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Chapter XII

Inflation in Our Economy;
Money Wages, Prices, and Profits

I. Introduction

It has been emphasized that under capitalist conditions money prices must not only be such that a surplus is generated, but they must also yield cash flows that both validate past decisions with respect to investment and financing and induce current and future investment. Results of past decisions are "present" in the form of capital assets, investment in process, and inherited liability structures. The profits that prices contain both validate the past and affect current investment and financing decisions. Today's prices yield today's profits that affect future investment and financing activity.

However, prices not only yield profits but they also cover costs. The cash flow to a unit pays for costs. In particular, the wages paid to produce current output are "financed" by sales proceeds of such output. In a capitalist economy, the wages and profits earned in the production of consumer goods are financed by the sales proceeds from current output, whereas the wages and profits earned in the production of investment goods are financed by the financial instruments that are issued in the anticipation that future profits will be earned.

In a money using economy, only that which can be financed can happen and that which cannot be financed will not happen. In private business and for households the financing either comes from income
earned from the current operation of the economy or from financial instruments, which in turn are acceptable because of money flows that are expected to occur. For government, the financing comes from either tax revenues or financial instruments, which in turn are acceptable because it is anticipated that future tax receipts or future debt financing will yield funds to meet the financial commitments. The financial collapse of New York City occurred when it became abundantly clear that tax receipts did not leave a large enough margin over current payment commitments to enable New York to meet the payment commitments on outstanding debts. New York City not being a sovereign, does not have the option of forcing its non-interest-paying notes on its debtors even as it makes such debt legal tender. If New York City were a "country," the indebtedness of the city would have forced a decline in the exchange value of its currency which, in turn, would have meant a partial default of its debt and a decline in the command over goods of New York City-denominated incomes.

Inflation can occur only if purchases at higher prices can occur. Inflation always has a financial side. Someplace in the economy the financing of purchases at higher prices must be taking place. This is not to say that financial, or monetary, changes are the cause of inflation; the financial and monetary changes can be induced. In an economy with a sophisticated and complex financial structure, the financial system has the capability to adjust to the demand for financing. New financial instruments and new ways of using old instruments often occur in complex financial markets. Innovations enable the financial system to accommodate to demands for the financing of spending.

Prices and profits depend upon money wages, the efficiency of labor, and the composition of current output. Our argument begins with the proposition

1"Trade credit" or other such seller financing fully fits into this format.
consumption goods \( P_C \), sales receipts equals expenditures, \( P_C = C_w + C_w N_1 + C_w N_2 + \ldots \)

where \( P_C \) is the sales receipts and \( C_w N_1 + C_w N_2 + \ldots \) are various components of expenditures. In this way of looking at things, \( W_C N_C, W_1 N_1, \ldots \) etc. are sources of financing of expenditures. The simple, but heroic, behavioral assumptions that \( C_w = a \) and \( C_w = b \), i.e., that all of wage income is used to finance consumption spending and none of profits are so used lead to propositions that profits equals investment and that the price level of consumer goods equals the product of a productivity adjusted money wage and a coefficient that reflects the composition of outputs. By a series of quite straight-forward assumptions, we arrived at a formulation of price level determination,

\[
P_C = a \left( \frac{W_1 N_1}{W_C N_C} + \frac{DF}{W_C N_C} \right) = \frac{W_C}{A'} \left( 1 + \frac{W_1 N_1}{W_C N_C} + \frac{W_1 N_2}{W_C N_C} + \ldots \right),
\]

which shows that prices depend upon the composition of demand.

Underlying this key equation is the simple assumption that all of wages are used to finance the acquisition of consumer goods. Implicit in this equation is the proposition that if money wages rise the entire amount will be spent on consumer goods. Thus, if money wages rise in the production of consumer goods and the supply price rises by an amount equal to the rise in unit money wages, then the demand to purchase the output at a new higher price will be forthcoming. Furthermore, if wages and employment rise in the production of investment goods, then profits in the production of consumption goods will rise. As profits do not finance consumption, there will be no direct secondary effects upon the prices of consumption goods. From this rise in profits, the secondary effects will be indirect, depending upon how wages rise in the production of consumer goods react to a rise in consumer goods prices and...
how investment reacts to a rise in profits. However, both the increased wages in the production of consumer goods and a higher rate of inflation need to be financed. The question in tracing an inflationary process through the economy always comes back to how both supply and demand at higher prices are financed.

The price level and profit relations are the skeleton structure of a theory of the behavior of a capitalist economy. Models of the behavior of investment, money wages, the productivity adjustment, government spending, transfer payments and taxes need to be introduced to complete the model. Each of these, except the productivity adjustments, requires financing.

Demand relations are only part of the mechanism which determines prices, outputs and profits. Supply conditions also affect prices, outputs and profits. The labor needed to produce output by the techniques embodied in existing plants and equipment determines the wage costs that must be recovered in prices; prices finance wages. The continued existence of a firm requires the money costs are either recovered in prices or obtained by some "subsidy" the output prices at which the normal functioning of the economy is assured will cover technologically mandated wage costs, business taxes and business style costs, as well as yield profits that validate debts and prices paid for capital assets. Prices are the mechanism which set up the gross cash flows that cover wage costs, whether technologically determined or due to business style, and taxes. If wages or business taxes rise, then prices must rise if the economy is to validate debts and prices paid for capital assets. Such validation is necessary if investment is to continue and financial investment flows.

A corollary from the above is that if the price level of investment goods rises relative to the price level of consumer goods then the
aggregate flow of profits must increase if the prices paid for investment output are to be validated. But the flow of profits in consumption goods depends upon the wages paid in investment goods production, which depends upon the amount of investment goods output that is financed. The proportion of the effective demand for consumer goods that is financed by other than wage incomes derived from consumer goods production. Thus, if investment goods production does not rise sufficiently to increase profits so that higher capital-asset prices ensue which validate higher costs of investment goods, a government deficit or other profit-enhancing spending is necessary. If higher investment goods prices are to be validated. The large deficits and strongly rising prices during the recovery and expansion phases of recent business cycles, served a needed purpose in floating off high cost investments and the instruments used to finance these investments. Inflation is one way to generate rising profits.

