need not identify the specific nature of this gift[6] in order to establish its existence: the prima facia evidence of such a gift is overwhelming. As Edward Wilson writes:

> During the past ten thousand years or longer, man as a whole has been so successful in dominating his environment that almost any kind of culture can succeed for a while, so long as it has a modest degree of internal consistency and does not shut off reproduction altogether. No species of ant or termite enjoys this freedom .... Man has temporarily escaped the constraint of interspecific competition. (Wilson, 1975, p.550)

Economic theory provides the tools for analyzing the consequences of such an escape from competition. The payoff from such an advantage is a rent. The theory also makes it clear that the existence of potential rents leads to a destructive form of competition for these rents: rent-seeking behavior.[7] In sociobiological terms the consequence of this genetic gift is a disruption of the selection process.

Wilson depicts "stabilizing selection" as shown in Figure 1. The arrows represent "[r]esults of (↓) adverse and favorable (↑) selection on various parts of the population frequency distribution on a phenotype character." (Wilson, 1975, p. 67)

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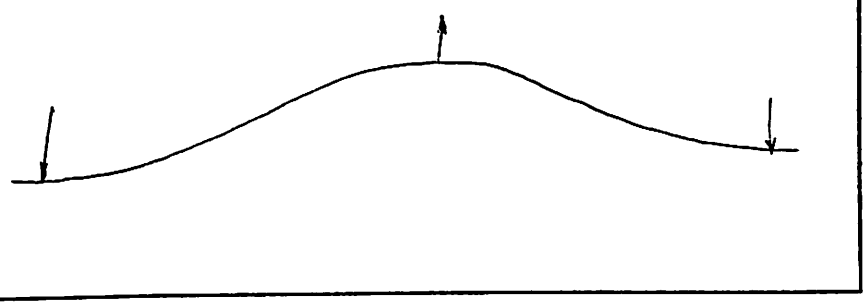
[6] Edward Wilson writes that "[a]ll of man's unique social behavior pivots on his use of language, which is itself unique." (Wilson, 1975, p. 555)

[7] See (Evensky, 1988) for an extended discussion of this topic.

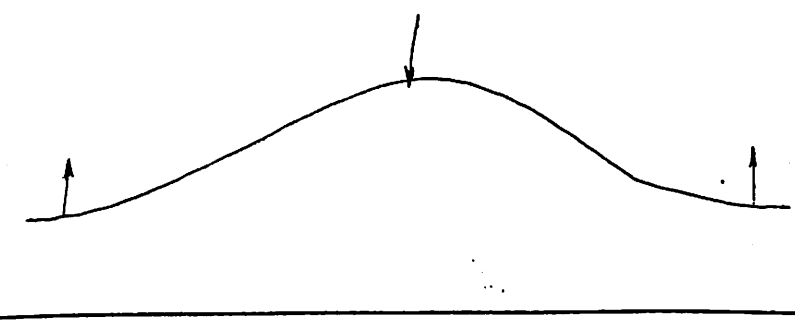
Figure 1: Stabilizing Selection



Stabilizing selection "consists of of a disproportionate elimination of the extremes ...." (Wilson, 1975, p.67) This pressure at the extremes is applied by the interspecific competition.

When the threat from interspecific competition is virtually eliminated, the resulting rents create an incentive for intraspecific competition. Such a case would lead to what Wilson refers to as "disruptive selection". He represents this case as shown in Figure 2 (Wilson, 1975, p. 67):

Figure 2: Disruptive Selection



This disruptive selection is clearly destructive for the species.

The irony of the human condition is that our genetic gift has created an internecine competition over rents that is inherently self-destructive. In order to avoid our own self-imposed extinction it is necessary that a countervailing force evolve. This force serves the ends not of the individual but of the group, the

species. Thus, the force must be the product of an evolutionary selection at the level of the group rather than the individual.

The traits that have evolved within the individual in order to preserve the existence of the group are commitment and self command. Commitment is a "pledging or binding of the individual to behavioral acts." (Kiesler, 1971, p. 30) Commitment allows the individual to identify with the values of the group. Self command provides the individual with the strength of will to follow through on commitments.

Society makes use of these traits for its own preservation by instilling the values that define one's commitments[8] and the beliefs about reality that frames one's choice set.[9] As Wilson writes: "To counteract selfish behavior and the 'dissolving power' of high intelligence, each society must codify itself. Within broad limits virtually any set of limits works better than none at all." (Wilson, 1975, p. 562)

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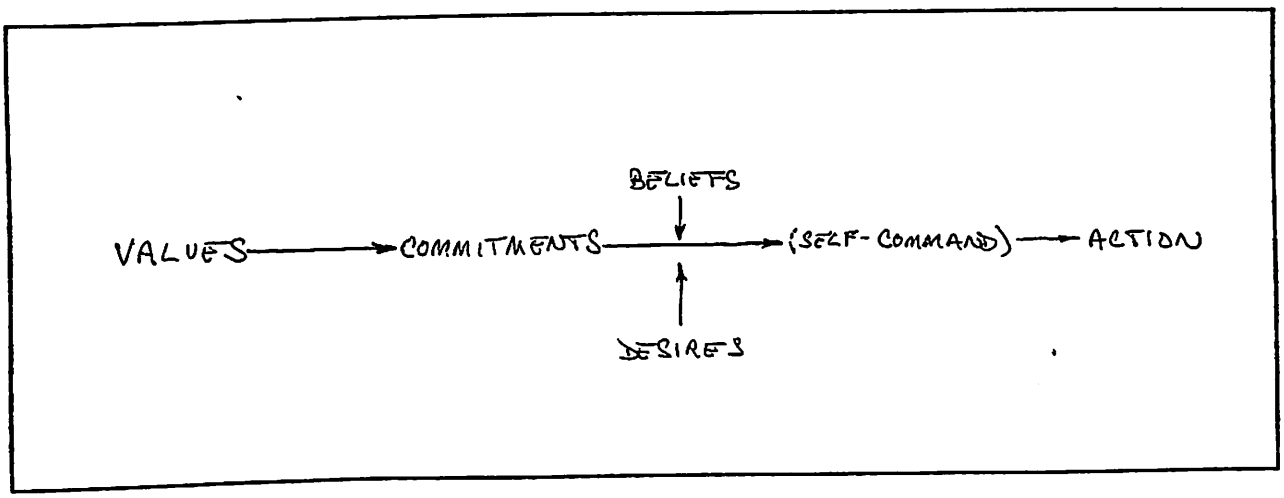
[8] Inkeles writes that "a large part of socialization consists in the simple effort to inculcate values." (Inkeles, p. 618)

