Prices, Employment and Profits

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Simultaneous inflation and unemployment, which has led to the coinage of terms like stagflation and slumpflation, appears to be a non-transitory characteristic of advanced capitalist economies. The combination together with unimpressive growth since the mid-sixties is the result of both the behaviour of labor and output markets and the system of government intervention that have aimed either to achieve a closer approximation to full employment or to prevent financial market incoherence. Thus stagflation has roots in both the structure and performance of markets and the behaviour of macro-processes.

To understand the path of prices \(P\) and employment \(N\), we need to explain: 1) the dynamics of wage \(W\) and \(P\) behaviour that reflect institutional characteristics; 2) how aggregate relations determine the \(P\) and \(N\) combinations, and 3) how these two determinants are reconciled to yield evolving reality.

The institutional assumptions

Today's institutional framework is characterized by: a) firms and labor organizations which possess market power; b) big government, whose monetary and fiscal measures constrain the "downward potential" of aggregate profits and influences the \(P-N\) outcomes; c) a financial system which intermittently seems to verge on crisis, and central bank interventions which prevent any immediate financial disaster from fully taking hold.

Thus market power is exercised within aggregate conditions which set limits to possible realized conditions. Neither market power nor aggregate explanations of the realized \(P-N\) combinations suffice. There need a

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1 A detailed description and interpretation of the various situations are to be found in Weintraub (1978) p. 76.
supplemented framework that integrates the two.

Market power of firms leads to administered prices able to assure managers of an easy life, and persuade financers that profit margins will not collapse when excess capacity (unemployment) prevails. This assurance facilitates the financing of expensive capital assets. Thus a modern capitalist economy has a debt structure that requires continuous validation by profit flows, and a banking/financial structure which must function smoothly if investment is to be financed. We will forego technical analysis of the banking and financing system in this paper; we merely assume that the managers of administered prices and the negotiators of wages know that both the Treasury and the Central Bank will intervene to prevent a 'free fall' of the financial system.

Negotiated wages ensue from trade union power which is an organizational imperative in a democratic society. Negotiated and contractual wages also tend to make costs comparable among the 'independent' firms that share market power. Labor's market power may have its genesis in the political power of workers, rather than on the economic power of unions.²

Big government mainly operates by way of transfer payments, defence spending, and taxes. Big government ordinarily implies a need for high taxes. Both the spending and taxing schedules are related to G.N.P. so that the government will be moving towards deficit or surplus depending on whether the economy is in an upswing or downswing.

As mentioned earlier we postulate that a Central Bank exists, and that it

²The experience of 1982-3 shows that in the United States the market power of labor can be attenuated by unemployment, profit squeezes, and a hostile government. It is therefore an open question as to whether stagflation has been replaced by a repression of employment. We believe that the success against inflation is transitory unless the trade union fundamentals have been broken.

of 1982-83
will jump in to prevent full fledged chaos from developing.\textsuperscript{3} We assume that the W and P processes take place in an environment in which it is known that the Central Bank will accommodate the financial needs of governments, and that it will assure that deep debt-deflation will not occur.\textsuperscript{4}

Big government, along with activist Central banks, have modified the nature of business cycles. A full fledged debt-deflation and a deep and long depression are less likely for when income drops a huge deficit well-nigh automatically occurs. The deficit sustains business profits, which, in turn, enable business to fulfill its debt obligations. As a result, the value of business capital and its means to redeem debt commitments are maintained. Hence investment activity is at a higher plateau during modern recessions than otherwise.

Because deficits sustain—and even increase—profits during recessions, the markup per unit of output does not fall in recession. The exercise—real or potential—of trade union strength, and the constraint upon the fall in output that follows the government deficit, limit the money wage fall that takes place during recessions compared to earlier times. The very relations which moderate the income decline tend to at least attenuate any tendency for P's to fall during periods of high unemployment. The N, P and Q characteristics of the business cycle have thus been transformed by the institutional adaptations since World War II's institutional adaptations.

\textsuperscript{3}For a discussion of these aspects, see Minsky (1982).

\textsuperscript{4}Our argument does not lead to the monetarist conclusion that money income or prices are determined by the money supply and velocity, but that Central Bank interventions that prevent debt-deflations are part of the environment within which investment takes place. On the money, wages and markup nexus, see Weintraub (1981).
The analytical framework

There are two aspects to the P and W formation in our economy: (1) a combination of bargaining that sets wages and the exercise of market power and leads to the markup on unit labor costs; (2) the aggregate relation that yields total obtainable aggregate obtainable markup on wage costs, and thus the P and Q combinations, that can prevail. Both aspects yield markups, but each reflects different facets of the flux of the economy.

Bargaining and Market power

The determination of prices and wages by bargaining and market power may be represented by two interacting equations over time:

\begin{align*}
(1) \quad P(t) &= \gamma A(t) + \alpha P^*(t) \\
(2) \quad w(t) &= g(X(t), P(t)) + \beta P^*(t)
\end{align*}

where \(P(t)\) and \(w(t)\) represent price and wage levels, \(A(t)\) traces average labor productivity, while \(P^*(t)\) reflects price expectations. \(X(t)\) stands for a vector of real variables (for instance, expected productivity gains, taxation...).