Chronic inflation, of the kind that has ruled since the middle 'sixties, is part of the process by which our economy has avoided the debt-deflations that the true financial structure makes possible and which the various crunches of the years following 1965 could very well have triggered. Inflation is the price we have paid in order to avoid deep depressions. However, the floating-off of debt structures by inflation is a "game" that can be played only a number of times; the propensity to expand into a boom is atrophied once investors require returns that are large enough to compensate for the prospects of higher inflation rates and an increase in defaults.

Chronic inflation is an attribute of an economy that is cyclically unstable, but which has changed the shape of the business cycle so that debt deflations do not occur. Inflation in such an economy can be broken if government once again becomes small and that a destructive debt deflation and brief depression can happen, so that the unstable structure is changed so that
Our basic theory explains investment and its financing and how financial investment determines profits by way of mark-ups in money wages, adjusted for the efficiency of labor in the production of consumer goods. However, no explanation of prices and of the forces in our economy—i.e., complete without taking into account how wages (both money and relative), savings and of wages, consumption out of profits (including the salary income that are generated by business styles) market power of businesses and taxes and government spending affect the demand or supply conditions for output. Supply prices—and the course of supply prices over time—are designed to cover costs. Wages, taxes, and the historic cost of capital as reflected in outstanding undetermined assets that are included in supply prices. Whether such supply prices can be achieved depends upon the course of demand.

Each of the items listed as affecting the demand or supply conditions for output are at any moment of time determined within the ruling institutional structure. The course of the elements in any pricing formula reflects these institutional structures, however, the movement of prices that results with these institutional

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Inflation is determined by the way financial aggregates relate to the underlying demand for financing. Then the theory of inflation that emerges from this analysis is that there are various demands for external financing that result from the way various markets and government programs work and what happens to prices, outputs, and the stability of the economy depends upon how "supply and demand" in financial markets influence the supply of finance and ultimately determine the price. Prices are mostly the derivative of the way the financial system reacts to profit opportunities.
the market processes which generate financial structures that are conducive to debt deflations are diminished in importance.

We have examined the investment and related financial loops that enter into expanding the skeletal model. We showed how investment under capitalist conditions is both affected by and affects financial conditions. Whereas the standard neo-classical and the conventional Keynesian theories emphasize that investment determines employment and productive capacity, the theory we constructed shows that investment also determines profits, and thus the cash flows, that validate the financial structures.

We have developed an investment theory of aggregate demand and profits and a financial theory of investment. Given the nature of banking and the inherently conjectural nature of the decisions that lead to investment and liability structures, several major theorems emerged from the analysis of investment and finance. A capitalist economy with sophisticated financial institutions is inherently unstable. Its path will be cyclical; these cycles will contain episodes that can be characterized as financial crises. However, this theory is incomplete, for explanation of the behavior of productivity deflated money wages, government taxes, and government spending is needed.

The determination of money wages is critical in any theory of inflation. How money wages are determined and the effect of variations in money wages and relative wages upon prices and profits need to be examined. The process of determining money wages, as well as those business expenditures which result in wages, but which are related to business style and are interpreted as an allocation of profits, are affected by institutional...
In our economy, money wages are not determined as neo-classical theory seems to assert by having the quantity of money determine the price level of output and having output prices transform the abstract marginal productivity of labor, as determined by the techniques embodied in capital assets, into money wages. In our economy, money wages exist as a result of wage bargains. Money wages lead to money supply prices for different outputs. Financed investment demand leads to the mark-up on unit labor costs for consumer goods. In the more complex and purchased input determine out of pocket costs, not wages. Money wages still lead to the supply price of different outputs, but consumption financed by incomes earned in producing investment goods, government financed demand, and the foreign trade balance combine to determine the gross mark-up on unit technologically determined labor costs. Prices in every case are some market determined mark-up on unit labor costs.

We distinguish between two types of inflation. In the first kind, the unit labor costs that are determined by technology and money wages do not rise or rise but slowly, and the mark-up on wages due to consumption spending "financed" by investment goods production and other sources such as government employment, transfer payments, and profits, increases relative to wage incomes from consumer goods production. In the second kind, unit labor costs increase because money wages in the production of consumer goods increase significantly faster than average output per worker. The first type of inflation, which occurred during normal cyclical expansion, tends to be self-limiting. In history, the second type of inflation usually occurred during wars, when government demand kept increasing the mark-up even after full employment was realized. The second type of inflation has
become a characteristic of current economies, in which fiscal policy, in the form of investment inducements and transfer payments, is the keystone to government contra-cyclical policies. The secular rise in the proportion of consumption spending financed by investment, government spending, and the consumption financed by profits in the guise of business style wages puts downward pressure on price deflated wages of production workers. Such falling, or static, price deflated production worker wages can lead to labor market reactions that generate large increases in money wages. However, even if large increases in money wages take place, there is no guarantee that inflation will take place for the various components of demand at the higher prices have to be financed. In our modern institutional set-up, increases in money wages and profit margins are often validated by accommodating increases in bank financing or government deficits. Governments and central bankers may have lost the initiative in determining what and how much will be financed by the symbiotic relations between business, banks, and trade unions because of the political commitment to moderating employment.

In this chapter, various aspects of price level determination will be examined. One conclusion of the analysis is that the inflation that has ruled since 1966 is largely caused by the explosive growth of government, especially, but not exclusively, government transfer payments.
II. This Analysis as Keynesian Theory

That money wages, and thus money wage bargains struck by business and trade unions, affect the price level, relative prices, and the course of output prices in a capitalist economy is a natural proposition within Keynesian analysis. In terms of the logic of Keynesian theory, the proposition that money wage changes relative to productivity changes determine the price level for any given structure of demands is necessary because the supply of money, which is used to determine prices in neo-classical theory, is assigned in the formal structure of Keynesian theory to the determination of the price level of capital assets.