Robert Le Vine defines "culture as a shared organization of ideas that includes the intellectual, moral, and aesthetic standards prevalent in a community and the meanings of communicative actions." (LeVine, 1984, p.67) He suggests that culture is a set of "supraindividual phenomena" that provide a "locus of order" for the individuals. (Le Vine, 1984, pps. 68, 69) Le Vine writes that "[t]he socializing agent's beliefs and values concerning various personality characteristics and their outcomes are shaped by his perceptual experience as a participant observer in a normative environment [a culture] and serve in turn to dictate the direction in which he shapes his children's behavior." (Le Vine, 1969, p. 513) Thus socialization protects and perpetuates culture.

[9] See (Tversky and Kahneman, 1987) and (Schick, 1987) for a discussion of framing and beliefs.

Schematically the choice system of the individual can be represented as follows:



One makes choices on the basis of one's values,[10] one's beliefs, and one's desires. The actual outcome, the action, generated by this choice mechanism depends on the degree of self-command. If self-command is absolute, then commitments will be followed absolutely. This does not imply totally transcendent behavior. One's commitments include one's own well being.

This choice mechanism requires the same forms of rationality as does Becker's model. In order for the mechanism to function smoothly, not only our beliefs and desires but also our commitments must be internally logically consistent. (Elster, 1983, p.1) Furthermore, behavior is substantially rational: the goal of a Being is to keep his balance.

[10] The view that the origin of behavior lies in set of values found in such a meta-ordering is not new to the literature. Amartya Sen appeals to "a meta-ranking" (Sen, 1982, p.100), Jon Elster refers to a "hierarchy of values" (Elster, 1979, p.127), Howard Margolis cites "'ultimate preferences' [that] somehow reconcile his [a beings] group-and self-interested preferences" (Margolis, p.2), and Albert Hirschman uses the term "meta preferences" (Hirschman, 1984, p.95). What is new here is the foundation we provide for that view.

An array of commitments must be balanced in every decision.[11] When there is conflict between commitments and actions there is dissonance.[12] In the presence of dissonance the individual can pursue a number of strategies of dissonance reduction.[13] These may take the form of an adjustment in commitments, beliefs, desires, or actions. This internal adjustment mechanism is a source of creative change within the individual.

If an individual's commitments, beliefs, or desires are in conflict with societal norms then another adjustment mechanism is set into motion. Just as the individual seeks internal dissonance reduction, so too the society seeks internal harmony. Any tension between individual commitments, beliefs, or desires and societal values and beliefs must be resolved if society is to maintain its cohesion and order. This resolution may find the individual returning to social norms, it may take the form of a societal adjustment, or it may result in some combination of individual and societal adjustments. Again, this adjustment mechanism is the source of change. The speed of societal adjustment depends on the degree to which extant societal institutions are malleable. The more ossified the institutions the slower the process of change and the more likely that when change occurs it will be radical.[14]

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[11] Amitai Etzioni identifies the same objective in terms that reflect a slightly different conceptual framework: "... people seek a balance between their moral commitments and their pleasure (a judicious "mix")...." (Etzioni, 1988, 67)

[12] See (Festinger, 1957).

[13] See (Elster, 1983, p. 118-123) and (Schelling, 1984) for an interesting discussion of such strategies.

[14] This is analogous to the conditions of adjustment along the

In sum, a Being is a multidimensional individual who coevolves with society.[15] As Wilson writes:

> Human beings are absolutely easy to indoctrinate - They seek it. If we assume for argument that indoctrination evolves, at what level does natural selection take place? One extreme possibility is that the group is the unit of selection. When conformity becomes too weak, groups become extinct. In this version selfish, individualistic members gain the upper hand and multiply at the expense of others. But their rising prevalence accelerates the vulnerability of the society and hastens its extinction. Societies containing higher frequencies of conformer genes replace those that disappear, thus raising the overall frequency of the genes in the metapopulation of societies....
>
> The competing, individual level hypothesis is equally sufficient. It states that the ability of individuals to conform permits them to enjoy the benefits of membership with a minimum of energy expended and risk. Although their selfish rivals may gain a momentary advantage, it is lost in the long run through ostracism and repression ....
>
> The two hypotheses are not mutually exclusive. Group and individual selection can be reinforcing. (Wilson, 1975, p. 562)

The model presented here represents the coevolution or the "reinforcing" nature of individual and group selection. It is a Smithian model of human behavior. Adam Smith saw humans as social animals, shaped by and shaping their society. He saw individual behavior as determined by the balance among an array of sentiments.[16]

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border between shifting tectonic plates.

[15] This coevolution of individual and society requires yet another form of rationality to be embodied in the model: Simon's "procedural rationality." (Simon, 1982, p. 452) Such a rationality is necessary given the cognitive limitations of the human being and the complex, interactive choice process in which that person must participate. See (Simon, 1987) for more on this.

[16] See (Heilbroner, 1982), (Evensky, 1987), (Evensky, 1989)

However, while this is a return to a Smithian conception of being, it is not the model of Smith. The distinction lies in the fact that Smith's model is normative. There is for Smith one set of values, one balance of sentiments, that is "correct". Correct values evoke perfect sympathy from an impartial spectator and are in perfect harmony with the Deity's Design. One with such values and the absolute self-command necessary to enforce those values on self contributes to the realization of the Design.