The price equation reflects the market power of firms. The \(\gamma\) markup factor, reflects market power, history, and cash payment requirements imposed by the liability structure of firms.

As far as the wage equation is concerned, we live in a world in which trade unions exist and money wages are largely the result of bargaining and negotiations. Any explanation of wages must take this into account.\footnote{For discussion see Weintraub (1978). In particular, his chapter five: “Money Wages: Phenomena in Search of a Theory”.}

Unemployment (U) affects the wage boosts but so long as catastrophic and

\footnote{Because the wage level is affected by the price level the “P’s” in this analysis are the prices of consumer goods. It will be evident in his argument about...}
Footnote 5 (continued)

The aggregate determination of prices and wages that the aggregate argument most immediately relates to the prices and wages of consumer goods. It is easy to assume that the wage level in consumer and investment goods are in a fixed relation one to the other and that prices of investment goods are endogenous to labor costs. These equations (1) and (2) might either to both consumer and investment goods prices.
prolonged unemployment has been averted, the effect of today's unemployment
rate on wage bargains has been subdued, leading in our view to today's U rate can
being omitted from equation (2) as an explicit variable, although chronic
high U's can erode the market power of unions and thus affect the W → P
reaction. The price variable components in the wage equation captures the explicit or
implicit, full or partial, indexing of wages.

Substituting (2) into (1) we obtain (under particular specifications) a
second order equation:

\[ P_c(t) - (E + F) P_c(t-1) + F P_c(t-2) = 0 \]

which resembles the reduced form of the accelerator-multiplier trade cycle
models. The general solution to the equation is given by:

\[ P(t) = B_1 \mu_1 + B_2 \mu_2 \]

where the roots \( \mu_1 \) and \( \mu_2 \) depend upon the parameters \( E \) and \( F \), while \( B_1 \) and \( B_2 \)
are determined by initial conditions. If the parameters are constant, the
same holds for the roots \( \mu_1 \) and \( \mu_2 \). If the roots take on values greater than
one, the model will tend to explode. The linear second order form to which we
reduced the iterative wage-price determination process is a 'gross
simplification' of the interactions in the economy. It is unable to generate

\[ \text{This coincides with what the New Cambridge School, based on the target}
\text{real wage hypothesis, has done. See Cripps-Godley (1976).} \]

For instance, on certain extrapolative expectations then:

\[ P^0(t) = P(t-1) + \theta(P(t-1) - P(t-2)) \]

and if wages vary according to the following formula; then:

\[ W(t) = \lambda P(t-1) \text{ and} \]

Further, if output per man is given, then by substituting into equation
(1), it follows that:

\[ P(t) = \left( \frac{X^a}{X} + \alpha + \alpha \theta \right) P(t-1) - \alpha \theta P(t-2). \]

It is worth stressing that this is just an example. The model can be
specified in other forms.

For a discussion of these models see Samuelson (1939), Hicks (1949) and
Minsky (1959). Equation (4) can also assume a more general form.
the complex paths that non-linear systems do, but it can generate paths equally unacceptable as a stand in for economic outcomes. The explosive result is as unacceptable as the incoherent or turbulent paths that non-linear iterative processes generate.

Acceptable, non-explosive results follow if meaningful constraints on the variables are introduced. For time series that tend to explode (or collapse), these become ceilings and floors. If the ceilings and floors reflect economic processes, then the economic system can be characterized as "nonlinear." Analytically posting ceilings and floors is a technique for converting complex nonlinear processes into piecewise linear systems.

Macroeconomic Price Determinants

The markup in equation (1) includes a factor allowing for price anticipations, for firms do not always succeed in attaining their price, quantity and profit objectives. There are macro-constraints which limit price power by determining whether in the aggregate the firm's objectives can be validated.

Gross capital income, or \( R \), is the difference between total revenue and labor costs. For the \( b \)-sector this is equal to:

\[
R_C = P_C Q_C - W_C N_C
\]

From Kalecki (1971)

\[
R_C = W_{IN} + Df + CR - SW
\]

For an analysis of nonlinear systems, see Day (1982).

Ceilings and floors break the iterative process by "not allowing" the results of the process in time \( t \) to occur and be fed into the determination of the variable in time \( t+1 \). etc... The characteristics of the time path generated by a model with an explosive process that is constrained depend on how the rate of growth of the ceiling (constraint) compares to the minor root \( \mu_2 \). For a mathematical proof, see Minsky (1959).