In the standard expositions of the content of The General Theory, the determination of the price level is "vague." In textbook versions, the proposition is often advanced that Keynes' explanation of unemployment is due to an assumed rigidity of money wages. This "textbook" proposition is curious, because The General Theory grew out of an attempt to explain the Great Depression. During the Great Depression, in the short span of 1929-1933, hourly wages in manufacturing in the United States fell by some twenty two percent and the price level by thirty percent. Money wage and money price rigidity were not evident characteristics of the epoch. The recursive Debt deflation process, described by Fisher and fundamental to Keynes, depends in critical ways upon the existence of flexible prices and wages. In one scenario, the "money" and "financial" variables are assigned to the determination of the price level of capital assets, the neo-classical synthesis.

2 In 1933, average gross hourly earnings in agriculture was $.115. The "dollar a day" wage standard survived from the Civil War to the Great Depression.
Furthermore, we know that

\[ I = y \cdot N. \]

and that

\[ I_C + I_T = y \cdot N. \]

furthermore, we know that

\[ I_T = \frac{y}{w}. \]

In symbols, this gives us good.

\[ I = y \cdot N, \]

\[ I_T = \frac{y}{w}. \]

and production adjust so that profit equals investment.

However, investment that is financed, in the Keynesian model, prices

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and production adjust so that profit equals investment.

Furthermore, investment that is financed equals the sum of wages, i.e.,

employment of the various surpluses equals the sum of the deficit. Furthermore, the Keynesian theory has the details of the economy, the prices, wages, outputs, and employment adjusting so that a simultaneous clearing of all markets takes place.

Keynesian theory depends upon money, whereas the new classical theory does not. Keynesian theory is based on the so-called real world, whereas the new classical theory is based on the so-called ideal world.
(3) \[ P_C = \frac{W_C}{A_C} \left( 1 + \frac{W_I}{W_C N_C} \right) \]

As a result, we have that

\[ P_C = \frac{W_C}{A_C} \left( 1 + \frac{W_I}{Q_C} \right) \]

and

\[ \left( P_C - \frac{W_C}{A_C} \right) Q_C = W_I N_I \]

The difference between prices and unit labor costs of consumer goods multiplied by the various outputs must equal wages times employment in investment good production. The money wage rate in the production of investment goods is a key "parameter" which regulates the outputs, prices, and profits of various consumer goods. As we also have that

(5) \[ P_C = \lambda \frac{W_C}{A_C} \]

where \( \lambda \) is the "mark up" coefficient determined by the various "demands" for consumption goods that are financed by other than the wage bill in consumption goods. It is obvious that the course of money wages affects the course of prices. If we manipulate equations to get a logarithmic transformation of expression and then differentiate, we get that

(6) \[ \frac{\dot{P}_C}{P_C} = \lambda \frac{\dot{W}_C}{W_C} + \frac{\dot{A}_C}{A_C} \]

which says that the percentage change in price level of consumer goods equals the sum of the percentage change in the mark-up and the percentage change in the money wage rate minus the percentage change in the productivity of labor. This, or a similar equation, is fundamental to those conventional arguments that too great an increase in money wages causes inflation, except that the effect upon the rate of inflation of the coefficient \( \lambda \) and the way in which \( \lambda \) is determined by investment, government deficits, and
the business style of the economy is often neglected.

If \( \frac{\lambda}{\lambda} \) is ignored, the rate of inflation equals the rate of change of money wages minus the rate of change of labor productivity. Both the rate of change of money wages and of labor productivity are of those commodities which enter into the price index of consumer goods. It follows from equation 6 that, if per unit labor costs for wages need to include the cost of fringe benefits increase by 8% per annum and labor productivity increases at a 2% per annum rate, the rate of inflation will be 6%. Note that this argument is a "demand" argument: the demand price per unit of consumer goods will increase by the difference between the rate of change of money wages and productivity.

The thrust of this argument is that part of the explanation of inflation is to be found in the course of money wages in the production of both consumer goods and other outputs. However, as the course of prices, which determines upon the composition of outputs, as exemplified by \( \frac{\lambda}{\lambda} \), it is evident that the course of money wages alone does not determine the course of consumer goods prices.

As \( \frac{\lambda}{\lambda} \) is identified with the composition of output, the course of prices depends upon investment demand, government spending, transfer payments, taxes, and the spending that goes under the rubric of "business style." Inflation is not simply a result of inept monetary or fiscal policies or of tax market power by business or trade unions. Inflation is the result of fundamental "decisions" about the composition of output, the demands that will be financed, and the sources of disposable income.

The determination of the course of consumption prices by the composition of the
demand that is financed and by decisions to spend non-wage incomes on consumption is a theory of price level determination that is compatible with the emphasis upon financial flows in the economics of Keynes, whereas a view that prices are determined by money supply is not. For it is the government and investment demands, that are financed at prices which reflect money wage rates in investment goods production and government employment, that generate the wage flows that finance demand for consumer goods that are supplied at prices that reflect the money wages in consumer goods. It is true that the money wage rate sets a normal supply price of output, but if a rise in money wages is to be effected, then the amount of investment (financing) and government demand must rise along with the money wage rate.

...Well argued. Could use fewer adverbs, copy...
III. An Aside on Monetary Rules

A monetarist proposition is that the monetary authorities should aim to achieve a constant rate of growth of the money supply. Furthermore, it is held that they are capable of achieving this objective. This is desirable because a constant rate of money growth will achieve a constant rate of price inflation. Fully anticipated price inflation at a constant rate will lead to a "natural rate" of employment as well as to the "natural rates" of the various outputs and to a "natural" distribution of real income. According to Professor Friedman, this is so because the "real" economic results—employment, its allocations, various outputs, relative prices, including wages, and the real interest rates—"would be ground out by the Walrasian system of general equilibrium equations, provided there is imbedded in them the actual structural characteristics of the labor and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labor availabilities, the costs of mobility, and so on."