Our model encompasses the order Smith envisioned, but only as a special case. It is a model about norms, but it is not a normative model.[17] Any set of values and beliefs are consistent with our model. The point of the model is that values and beliefs are at the core of culture, that culture defines a community, and that one's degree of membership in a community is determined by the degree to which one's commitments and actions reflect the community's values and beliefs.

To interpret human behavior without considering an individual's normative cultural context is to treat a human being as a "social moron". (Sen, 1982, p.99) Our Being is not a social moron. Nor is he a simple product of his society. The model suggests that the individual coevolves with society. Whether this coevolution is convergent on some ethical norm or simply a random

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[17] Our model cites no particular set of values and beliefs as "correct". The only "correct" set of values would seem to be one that is internally stable: One that all individuals would commit to from behind a "veil of ignorance" in a world in which all individuals have perfect self command. If this is unachievable is there no second best? Smith argued that a society may be able to converge on good values by education, a free commerce of ideas, and a civic humanist form of leadership. (Evensky, 1989)

walk is beyond the scope of the model.[18]

CONCLUSION

The model of Being presented here solves the problem Becker's model faced at the limit. The heroic self sacrifice of a Medal of Honor winner requires no ad hoc explanation; it is the ultimate expression of a commitment that transcends self. Our model also resolves the problem of "from whence conscience" that Frank's model cannot resolve. In this model conscience evolves through the individual/societal coevolution. Commitment and self command that are the genetic traits that underlie this model. They are individual traits that evolve through group selection. It is this basic connection, evolving individual traits through group selection, that underlies the larger scope of the coevolution of these two levels of existence.

A key virtue of the conception of Being presented here is that it allows economic analysis must take its place among the sciences of human behavior and society; a position it must take if it is to achieve its full potential. Herbert Simon writes:

> Economics without psychological and sociological research to determine the givens of the decision-making situation, the focus of attention, the problem representation, and the processes used to identify alternatives, estimate consequences, and choose among possibilities - such economics is a one bladed scissors. (Simon, 1986, p. S224)[19]

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[18] David Hume demonstrates in his Dialogues Concerning Natural Religion that there is no way we can empirically prove the existence of a "Design". To believe in such requires Demea's act of faith. (Hume, 1947)

[19] One can find similar criticisms of the narrow perspective of of economics that is generated by a behavioral foundation based on homo economicus in (Etzioni, 1986), (Margolis, 1982), and (LeVine, 1984).

The model of Being presented here provides the second blade. It encompasses personal desire as a behavioral base, the one blade, and complements that with cultural norms of values and beliefs, the second blade. In doing so it replaces barriers with bridges to other disciplines where the complex nature of being is not assumed away. Speaking for these other disciplines Robert O. Keohane writes that

> political scientists try to give some account of preferences. We do not believe that 'there is no accounting for tastes.' ... Political scientists as well as sociologists and anthropologists care about how societies select the kinds of tastes that they do. And this is obviously not just a rational process of choice taking place in present time; it is a profoundly historical process. ...
>
> So the preaching of economists about how to explain both dazzles and disillusions us. Many of us have been dazzled, and I think we have learned a lot by casting this reflected light, being the moon to the economists' sun. But eventually we become aware of the limitations of the approach, particularly its failure to consider culture, institutions, the sources of preferences, and historical process. Then the preaching seems too narrow, even a little bit like Savanarola, burning the books he didn't like. We don't burn the economist, but lacking a conversation, we may stop listening. (Keohane, 242-244)

Recent work done in the psychology of choice offers empirical support for Keohane's position. Kahneman, Knetsch, and Thaler find in their psychological research that one must consider "[c]ommunity standards of fairness" if one is to appreciate the foundations of individual behavior. (Kahneman, Knetsch, and Thaler, 1986, p. S297). Tversky and Kahneman write that in the psychology of choice, framing is controlled in part by "norms" of the decision maker. (Tversky and Kahneman, 1986, p.S257) Both of these perspectives on the psychology of choice are consistent with the model of Being presented here.

The ultimate strength of our model derives from the fact that it is consistent with the empirical evidence. The best such evidence can be found in the "Econ culture" itself.[20] That culture is based on the belief that homo economicus is a true representation of human nature. The culture is transmitted to new members primarily through economics textbooks. These textbooks depict humans as Beckerian rational utility maximizers. However, nowhere in these texts is there mention of Becker's mutant altruist who constrains our self-indulgent behavior by creating interdependence. The culture represents the egoistic utility-maximizer as the engine of progress in society, and the wealth of the successful maximizers as the reward for fitness. These beliefs and values are transmitted through a socialization process that emphasizes the mastery of the unique language of the culture.

Given the well defined nature of this "Econ" culture, our model predicts that we should be able to distinguish between members and non-members by their choices. Let us assume for example that we could provide individuals with an opportunity to exploit a market advantage. Suppose further that we could select individuals from two distinct cultures. One, the "general community", values fairness and rejects exploitation. The other, M.B.A. students socialized in the Econ culture, values utility. If cultural attachment was absolute and self-command were perfect, we would expect all community members to reject the exploitation and all M.B.A.s to use the opportunity to maximize their own utility.

[20] See the report of Axel Leijonhufvud ("Econologist of some experience" (Editor's Note, p.327)) on "Life Among the Econ." (Leijonhufvud, 1973)

Howard Kunreuther cites a series of thought experiments that simulate this case. He notes that when individuals were asked whether "it was appropriate to raise prices if there was a shortage" (specifically a shortage of Cabbage Patch dolls); in the community sample "24% found this to be acceptable in contrast with 64% of the M.B.A. students." (Kunreuther, 1986, p.S331) "Another question asked whether people felt it was acceptable to raise the price of current stock of peanut butter when the owner learns that the wholesale price has risen?" In the community sample "21% found this practice acceptable, while 73% of the M.B.A. students did so." (Kunreuther, 1986, p.S331)

A study by Janet Walker of students in the graduate school of business (GSB) at University of Chicago ("widely recognized to be, a particularly staunch advocate of the virtues of laissez faire" (Walker, 2)), presents results that are consistent with Kunreuther's evidence that the Econ culture is a powerful determinant of behavior among those who buy into that culture. Walker writes that "the data suggest that the socialization into the GSB worldview aids the development, in certain types of individuals, of this particular brand of reduced responsibility 'utilitarianism'." (Walker, 3)

The power of business schools to socialize students is apparently evident to those schools themselves. During the 1980s there has been a significant increase in the number of business schools that are offering courses in ethics. "The aims of those teaching the courses vary. Some claim business ethics should sensitize students to moral issues they may face on the job.