See Kalecki (1971)
where $N_I$ and $W_I$ refer to investment goods, $C_R = \text{consumption out of profits and}$
$S_W = \text{saving out of wages, while } Df = \text{government deficit}.^{12}$

Combining (5) and (6), one obtains:

(7) $P_C Q_C = \frac{W_C}{A_C} N_C + W_I N_I + Df + C_R - S_W$

By rearranging, one has: This becomes:

(8) $P_C = \frac{W_C}{A_C} \left(1 + \frac{W_I N_I + Df + C_R - S_W}{W_C N_C}\right)$ and

Equations (8) reveals that the $P_C$ can be viewed as a markup on unit labor costs. This relation has to be integrated with the market process that determines the price and wages. For convenience, we can write (8) as:

(9) $P_C = \frac{W_C}{A_C} \left(1 + \frac{w}{A_C} M K_C\right)$

where $MK_C = \text{average markup in the } C \text{-goods.}$

THE PATH OF PRICES AND EMPLOYMENT: THE ECONOMICS OF STAGNATION

We therefore have two sets of relations which reflect different aspects of the mechanics of a modern economy. One invokes paths for $P$'s and $N$'s and
the other reflects the market power of firms and the bargaining power that

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The definition of the deficit implied by this formula is (slightly) different from the one used by national accounts. On the spending side, acquisition of pre-existing assets and spending to refinance businesses needs to be excluded. On the revenue side there is a need to exclude revenues that reflect "transfer of wealth" such as death duties, fines, and capital levies.

On Weintraub's assumption (1981), according to which

$P_C Q_C = \alpha w N$
	hen (8) becomes:

$P_C = \alpha \left(\frac{w}{A_C}\right) N/N_C$

For a "generalization of the generalized" $\alpha$ concept, see Ferri (1983).
sets wages. The second reflects: (1) the course of I; (2) the fiscal posture of G and (3) the distribution of income in concert with the consumption propensities of the "classes" of income recipients. Both sets of relations reenforce the proposition that \( P_C \) is a markup on unit labor costs, but in one case it reflects market power and in the second, it is a by-product of the structure of aggregate demand.

The actual \( P_C \)-path depends upon the interaction of the relations. Thus we require a reconciliation process. From (7) we can write:

\[
(10) \quad \left( P_C - w_c \right) \frac{Q_C}{N_c} = w_I N_I + D_f + C_R - S_w
\]

Profit per unit of labor in C-production (the expression within the parenthesis) times the number of employed hand \( \text{time} \, R_C \) equals the sum of wages in investment production, the government deficit, and the saving and spending proclivities out of \( w \) and \( R \) incomes.

The course of aggregate \( R \) through time parallels the various \( R \)-components. For purposes of this argument, the right hand terms are determined outside the system. The path of profits, as determined by aggregate relations, is thus amenable to influence by monetary policy despite the remote effects. Thus, in the following exercises the behaviour of the aggregate \( R \) is taken as given and \( R_c \) becomes a rectangular hyperbola in profit per unit of employment.

Given that:

\[
(11) \quad P(t) = \frac{Q(t)}{N(t)} = \frac{P(t) A(t)}{N(t)}
\]

is the revenue per unit of employment, and that \( Q(t) / N(t) = A(t) \), then profit per unit of employment is equal to:

\[
\frac{1}{14} \text{In a small government capitalism, the course of } R_c \text{ depends upon } N, w, \text{ and non-C production. Obviously, investment depends upon realized gross profits, but not in a simple way for the liability structure, financing conditions, and the market prices of existing capital assets are determinants of investment. See Minsky (1975).}
\]
determinant \( R_c \). Therefore, it is "logical" to assume that for total profit available, the productivity of goods will increase as wages and prices increase, an outward moving \( R_c \) curve is entailed by rising \( W \) and \( P \).
increase even as employment decreases. 

At r_{3} an effective maximum inflation barrier is posited when the limitations of the financial system and conventional anti-inflationary monetary and fiscal measures take hold. These drive private investment downward, even as the deficit escalates. A sharp rise in U and the new constraint on the P/H lead to a new initial condition for the price equation that, for a time, will moderate \( \Delta w \) and \( \Delta P \) increases. At such time an expansion process of aggregate attainable profits will mainly lead to a rise in employment.

Conclusions

This has been an exercise in integrating a market process explanation of price movements, with the constraints upon prices and employment that reflect the aggregate characteristics of the economy.

In our model U does not check inflation, but is the result of inflation when total profits constraint are specified. Policy to constrain aggregate profits will not usually decrease inflation. How many years have I been shouting this? Twenty-five years? In our model monetary policies that might increase investment or fiscal policy, which would enlarge the deficit, would not increase the accelerating rise in P during a 'free fall' period in which the unconstrained rise in P takes place. Rising N's could be associated with rising P's if the aggregate constraint is sufficiently relaxed.

The "explosive" accelerator-multiplier relation is a representation of the migration of the economy to an incoherent state: 'floors' and 'ceilings' prevent the migration to 'incoherence' from occurring. In general, any system as complex as an economy will of their internal functioning drive on towards incoherent situations. Institutional floors and ceilings, imposed by institutional structure, 'automatic' stabilizers, customary usages, and policy maneuvers will override
the endogenous thrust to 'incoherence' by substituting the value of a constraint for the absurd "free market" values.

A major implication is that appropriate institutional arrangements and not infrequent policy interventions are necessary to prevent a market economy from periodically degenerating into incoherence.
BIBLIOGRAPHY