Once the real results are determined independently of money market phenomena, then the only thing left for the rate of growth of money to do is to affect the price level.

Professor Friedman's assertion as to what the Walrasian System of general equilibrium equations tells us is a great big "hand wave." First of all, "the Walrasian System of general equilibrium equations" does not grind out outputs, employment, and relative prices—market processes

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determine economic reality. The Walrasian System of general equilibrium equations is an attempt to model reality and the existence of a consistent solution to the set of equations set up by the Walrasian model has been shown to exist only for very abstract systems, none of which make allowance for even a meaningful sample of the listed institutional relations, let alone the big bag of "and so on." Thus, Professor Friedman's assumption that monetary analysis can "begin" with an assumption of an underlying determinateness of employment, the distribution of employment, and the relative shares of wages and profit incomes in total incomes is not warranted. The argument that stable monetary growth, adjusted for output growth, will only affect the price level is based upon a false premise.

The quantity theory equation \( MV = PQ \) transformed into a logarithmic form yields

\[
\frac{\dot{M}}{M} + \frac{\dot{V}}{V} = \frac{\dot{P}}{P} + \frac{\dot{Q}}{Q}.
\]

If we assume that \( \dot{V}/V = 0 \) and that \( \dot{Q}/Q \) increases only because of higher average productivity of labor, so that \( \dot{Q}/Q = \dot{A}V/AV \), we get

\[
\frac{\dot{M}}{M} + \frac{\dot{V}}{V} = \frac{\dot{P}}{P} + \frac{\dot{A}V}{AV}.
\]

The \( \lambda \) coefficient in equation 4 represents the composition of output. According to Professor Friedman's complex, open-ended, and heroic assertion about the results obtained from the Walrasian System of general equilibrium equations, the composition of outputs is fixed, so that \( \lambda/\lambda = 0 \). Thus, equation 6,

\[
\frac{\dot{P}_c}{P_c} = \frac{\lambda}{\lambda} \frac{\dot{w}_c}{w} - \frac{\dot{A}_c}{A_c} \frac{\lambda}{\lambda},
\]

becomes
\[
\frac{\dot{P}_C}{P_C} + \frac{\dot{A}_V}{A_V} = \frac{\dot{w}_C}{w_C}, \quad \text{and if} \quad \frac{\dot{P}}{P} = \frac{\dot{A}_V}{A_V}, \quad \text{we have} \quad \frac{\dot{P}_C}{P_C} + \frac{\dot{A}_V}{A_V} = \frac{\dot{M}}{M} = \frac{\dot{w}_C}{w_C},
\]

that is,

\[
\frac{\dot{M}}{M} = \frac{\dot{w}_C}{w_C}.
\]

Inasmuch as \(M/M\) is assumed by monetarists to be controlled by the monetary authorities, so that the path of \(M/M\) is a policy variable, we have that, in Friedman's view, \(\dot{M}/M + \dot{w}_C/w_C\) monetary changes lead to wage changes.

Friedman's view of the world is that, once the institutions of the labor market are fixed, the causal chain for inflation runs from monetary changes to money wage changes. The Friedman view of the world leaves no room for the bargaining and market processes which determine wages, unless it is argued that each bargaining negotiation is a "structural change." But this view of a "structural" change reduces the concept to a rather meaningless term. Furthermore, if the structural characteristics of the economy are always changing, then the important determinants of what happens lie in the structural changes that take place and Economics, to be relevant, needs to explain the course and significance of the structural changes that occur.
Brakers are in business to accommodate customers, which means that a rise in the demand for financing will lead to a rise in bank holdings of assets and in bank liabilities outstanding. Thus, a rise in \( \frac{W_1N_1}{W_0N_C} \) will mean a rise in bank credit outstanding which implies that bank liabilities outstanding will increase. Furthermore, a rise in \( W_C \) will mean that consumer goods producers are using more bank credit. The causality chain which starts with \( \frac{W_1N_1}{W_0N_C} \) increasing, has \( \frac{W_C}{W} \) and \( \frac{\dot{M}}{M} \) drawing forth an increase in \( \dot{M} \), that is,

\[
\frac{\lambda}{\lambda} + \frac{W_C}{W} + \frac{\dot{M}}{M}.\]

In this endogenous money path, the normal processes which determine investment demand and wage bargains lead to a demand for financing. If the supply of financing is responsive, and it is responsive, then money changes will reflect the behavior of the price determination relations of our model.

Enjoyed this section. Two points worry me:

1. On p.16, you need to say more re the aggregation mechanisms or refer to earlier chapters, e.g. 11. Is more at stake than the rather cryptic discussion on this page.

2. The \( \dot{A}_C \) and \( \dot{A}_V \) reconciliation needs to be spelled out. See my note on p.15.
IV. Money Wages and Price Deflated Wages

In professional and public discussions of economics, "real" wages and interest rates are distinguished from nominal or money wages and interest rates. This distinction and terminology are legacies of and make sense within the neo-classical synthesis. This is so because in this theory labor supply and demand are determined by the output that can be exchanged for labor and the output that labor can produce. Thus, the "price system" generates wages only in relation to the prices of what wages buy and what labor produces.

The proposition that labor supply and demand depend upon the ratio of wages to prices is not a conclusion of the analysis; it is there by assumption. In order to prove that a decentralized market leads to a coherent result, neo-classical theorists find it necessary to assume that the labor supplied and demanded is governed by price deflated wage rates. It is convenient for neo-classical theorists to assume that labor is supplied only because labor income yields command over consumption goods and that an increase in the supply of labor will be forthcoming only in exchange for increases in price level deflated wages. Neo-classical theory is wedded to a simplified "Benthamism" in which "good" is identified with commodities and services received, and evil is identified with work. Any conception of "man" which goes contrary to the Benthamite view, in particular, a conception which recognizes that the market only delivers a part of what "man" aims for, does not fit into neo-classical theory.