Others wish to motivate students to act morally in the workplace. Some attempt to teach moral reasoning. Some hope to change business practices." (De George, 206) Whatever the specific objective of these courses, the underlying assumption that motivates them is the same: a belief that the behavior shaped by the traditional curriculum must be reshaped by the curriculum changes.

So we see that while traditional economic analysis based on homo economicus would deny that culture shapes values and, in turn, choice; choices within the very culture generated by this traditional view belie the behavioral foundation of its own analysis. We need look no further than the culture of the "Econ" to see that, as our model predicts, culturally based values do affect choice.

Amartya Sen writes in his piece on "Rational Fools" that the

> nature of man in these current [emphasis added] economic models continues ... to reflect the particular formulation of certain philosophical questions posed in the past. ["[I]n what sense and to what extent would egoistic behavior achieve general good?" (Sen, 1982, p.87)] The realism of the chosen conception of man is simply not a part of this inquiry. (Sen, 1982, p.88)

Sen argues that a more realistic description of the foundation of human behavior must include commitment and that this expansion of our behavioral repertoire "implies no denial of reasonable assessment as a basis for action." (Sen, 1982, p. 105)

The Being we describe is just such a person. He acts rationally and most often on the basis of his own desires (e.g., chocolate v vanilla); but he has the capacity to adopt a set of commitments that will on occasion generate behavior that transcends self.

If the Econ cultural discourse is to be a part of a larger social science community conversation, then the language we use must be a bridge not a barrier. Including the role of values and community in the Econ discourse creates such a bridge. I also allows the Econ to comprehend a statement such as this:

> Every now and then I think about my own death, and I think about my own funeral .... I don't want a long funeral. And if you get somebody to deliver the eulogy, tell them not to talk too long ... tell them not to mention that I have a Nobel Peace Prize ... tell them not to mention that I have three or four hundred other awards .... I'd like somebody to mention that day, that Martin Luther King, Jr., tried to give his life for others. I'd like for somebody to say that day that Martin Luther King, Jr., tried to love somebody ....
>
> Say that I was a drum major for justice. Say that I was a drum major for peace. That I was a drum major for righteousness. And all the other shallow things will not matter. I won't have any money to leave behind. I won't have the fine and luxurious things of life to leave behind. But I just want to leave a committed life behind.
>
> (Dr. Martin Luther King, Jr., Ebenezer Baptist Church, Atlanta, Georgia, February 4, 1968)

These are the words of Dr. Martin Luther King, Jr. to his congregation two months before he was assassinated. Dr. King is not speaking as <u>homo economicus</u>. He is speaking as a rational man expressing his commitment to a community he envisioned based on the values he was socialized to hold. He recognized, as Adam Smith did some two hundred years before, that in the absence of a common commitment to community the forces that tear society apart will prevail. Dr. King closes his last book, published posthumously, with the following lines: "We still have a choice today: nonviolent coexistence or violent coannihilation. This may well be mankind's last chance to choose between chaos and community." (King, 191)

Only by expanding the conception of Being assumed by NeoClassical theory can that theory of choice comprehend the meaning of such a choice.

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p_K ≡ price of capital services
p_A ≡ price of capital goods
r ≡ rate of return

Rates of Return by Industrial Sector in the United States, 1948–76

By BARBARA M. FRAUMENI AND DALE W. JORGENSON*

The purpose of this paper is to present estimates of nominal and own-rates of return for forty-six industrial sectors of the *U.S.* economy. These estimates are derived within a system of national accounts that includes measures of prices and quantities of output and input for individual industrial sectors, and prices and quantities of income and expenditure, saving and investment, and wealth for the *U.S.* economy as a whole.[1] These prices and quantities are combined to provide measures for each of the accounting concepts that are adjusted for inflation.[2]

A system of prices for capital goods is an essential component of a complete system of national accounts. The prices of new capital goods are compared with the prices of consumption goods and services in determining the allocation of the national product between investment and consumption. The prices of the services of capital goods currently in existence are compared with the prices of labor services in selecting the relative proportions of capital and labor services in production.

In the absence of taxation, the price of capital services, say $p_{K,t}$, can be expressed in terms of the price of capital goods $p_{A,t}$, the rate of return r_t, depreciation $p_{D,t}$, and revaluation $p_{A,t} - p_{A,t-1}$:

$$p_{K,t} = p_{A,t-1} r_t + p_{D,t} - (p_{A,t} - p_{A,t-1})$$

This relationship results from representing the price of acquisition of capital goods as the discounted value of future rentals.

Outlay on capital services can be expressed as the sum of outlays on all types of capital services. Each outlay is the product of the price of capital services and the corresponding quantity of capital, say K_{t-1}. If there were only one asset, property compensation could be represented in the form:

$$p_{K,t} K_{t-1} = p_{A,t-1} r_t K_{t-1} + p_{Dt} K_{t-1} - (p_{A,t} - p_{A,t-1}) K_{t-1}$$

Given data on property compensation, the acquisition price of capital, and depreciation, this expression determines the rate of return r_t, and therefore the price of capital services. If there are several assets, property compensation is the sum of the value of capital services for all assets.

Again, in the absence of taxation, the rate of return can be expressed in the form:

$$r_t = \frac{p_{K,t} K_{t-1} - p_{D,t} K_{t-1} + (p_{A,t} - p_{A,t-1}) K_{t-1}}{p_{A,t-1} K_{t-1}}$$

The rate of return is equal to the ratio of property compensation, less depreciation and plus revaluation, to the value of capital at the beginning of the period. This is a *nominal* rate of return, since it includes the revaluation of assets. The corresponding *own*-rate of return excludes revaluation and takes the form:

$$r_t - \frac{p_{A,t} - p_{A,t-1}}{p_{A,t-1}} = \frac{p_{K,t} K_{t-1} - p_{D,t} K_{t-1}}{p_{A,t-1} K_{t-1}}$$

*Boston College and Harvard University, respectively.

[1]The system of national accounts was originally designed and implemented for the private sector of the *U.S.* economy by Laurits Christensen and Jorgenson (1969, 1970, 1973a,b). This system has been extended to incorporate production accounts for individual industrial sectors of the *U.S.* economy by Fraumeni and Jorgenson.

[2]Adjustments of a system of national accounts for inflation are discussed by Phillip Cagan and Robert Lipsey. Adjustments of business accounts for inflation have been discussed from an economic viewpoint by Solomon Fabricant, and by John Shoven and Jeremy Bulow (1975, 1976).

TABLE

Industry
Agriculture
Agricultural Services
Metal Mining
Coal Mining
Crude Petro.
Nonmetallurgical Mi
Construction
Food
Tobacco
Textiles
Apparel
Paper
Printing & Publishing
Chemicals
Petroleum Refining
Rubber
Leather
Lumber & Wood
Furniture
Stone, Clay, Glass
Primary Metal
Fabricated Metal
Machinery excluding E

If rates of growt
among assets, the
enter into the pric
different for each

In the presence
capital services ma
bilities in determi
The nominal rate
equal to the ratio o
less depreciation a
revaluations, to th
beginning of the
return for all assets
before.

We combine dat
tion and the value
dustrial sector with
structure for prop
estimates of depreci
existing stocks of ca
of rates of return fo
sectors. In Table 1
of return for each s
on capital assets and
We also present own
sector, including oni

adjust for risk + monopoly (degree of)

TABLE 1—SECTORAL NOMINAL AND OWN-RATES OF RETURN, ANNUAL AVERAGES, 1948–76

Industry	Nominal	Own	Industry	Nominal	Own
Agriculture	0.0749	0.0350	Electrical Machinery	0.1212	0.0825
Agricultural Services	0.0693	0.0388	Transportation Eqpt.	0.0535	0.0127
Metal Mining	0.0900	0.0462	Motor Vehicles	0.2846	0.2450
Coal Mining	0.1424	0.1021	Professional Photographic Eqpt.	0.1420	0.1052
Crude Petro.	0.1240	0.0812	Miscellaneous Manufacturing	0.1382	0.1030
Nonmetalurgical Mining	0.1522	0.1135	Railroads	0.0747	0.0346
Construction	0.1471	0.1078	Street Rail, Bus	0.1712	0.1352
Food	0.1031	0.0667	Trucking Services	0.1435	0.1031
Tobacco	0.1350	0.1085	Water Transportation	0.0727	0.0455
Textiles	0.0903	0.0577	Air Transportation	0.0199	−0.0152
Apparel	0.1052	0.0809	Pipelines	0.1106	0.0697
Paper	0.1283	0.0864	Transportation Services	0.0983	0.0632
Printing & Publishing	0.1069	0.0654	Tel. & Tel.	0.1460	0.1126
Chemicals	0.1322	0.0950	Radio & Tel.	0.1514	0.1188
Petroleum Refining	0.1240	0.0812	Electric Utilities	0.1306	0.0836
Rubber	0.1052	0.0650	Gas Utilities	0.1454	0.0988
Leather	0.0980	0.0724	Water	0.1824	0.1399
Lumber & Wood	0.2045	0.1648	Wholesale Trade	0.1269	0.0936
Furniture	0.1137	0.0741	Retail Trade	0.1017	0.0677
Stone, Clay, Glass	0.1123	0.0738	Finance, Insurance & Real Estate	0.0560	0.0178
Primary Metal	0.0900	0.0462	Services	0.0913	0.0533
Fabricated Metal	0.1051	0.0595	Households	0.0793	0.0442
Machinery excluding Electrical	0.1460	0.1068	Institutions	0.0793	0.0309

equalizing of rate of profit?

If rates of growth of asset prices differ among assets, the own-rates of return that enter into the prices of capital services are different for each asset.

In the presence of taxation, the value of capital services must be reduced by tax liabilities in determining the rate of return. The nominal rate of return for all assets is equal to the ratio of property compensation, less depreciation and tax liabilities and plus revaluations, to the value of capital at the beginning of the period. The own-rate of return for all assets excludes revaluation, as before.

We combine data on property compensation and the value of capital for each industrial sector with information on the tax structure for property compensation and estimates of depreciation and revaluation of existing stocks of capital to obtain estimates of rates of return for all forty-six industrial sectors. In Table 1 we present nominal rates of return for each sector, including earnings on capital assets and gains from revaluation. We also present own-rates of return for each sector, including only earnings on assets.

Nominal rates of return for the period 1948–76 vary from 0.0199 in air transportation to 0.2846 for motor vehicles and equipment. Thirty of the forty-six sectors have rates of return between 9 and 15 percent. Transportation equipment, except for motor vehicles, and ordnance has a nominal rate of return for the period as a whole of 0.0535; finance, insurance, and real estate has a nominal rate of return of 0.0560. By contrast lumber and wood products has a nominal rate of return of 0.2045, and water supply and sanitary services has a nominal rate of return of 0.1824 percent.