Even if the Benthamite blinders as to what motivates labor are accepted, the narrow focus on wages relative to prices is not sufficient to
explain how wages affect what happens in an economy in which there are financial contracts that are denominated in money. In such a world, money wage rates and money profit flows determine whether payment commitments can be fulfilled. The ability of a worker with mortgage and consumer durable debt to fulfill outstanding contractual obligations can improve when money wages rise, even if the price level of current consumption rises with money wages, and the ability to fulfill contractual obligations can diminish when money wages fall, or when prices of price-inelastic current consumption items rise relative to wages. In a like manner, businesses with money payment commitments are concerned about their flow of gross money profits and not with the ratio of profits per unit of output to wages per unit of output. A rise in money wages means that the same, or even a slightly smaller, percentage mark-up will yield a larger money flow. If the gross money profits in consumption goods production equals the wages paid in investment goods production, then the gross profits in consumption goods will rise when money wages in investment goods rise. Symmetrically, a fall of money wages in investment goods production, even if employment is sustained, leads to a reduction in the ability of consumption goods producers to meet financial obligations.

Prior to the development of various price support programs, the relation between the fulfillment of commitments on debts and prices was most
clearly exhibited in agriculture. A fall in the demand for agricultural output, or an increase in supply, would lead to a fall in the price of products, which was quickly transformed into an inability of the farmers to fulfill debt commitments. (i.e., the cash flow required was not available.)

In a world with inter-temporal contracts denominated in money, the course of money wages and money prices helps determine whether financial contracts will be fulfilled. If money wages and prices increase by the same percentage, the real wage does not change, but the money cash flows per unit of output available to meet payment commitments increase. The inverse is true if money wages and prices fall.

Even though wages and salaries are set in money terms in our economy, this is not a necessary attribute of the labor compensation system. Under crop sharing, company towns, and paternalistic corporation compensation systems employees receive at least some of their compensation in goods and services. In a contemporary labor contract in the United States, the package of health services provided for in the contract is often set in terms of the services to be provided, not the costs to be borne.

When employers agree to provide employees a packet of goods and services, then a rise or a fall in output prices relative to the prices of goods and services the employer has undertaken to provide has an amplified effect upon the cash flows of the employer. In current labor market contracts the agreement to provide medical services makes the employer vulnerable to increases in medical costs unless any increase in medical costs can be passed on in product prices. In order to be able to pass on such costs the employer either needs to have a reserve of monopoly power which can be exercised if needed, or the rise in costs must.
apply to all units in an industry or demand for consumption output needs to rise. If we consider medical payments by employers as the equivalent to an allocation of profits to finance consumption, then demand and prices need rise by the amount necessary to increase the "gross profits" so that medical care can be financed.

One peculiarity of employer-provided medical care schemes is that a rise in medical care prices shows up twice in the price index. Once in the price of medical care as such and a second time in the price of the products which furnish the sales revenues that pay for employees' medical care. The extraordinary inflation in medical care costs has not only raised the price of an appendectomy but it has also raised the price of a Chevrolet.1 One effect of wide area trade unionism is to make the costs of all producers move in the same direction. Devices such as the exemption of employer-provided medical care from the tax base of the employee, which encourages the provision of this fringe benefit, may be interpreted as ways of assuring that all employers' labor costs move in the same direction when medical costs increase.

However, given that most although not necessarily all, labor renumeration is in money terms, the well-being determined by commodity flows that wages can provide depends upon what this money income will buy. Whereas wage bargains between employees and employers are struck in money terms, what the wage will buy is determined by the way prices behave. Individual wage contracts and government actions that affect labor compensation determine money wages; the command over goods and services that

1 The Wall Street Journal of May 10, 1978 reported that some automobile companies are ready to begin experimenting with closed panel health maintenance organizations in lieu of the insured "fee for service" medical care system. As international competition in the automobile market increases, the ability of companies to pass through higher medical costs in prices diminished for not all companies have the same "cost of medical service" input.
money incomes provided is determined by market adjustments. Inasmuch as wage negotiations often lead to contracts that involve a large number of workers and affect the supply price of significant outputs, it is important to recognize that changes in money wages, and other terms in labor contracts, set a process in motion. A labor contract does not establish a result. Between a wage contract and the standard of life delivered to workers stand economic adjustments that are triggered by wage contracts. Instead of starting, as neo-classical theory does, with the "economic process" determining relative prices, including the wage-price ratio, and money and financial markets setting nominal prices, it is best to begin with money wages being determined by bargaining and market interactions. Money wages, in turn, set off market adjustments which determine money prices. Thus, changes in the bundle of goods delivered by changes in money wages depend upon the way prices react to changes in labor costs and particular demands.

A similar distinction applies to government actions, whether legislated or administrative. Government actions do not determine an outcome; government actions start a process. What is actually "delivered" and to "whom" is not determined by the government decision alone; it also depends upon the way markets interact. Many government actions turn out not to deliver what they were designed to deliver and not to affect the intended target in the desired manner.

To understand the effect of money wage changes and government interventions, it is necessary to understand how markets behave. Major trade union contracts are like government policies in that they start interactive market processes. The end result that a
union contract delivers can be far different from the intended result.

A confusion between what can and cannot be delivered by negotiations and government interventions permeates both labor negotiations and government. Neither legislation nor collective bargaining can mandate a "real" result. All that can be done is to start a process that operates within the institutional set-up that prevails.