Own-rates of return for the period as a whole vary from a negative 0.0152 for air transportation to 0.2450 for motor vehicles and equipment. Thirty-nine of the forty-six sectors have own-rates of return between 3 and 12 percent. Transportation equipment, except for motor vehicles, and ordnance has an own-rate of return of 0.0127 for the period as a whole, while finance, insurance, and real estate has an own-rate of return of 0.0178. By contrast, lumber and wool products has an own-rate of return of 0.1648,

TABLE 2—CLASSIFICATION OF ANNUAL AVERAGES FOR SECTORAL NOMINAL RATES OF RETURN BY PERIOD, 1948–76

Average Rate of Growth in Percent	1948–76	1948–52	1953–56	1957–59	1960–65	1966–68	1969–72	1973–76
Less than 3	1	1	4	3	1	0	1	0
3 to less than 6	2	4	8	9	6	1	1	2
6 to less than 9	6	12	10	11	19	3	4	1
9 to less than 12	15	7	13	15	10	18	19	3
12 to less than 15	16	12	8	6	6	10	10	14
15 to less than 18	3	4	0	2	3	7	2	11
18 to less than 21	2	2	1	0	0	3	3	5
21 or more	1	4	2	0	1	4	6	10

TABLE 3—CLASSIFICATION OF ANNUAL AVERAGES FOR SECTORAL OWN-RATES BY PERIOD, 1948–76

Average Rate of Growth in Percent	1948–76	1948–52	1953–56	1957–59	1960–65	1966–68	1969–72	1973–76
Less than 0	1	3	0	1	1	0	1	2
0 to less than 3	2	9	9	8	2	2	5	8
3 to less than 6	11	9	12	10	7	6	15	11
6 to less than 9	15	10	11	15	19	16	12	11
9 to less than 12	13	5	11	9	9	8	4	6
12 to less than 15	2	5	0	3	4	7	2	4
15 to less than 18	1	2	1	0	3	4	3	0
18 or more	1	3	2	0	1	3	4	4

and water supply and sanitary services has an own-rate of return of 0.1399.

In Table 2 we present a distribution of nominal rates of return for the forty-six industrial sectors included in our study. In Table 3 we present a distribution of own-rates of return for these same industrial sectors. To analyze the patterns of change in these distributions across subperiods of time, we have divided the period 1948–76 into seven subperiods corresponding to the years between cyclical peaks of the *U.S.* economy in 1948, 1953, 1957, 1960, 1966, 1969, and 1973. Each subperiod, except for the last, begins with a cyclical peak and runs through the year prior to the following cyclical peak. The last subperiod begins with the peak year of 1973, but includes only the years 1973–76.

In comparing rates of return across subperiods of time, we find that the distribution of average nominal rates of return has shifted upward between the 1950's and 1960's, and between the 1960's and the 1970's, reflecting the increasing rate of inflation in the prices of capital goods between these decades. By contrast, the distribution of average own-rates of return, which excludes gains from the revaluation of assets, does not exhibit a similar trend. This distribution appears to be relatively stable over time, reflecting the stability of earnings on assets.

The aggregate nominal rate of return for the period 1948–76 is 0.0848; for the seven subperiods included in Table 2 the aggregate nominal rates of return of 0.0859 for 1947–52, 0.0577 for 1953–56, 0.0563 for 1957–59, 0.0647 for 1960–65, 0.1011 for 1966–68, 0.1038 for 1969–72, and 0.1309 for 1973–76. The distributions of nominal rates of return across industries reflect the aggregate rates. The distributions are concentrated at relatively low levels for the subperiods 1953–56, 1957–59, and 1960–65. Distributions for the remaining subperiods are higher, reflecting higher rates of inflation in asset prices.

The aggregate own-rate of return for the period 1948–76 is 0.0478; for the seven subperiods the aggregate own-rates of return are 0.0432 for 1948–52, 0.0414 for 1953–56,

0.0313 for 1957–59, 0.0515 for 1960–65, 0.0605 for 1966–68, 0.0514 for 1969–72, and 0.0484 for 1973–76. Since revaluations are excluded from the own-rates of return, the own-rates of return show much less variation over time than the nominal rates of return. The subperiods 1960–65, 1966–68, and 1969–72 are characterized by high average own-rates of return. The periods 1948–52, 1953–56, and 1957–59 are characterized by low-average own-rates of return. The own-rate of return for the most recent subperiod, 1973–76, is almost identical to the average for the period as a whole.

Our first conclusion is that there are surprisingly large differences in rates of return among sectors. For every dollar of capital shifted from air transportation to motor vehicles and equipment, the *U.S* economy would have earned $.2647 annually for the period 1948–76. Similarly, for every dollar shifted from transportation equipment, other than motor vehicles, and ordnance, to lumber and wood products, the *U.S* economy would have earned $.1510 annually. The differences in marginal productivity of capital among sectors, as measured by the own-rates of return, are comparable to the differences in nominal rates of return. Differences in own-rates of return provide opportunities to increase output without increasing capital stock by reallocating capital among sectors.

Our second conclusion is that substantial differences in rates of return among sectors have persisted over the period 1948–76. If rates of return were distributed independently over time, we would expect the variances of the distributions to be inversely proportional to the number of time periods. Our final conclusion is that own-rates of return for the most recent subperiod, 1973–76, are about average by postwar standards, while rates of return for the period 1966–68 were exceptionally high, and rates of return for the period 1957–59 were exceptionally low. These results are consistent with the findings of six studies of rates of return for all nonfarm, nonfinancial corporations surveyed by Cagan and Lipsey and with a recent study of rates of return for 187 individual corporations by William Brainard, Shoven, and Leonard Weiss.[3]

Our objective in measuring rates of return has been to account for the role of capital in explaining postwar *U.S.* economic growth.[4] Our principal findings can be briefly summarized as follows: The growth of capital stock accounts for 31 percent of the growth of output for the *U.S.* economy as a whole over the period 1948–76. The reallocation of capital among classes of assets within industries accounts for another 15 percent of the growth of output. Finally, the reallocation of capital among industries has contributed only a little more than 2 percent of the growth of output for the period 1948–76. Our overall conclusion is that differences in rates of return among sectors have failed to bring about a reallocation of capital that has contributed substantially to the growth of output.

Our estimates of rates of return by industrial sector can be combined with other data to analyze the allocation of capital within the *U.S.* economy in greater detail. By combining our estimates of rates of return with a financial measure of the cost of capital, it would be possible to analyze the impact of rates of return on investment and the market valuation of financial claims on assets. Similarly, by combining our estimates with the underlying effective tax rates by sector, it would be possible to apply our results to an analysis of the impact of the taxation of income from capital on capital allocation. Finally, comparisons of rates of returns across industries could be employed in the study of the impact of industrial organization on the allocation of capital.

[3]Additional estimates of the rate of return have been given by Richard Kopcke, Michael Lovell, and William Nordhaus.

[4]The results of this study and a detailed description of the sources and methods employed for the estimates of rates of return presented in Tables 1, 2, and 3 are given by Fraumeni and Jorgenson.

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Tables 3 and 4
Charts 5 and 6

The equations behind Table 2 are used to prepare static and dynamic projections for the period 1978:I to 1981:IV. Selected error statistics appear in Tables 3 and 4, while charts 5 and 6 provide graphs of the projections for selected equations.

The static forecasts are prepared in two steps. First, estimated coefficients and actual data are substituted into the equations, quarter by quarter, to prepare the raw forecast. Then, for any given quarter, the raw forecast error of the previous quarter is multiplied by the equation's autocorrelation coefficient, and the resulting product is subtracted from the raw forecast for the quarter under consideration. It is these final forecasts that are graphed, and it is their error performances that are tabulated for the static projections.

The dynamic forecasts are prepared in two steps also. The first step is the same as that for the static projection except that actual data are not used for values of lagged investment from 1978:I to 1981:IV. The raw forecast uses previous estimates of investment. Then, in the second step, for any given quarter the raw forecast error of 1977:IV is multiplied by the autocorrelation coefficient raised to a power equal to the number of quarters separating 1977:IV and the quarter under consideration; this product is subtracted from the raw forecast to produce the final estimate. These final estimates and their errors are graphed and tabulated.

In the tables, column 1 reports the value of

$$\Sigma_{i=1}^{16} \text{error}_{i/16}$$

Column 2 presents

$$\Sigma_{i=1}^{16} \text{error}_{i}/16$$

And column 3 reports

$$\Sigma_{i=1}^{16} (\text{error}_i)^2/16$$

In Table 3, columns 4 and 5 present the frequencies with which the absolute values of the errors exceed \$1 billion and \$2 billion, respectively, while in Table 4 the threshold values are \$4 billion and \$8 billion, respectively.

The values of the parameters for the equations graphed in the charts are:

Accelerator

$$IS = 6.74 + \Sigma_{i=0}^{5} b_i \, Q_{t-i} - .092 \, KS_{t-1}$$

$b_0 = .023$ $b_3 = .007$
$b_1 = .022$ $b_4 = .002$
$b_2 = .015$ $b_5 = .006$

autocorrelation coefficient = .995

$$IE = -60.0 + \Sigma_{i=0}^{5} b_i \, Q_{t-i} - .227 \, KE_{t-1}$$

$b_0 = .083$ $b_3 = .035$
$b_1 = .048$ $b_4 = .032$
$b_2 = .036$ $b_5 = .015$

autocorrelation coefficient = .997

Neoclassical

$$IS = -1.78 + \Sigma_{i=0}^{11} b_i \, (P/RS)_{t-i} \, Q_{t-i} + .025 \, KS_{t-1}$$

$b_0 = .00074$ $b_6 = .00045$
$b_1 = .00076$ $b_7 = .00035$
$b_2 = .00074$ $b_8 = .00026$
$b_3 = .00069$ $b_9 = .00017$
$b_4 = .00063$ $b_{10} = .000092$
$b_5 = .00054$ $b_{11} = .000034$

autocorrelation coefficient = .925
trailing term constrained to equal 0.

$$IE = -11.60 + \Sigma_{i=0}^{12} b_i \, (P/RE)_{t-i-1} \, Q_{t-i} - \Sigma_{i=0}^{12} c_i \, (P/RE)_{t-i-1} \, Q_{t-i-1} + .141 \, KE_{t-1}$$

$b_0 = .020$	$b_6 = .043$	$c_0 = .019$	$c_6 = .043$
$b_1 = .030$	$b_7 = .040$	$c_1 = .029$	$c_7 = .040$
$b_2 = .037$	$b_8 = .036$	$c_2 = .037$	$c_8 = .036$
$b_3 = .042$	$b_9 = .031$	$c_3 = .042$	$c_9 = .031$
$b_4 = .044$	$b_{10} = .026$	$c_4 = .044$	$c_{10} = .025$
$b_5 = .044$	$b_{11} = .020$	$c_5 = .045$	$c_{11} = .018$
	$b_{12} = .013$		$c_{12} = .011$

autocorrelation coefficient = .839

Time Series

$$IS/KS_{(t-1)} = .0021 + \Sigma_{i=1}^{3} b_i \, IS_{t-i}/KS_{t-1}$$

$b_1 = 1.21$ $b_3 = -.191$
$b_2 = -.043$

$$IE/KE_{(t-1)} = .012 + \Sigma_{i=1}^{2} b_i \, IE_{t-i}/KE_{t-1}$$

$b_1 = 1.40$
$b_2 = -.464$

q Model

$$IS/KS_{(t-1)} = .044 + \Sigma_{i=0}^{7} b_i \, (q)_{t-i-1} \, KS_{t-i-1}/KS_{t-1}$$

$b_0 = .0039$ $b_4 = .011$
$b_1 = .012$ $b_5 = .0068$
$b_2 = .015$ $b_6 = .0027$
$b_3 = .014$ $b_7 = .000067$

autocorrelation coefficient = 1.00
trailing term constrained to equal 0.

$$IE/KE_{(t-1)} = .056 + \Sigma_{i=0}^{7} b_i \, (q)_{t-i-1} \, KE_{t-i-1}/KE_{t-1}$$

$b_0 = .036$ $b_4 = .021$
$b_1 = .037$ $b_5 = .014$
$b_2 = .034$ $b_6 = .0076$
$b_3 = .028$ $b_7 = .0025$

autocorrelation coefficient = .994
trailing term constrained to equal 0.