The price level of consumption goods relation for the skeletal specification of the economy cited above is

\[
P_C = \frac{W_C}{A_C} \left( 1 + \frac{N_I}{N_C} \right),
\]

where \( \mu \) is the ratio of wages in investment goods production to wages in consumption goods production (\( W_I/W_C \)). We therefore have that

\[
\frac{W_C}{P_C} = \frac{A_W}{A_C} \frac{A_C}{1 + \mu \frac{N_I}{N_C}};
\]

The purchasing power of the wages of labor depends "directly" upon the average productivity of labor and inversely upon the ratio of employment in investment goods production to employment in consumption goods production. Inasmuch as \( A_V = Q_C/N_C \), the above reduces to

\[
\frac{W_C}{P_C} = \frac{Q_C}{N_C} \frac{1}{\mu + \frac{N_I}{N_C}}.
\]

An implication of the above is that the purchasing power of wages will increase if the output of consumer goods increases faster than total employment as modified by the relative wages in investment and consumption goods industries. If employment in investment goods industries and the relative wages in investment goods production increase fast enough,
then the purchasing power of wages in consumption decreases. If the output of consumption goods, $Q_C$, is proportional to employment producing consumption goods, then the purchasing power of money wages in consumption goods industries will decrease whenever the product of the wage ratio and employment in investment goods increases faster than employment in consumption goods.

If investment increases the average productivity of workers in consumption goods industries, then $Q_C$ will increase even if $N_C$ does not change. A rise in $Q_C$ with $N_C, N_I$ and $\mu$ constant, will tend to raise $W_C/P_C$.

Phrased another way, in a regime with constant money wages, if investment increases productivity in consumer goods production, then prices will tend to fall. There is an internal mechanism in a technologically progressive economy that tends to make prices fall. Normal functioning of a progressive economy will be associated with a downward pressure on prices.

The skeletal model also yields the result that

$$\left( P_C - \frac{W_C N_C}{Q_C} \right) \frac{W_I N_I}{Q_C} \text{ equal to}$$

The unit profit margin in the production of consumer goods is the wage bill in investment goods divided by the output of consumer goods. As $Q_C$ rises, the profit margin per unit of consumption goods $W_I N_I/Q_C$ decreases even as labor costs per unit of output $(W_C N_C/Q_C)$ falls. The price of output $P_C$ falls. The gross profits may remain constant, but only because quantity increases. However, if the increase in productivity is a result of a net increase in capital assets used in the production of consumer goods, then the profit per unit of capital assets will decline. Gross profits need to increase, or the capitalization rate of profits needs to increase, if capital asset prices are to be maintained. This can occur if $W_I N_I$ increases as net
investment takes place, or if the risk premium in the capitalization rate for realized and prospective profits decreases so that the capitalization rate increases.

If the sum of the 'depreciated' value of the inherited stock of capital assets, valued at the price that drew forth investment, and the new investment at its purchase price is to be validated then, unless capitalization rates increase, either money wages or employment in the production of investment goods needs increase. If there is slack in the economy, then investment goods production can increase. If there is no slack, then the value of the capital stock in nominal terms can be maintained by increasing money wages in investment goods production, or by shifting workers from the production of consumption goods to the production of investment goods.

If \( W_C \) increases with \( A_Y \) so that \( W_C / A_Y \) is constant, then a constant ratio of the wage bill in investment goods to the wage bill in consumption goods will yield a constant mark-up on labor costs per unit of output.

Rising wages and constant prices are believed to be more conducive to realizing the profit flows that are needed to validate debts entered into to finance capital asset ownership than constant wages and falling prices. Inflating out productivity increases so that prices, including the supply price of investment goods, do not fall, helps sustain the viability of debt financing. The more important the external financing of investment and positions in capital assets in an economy, the more important it is to have rising wages that offset the tendency for prices to fall in a technologically progressive economy. As the external financing of capital asset ownership increases whenever the complexity and expense of capital-assets increases, a capitalist economy which uses capital intensive modes of production will tend to have an "inflationary" bias.
A number of propositions follow from the above. One is that one way to slow down and stop inflation is by the production of consumer goods. If an economy's output of consumer goods increases rapidly, the price level will tend to decline. Such a flood of consumer goods will occur if consumer goods output increases at a faster rate than the wage bill in the production of consumer and investment goods. A second is that programs to increase investment and investment employment lend an inflationary bias to an economy. Furthermore, if this investment emphasis occurs in a world where relative wage rates reflect either market excess demands or union bargaining strengths, an emphasis upon investment as the source of employment and economic growth tends to increase the demand for labor in investment goods industries. Such an increase in demand will raise the bargaining strength of those unions whose members produce investment goods. This will tend to increase investment goods wages relative to consumption goods wages. This rise in investment goods wages will tend to raise the price of consumer goods beyond that required by the increase in investment goods employment. An expansion of investment output lowers the purchasing power of workers in consumption goods production because of the combined effects of increased employment in investment goods production and higher wages in investment goods production upon the price of consumer goods relative to wages in consumer goods production. If money wages in investment goods rise relative to money wages in consumption goods, it is possible for \( \frac{W_i}{W_c} > \frac{P^C_P}{W_c} > \frac{W_i}{W_c} \). Therefore, for the purchasing power of money wages in investment goods to increase even as the purchasing power of money wages in consumption goods decreases. A third implication is that if the effect of increased labor productivity is not offset by an increase in the wage bill in the production of investment goods, then the profits per unit of output will decrease. In these circumstances, gross profit flows may not be sufficient
to sustain the market value of the capital stock that has been augmented by investment flows.

The above propositions about the relations between money and wages, prices and profits in consumption goods production are based upon the skeletal model of price and profit generation. If the more complex price formation relations which allow for government, consumption out of profits and savings out of wages, are examined, we get:

\[
P_C = \frac{W_C}{A} \left( 1 + \frac{W_{I}N_I}{W_{C}N_C} + \frac{Df}{W_{C}N_C} + \frac{(\Pi - \Pi_G)}{W_{C}N_C} + \frac{\xi \Pi^*}{W_{C}N_C} - \frac{s^*_W}{W_{C}N_C} \right)
\]

or

\[
\frac{W_C}{P_C} = \left( 1 + \frac{W_{I}N_I}{W_{C}N_C} + \frac{Df}{W_{C}N_C} + \frac{(\Pi - \Pi_G)}{W_{C}N_C} + \frac{\xi \Pi^*}{W_{C}N_C} - \frac{s^*_W}{W_{C}N_C} \right)
\]

The purchasing power of money wages is inversely related to the size of the demands for consumption goods that are financed by other than the income derived from the production of consumer goods. Inasmuch as \(A_C = Q_C/N_C\), the equation could be written as

\[
\frac{W_C}{P_C} = \frac{Q_C}{N_C} \left( 1 + \frac{W_{I}N_I}{W_{C}N_C} + \frac{Df}{W_{C}N_C} + \frac{(\Pi - \Pi_G)}{W_{C}N_C} + \frac{\xi \Pi^*}{W_{C}N_C} - \frac{s^*_W}{W_{C}N_C} \right)
\]

It is evident that an increase in the output of consumer goods without a proportionate increase in employment in consumer goods production will tend to increase the purchasing power of money wages in consumer goods.