Cash Flow

$$IS/KS_{(t-1)} = .055 + \Sigma_{i=0}^{9} b_i \, (q)_{t-i-1} \, (F/CS)_{t-i-1}/KS_{t-1}$$

$b_0 = 3.58$ $b_5 = 2.23$
$b_1 = 3.61$ $b_6 = 1.70$
$b_2 = 3.46$ $b_7 = 1.17$
$b_3 = 3.15$ $b_8 = .687$
$b_4 = 2.72$ $b_9 = .283$

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A. Shaikh 4/15/87

"Choice of Technique" and the Falling Rate of Profit

The debate over the relation of the "choice of technique" to the conditions for a falling rate of profit proceeded in several stages.

1. The first round of the debate centered around whether or not the theory of competition prevents the adoption of methods of production which might lower the rate of profit even at a given real wage. This was the debate around the so-called Okishio Theorem (Cambridge Journal of Economics, 1978 2, 1979 3, 1980 4). It encompassed the following themes.

i. The neoclassical conception of competition rests on the premise that each firm "assumes the role of a 'price taker'"(W. Sichel and P. Eckstein, Basic Economic Concepts, Rand McNally, Chicago, 1974, p.158).

ii. Okishio showed that if competition operated under such "price taking behavior", so that even a technically innovative firm takes the selling price as given, then profit-rate maximizing behavior implies that no firm would ever "choose" a new method of production unless it anticipated a profit rate higher than the existing one. On this basis, all new methods would add higher than average rates of profit to the pool, so that the average rate itself would tend to drift upward -- for any given real wage.

The above does not imply that real wages remain constant over time. It only implies that technical change, taken by itself, necessarily raises the rate of profit. As a corrolary, it follows that the rate of profit can fall over the long run only if real wages rise fast enough to overturn the positive effects of technical change on the rate of profit. An observed fall in the rate of profit must therefore be the result of a combination of wage increases and/or worker effort slowdowns which together are sufficient to reverse the intrinsically rising tendency of the rate of profit. Implicit or explicit, this is the foundation of most Wage Squeeze crisis theories (Glyn and Sutcliffe, 1972; Bowles, Gordon, and Weisskopf, 1983).

iii. I argued that the above reasoning was wrong because it embodied the false notion that competitive firms are passive and impotent "price takers". Such a view derives not from the study of competition, but rather from the deeply ideological notion of an ideal capitalism characterized by perfect competition and general equilibrium. In sharp contrast to this, Marx's notion of competition implies the innovating firm "makes room" for itself in the market by lowering its selling price and thereby forcing others to do the same on penalty of extinction. And since the advantage in any such battle goes to firms with the lower unit

cost prices, I argued that competition will force capitalists to create and adopt methods which have lower unit costs (rather than higher rates of profit at a "given" selling price). With this, all the basic restrictions imposed by the so-called Okishio theorem fall by the wayside (Shaikh, CJE, 1978, 1980; RRPE, 1982 14(2)).

In the above discussion, I also argued that the creation of new methods with lower unit costs was itself a costly process involving a generally higher fixed investment per unit output. Such a process in turn can be shown to imply a rising capital-output ratio and a rising materialized composition of capital C/L. See attached notes.

2. The preceding round of debate centered around my argument that the competitive criterion of a lower unit cost price was inconsistent with the type profit rate maximizing behavior implied by the theory of perfect competition. This was widely interpreted to mean that the lower unit cost criterion was inconsistent with all types of profit rate maximizing behavior. Given this interpretation, and given the widespread reliance on perfect competition as the "generally accepted (mode of) analysis", most authors continued to support the Okishio Theorem in its original form. (Steedman, p.61; and Armstrong and Glyn, p. 69, among the responses to my original article in the Cambridge Journal).

But even in the midst of this first round, a new stage in the debate had emerged. In a little appreciated contribution, Nakatani pointed out that even under profit rate maximizing behavior, the choice of technique can lead to a falling rate of profit if firms expect the price of output to fall sufficiently. This is because a lower expected price will undercut the anticipated profit rate of the high cost method more severely than it would of the low cost method, so that a sufficiently lower expected price could actually reverse the profit rate rankings of the two methods (Nakatani, CJE 1980 4)

Nakatani's contribution made it clear that Okishio's results were critically dependent on the assumption that firms acted as if the prices of their goods were not only beyond their control but also expected to be constant over time. These are of course central assumptions in the static world of perfect competition. But as I pointed out in my response to Nakatani, it was not sufficient to replace the notion of given prices which are expected to be constant with the notion of given prices which may perhaps fall. The real issue had to do with the fact that price setting behavior is a part of real competition, so that firms with lower unit costs can drive prices down to the point that they can force out the higher cost methods (Shaikh, CJE, 1980, p. 81).

3. The third stage of the debate once again involved a paper by Nakatani ("Price Competition and Technical Change", Kobe University Economic Review, 25, 1979). It seems to have been even less appreciated than his previous contribution in the CJE.

In this new article, Nakatani followed up his earlier point on price competition by showing that once we allow for price-cutting as a part of competitive behavior, then choosing the method of production with the lowest unit cost (highest profit margin) is equivalent to choosing the method with the highest projected rate of profit.

It follows from the above that both sides of the debate assume that competition favors the method with the highest expected rate of profit. But the neoclassical/neoricardian notion of competition further assumes that firms are passive and impotent "price takers", whereas the marxian notion of competition assumes that firms are aggressive "price-cutters". It is from these fundamentally opposed conceptions of capitalist competition that the real difference arises.

4. Once it is recognized that the choice of higher profit rate techniques is perfectly consistent with a falling rate of profit, the issue then reverts back to the conditions for a rising organic composition of capital, for a rising ratio of dead-to-living labor (C/L), and to the impact of these on the long term trend of the rate of profit. These are the issues dealt with in the attached notes.