---

In these equations, we have \(D_f\) = the government deficit, \(\tau_p\) = taxes on profits, \(\Pi_G\) = profits from producing output for the government, \(\xi \Pi^*\) = consumption out of after-tax profits and \(s^*_W\) = savings out of after-tax wages. These can be further expanded and elaborated.
production. Furthermore, if the wage bill in consumer goods production increases because \( N \) and \( Q \) increase in (approximately) the same proportion, then, because the various ratios in the denominator, such as \( W_{CN} / W_{CC} \), \( DF / W_{CC} \) and \( \frac{\text{NOMINATE}}{W_{CC}} \), will tend to decrease, the price deflated wage will tend to increase. A rise in \( W_{CN} \) which decreases \( SW / W_{CN} \) will tend to raise \( W_{C} / N_C \) Symmetrically, if any of the numerators of these ratios, once again excepting \( SW \), tends to fall, the ratio \( W_{C} / P_{C} \) will tend to rise. The course of the purchasing power of wages in the production of consumers' goods depends upon the behavior of income sources other than wages in the production of consumer goods that finance spending on consumer goods. These other sources are wage incomes in the production of investment goods, government employment and the provision of ancillary services, transfer payments, and profits that are distributed and thus available to finance consumer goods and spending.

From the above equations it is evident that a rise in \( \Pi \) will raise prices. But we have identified \( \Pi \) as consumption spending that is financed by an allocation of profits not only to dividends, but also to "business style" spending on labor. Increased spending by firms on medical care, advertising, product development, etc., both raise average cost curves that rest on the technologically determined marginal cost curve and raise demand for consumer goods as the wage and other costs of these activities become consumer income. As such expenditures both raise unit costs and raise prices; they are in the nature of self-fulfilling prophecies. Unless there is a strong increase in \( \theta \), increases in those incomes which can be interpreted as allocations of profits will lead to inflationary pressures.
Inflation has two facets. One is the rise in prices even as money wages remain fixed or increase but slowly; the second is a rise in prices as money wages increase rapidly. These two facets are related. Whenever the way the economy runs leads to a rise in the "numerators in the denominators of equations 15 and 16 (\( W_1N_1, D_1, \) etc.), relative to the rise in the output of consumer goods, then the purchasing power of wages in the production of consumer goods falls. If this fall is sufficiently great, then the expectation is that some combination of union militancy, union aborting procedures on the part of employers, or government intervention (such as raising minimum wages or legislated indexing) will occur. In these circumstances, the economy will tend towards the second type of inflation. The ability of an economy to experience a fall in the purchasing power of money wages without triggering increases in money wages depends upon the institutional arrangements in the economy, the size of the fall, and whether inflation is a regular, anticipated and continual, or an "occasional" phenomenon that is expected to soon stop. Once inflation becomes a regular phenomenon, that is, it is expected to continue, then labor market organizations will evolve towards some sort of "indexing" arrangement, whether legislated or through some bargaining procedure.

The fact that a modest and irregular fall in \( W_C/P_C \) will not trigger a rise in \( W_C \) means that there is a barrier in the social organization of labor markets against inflation. This barrier basically means that small changes in \( W_1N_1 \) relative to \( W_1N_C \), within an environment in which \( W_1N_C \), transfer payments, and consumption out of profits are small, will not necessarily lead to increases in money wages. However, marked
changes in the demand for consumer goods that are financed by incomes that do not lead to consumption goods output will tend to break through the inflation barrier and thus lead to the inflation associated with increases in money wages.

Prior to World War II, capitalist economies were characterized by ineffective, or nonexistent contra-cyclical policy. Not only was government a small part of the economy, but there was little conscious effort to use monetary and fiscal policy to control business cycles. In those days, business cycle expansions were characterized by a rise in investment goods employment and in the proportion of the total wage bill that was derived from investment goods production.

As a result, the purchasing power of money wages \( W_C/P_c \) would fall. This fall in the purchasing power of money wages was accompanied by increased hours and steadiness of work and by opportunities to upgrade status of the jobs for those who had jobs at the expansion started. Thus, the prior employed were better off. The new additions to the employed were better off because they now had jobs. The declining purchasing power of the money wage rate during a business cycle expansion was accompanied by a widespread improvement in the purchasing power of workers' income during expansions. As long as upgrading, increased jobs, and increased hours accompanied expansion so that most workers gained, the upward pressure on money wages were not strong.

Furthermore, in the age of unconstrained business cycles, expansions were relatively short-lived, so that the rises in prices relative to wages were viewed the inflations were accepted as transitory. Because of the gold standard, the elasticity of finance during a business cycle expansion was
limited. Investment "boomlets" quickly led to rising interest rates which tended to constrain the rate of increase of investment. Once investment financing constrained the rate of increase of investments, there were no fiscal stimulants available to sustain or increase profits. The rise in interest rates, combined with the slowdown in the expansion of profits, tended to generate a turn-around in investment activity, which tended to remove the upward pressure on prices. The resultant price stability and even price declines removed the pressures for wage increases to offset price increases.

The peacetime inflations of the capitalist epoch prior to World War II were largely associated with business cycle expansions. As experience showed that cycle expansions were of limited duration, the rise in prices did not lead to expectations of continued rise in prices. Only if there is a belief that the fall in the purchasing power of money wages will continue will institutions appear which have the effect of "indexing" wages.

Four factors in the numerators of the denominators of equations 16 and 17 are of special importance in determining the purchasing power of money wages and thus the course of inflation. These are the wage bill in investment goods production, the government deficit, consumption out of after-tax profits and savings out of after-tax wages. There is nothing to add at this point about the effect of the wage bill in the production of investment production beyond what was learned in the exposition of the simple model. That government wages and transfer payments tend to generate demand for, even as they do not augment the supply of, the consumption goods that enter into price indices is evident.
Any increase in the ratio of such spending to the wage bill in consumption goods is inflationary. The way in which transfer payments affect consumption demand is obviously inflationary.

Any rise in the ratio of consumption out of profits to the wage bill in the production of consumer goods will tend to lower the purchasing power of wage income in consumer goods. In a simple sense, this involves the consumption spending of capitalists financed by dividends, interest, and capital gains. However, in our economy a large proportion of profits, in the sense of revenues minus technologically determined labor and material costs, is distributed in the form of wages to workers involved in administration, marketing, advertising, and other ancillary business functions. The spending of this wage income on consumer goods shows up in a reduction in the purchasing power of wages of labor that is required by the technique of production of consumer goods.

Savings by workers out of these wages that are technologically necessary to produce consumer goods, as well as the savings out of those wages that are technologically needed to produce investment goods, decrease the spending on consumer goods and thus tend to decrease their price of consumer goods.

The most important determinants of the course of prices, therefore, are the "way" the economy is "run," in the sense of the ratio of incomes that are available for spending on consumer goods relative to the wage incomes which arise in the production of consumer goods, and the course of money wages in the production of consumer goods. In particular, the money wages in the production of consumer goods may, or may not, react to a decline in the purchasing power of such wages as the other sources of financing demand for consumer goods increase. Each economy has an "inflation barrier,"
in that a decline in the purchasing power of money wages in consumer goods beyond some point will lead to a rise in money wages. The determinants of the "inflation barrier" are of major importance in determining whether, or at what stage, money wage increases will become a dominant factor in the determination of the course of prices. One specific determinant of the transition to an "open inflation" in which money wages and prices "chase each other" is the existence of large and growing demand for consumers' goods that are financed outside of incomes received in the normal "productive channels". War always leads to such a demand and generous system of transfer payments that are indexed and government policies to incuclue investment also lead to such demand.

The course of money wages is an important determinant of inflation, but it is not the essential cause of inflation. Inflation is first of all the result of financing too many claims on the supply of consumer goods at the inherited set of prices. Any restriction on the supply of consumer goods, such as occurs in wartime or as the result of a draught or any expansion of incomes that will be available to finance consumer goods demand without any concomitant increase in supply will lead to rising prices.

The behavior of money wages in an open inflation of rising money wages and rising consumer prices is more defensive than aggressive. When the financing of consumer demand by way of investment spending, government spending, transfer payments, or "business style expenditure", increases the demand for goods relative to the supply, then prices rise so that the price level deflated wage decreases. Such inflation occurs when employment is relatively full and business profits are high. These conditions are conducive to rising money wages. Trade unions make the money wage response
quicker and, according to the available evidence, seem to make the money wage increase greater for their members when this occurs.

The "new thing" that has been added in the past decade is the phenomenon of inflation, including increases in money wages, persisting in times of relatively high unemployment. However, these "new" stagflations have taken place in an era in which transfer payments have been increasing rapidly, government deficits have been larger during periods of relatively full employment and exploded when unemployment increases, and government wages and wage bills have been increasing rapidly. Thus, business gross profits and prices were sustained and even increased during the recessions of the late 1960's and early 1970's. Government policies which perhaps quite inadvertently sustained profits enabled business and the banks to survive the financial trauma of 1966, 1969-70 and 1974-75.

The fall in price deflated money wages during recessions because of profit inflation that effectively halts the thrust towards debt deflation after the financial trauma, together with the prior success of trade unions in raising money wages in the relatively tight labor market of the boom prior to the financial trauma, means that the institutionalized strong unions will apply pressure to raise money wages during periods of high as well as low unemployment. This money wage effect is especially likely to occur once government commitments to full employment are established. Thus, open inflation in periods of labor market slack is due to the persistence of profit-generating government deficits which lead to demand-generated price increases in periods of unemployment. The unemployment in these recessions is dominated by unemployment in investment goods production.
If the open phase of inflation is halted, because money wages are restrained but the basic pattern by which the demand for consumer goods is financed by other than money wages of the labor required in the production of consumer goods remains in place, then inflation will persist. True, the rate of inflation will be lower and the distribution of the gains and losses in price level deflated incomes will be different, but a basic inflation that reflects a shortfall of consumer goods relative to the demands for consumer goods that are being directly and indirectly financed will persist. The roots of inflation are systemic. Mere restrictions on money wage increases without affecting the structure of incomes available to finance demand for consumer goods will enjoy at best a transitory success in bringing inflation under control.

A good section. Highly relevant to U.K. 1978. Do check the symbols against those used in earlier chapters. Also try to give an equation page reference when conducting analysis of real wage, unit profit etc. movements. Helps the clarity of the argument.
V. Inflation and the "Trade-Off" with Employment

The Hicks-Hansen Model of income determination that became the basis for the large-scale econometric models virtually ignores price level formation. In the immediate post-war period, as the neo-classical synthesis was hammered out, it became clear that, whereas pre-Keynesian theory was incapable of explaining unemployment, it did have a theory of the determination of the price level and of changes in the price level, and that the Keynesian theory, as it was being formalized, explained unemployment but did not have a theory of price level determination and price level changes. There was, so to speak, an ignored variable and hence a missing equation in the Hicks-Hansen system.

This logical and intellectual vacuum was filled by A.W. Phillips who, on the basis of numbers published by Phelps Brown, argued that there was an inverse relation between money wage changes and the unemployment level. This was quickly transformed into an inverse relation between the unemployment rate and the price level. Samuelson and Solow enunciated this relation in an influential talk they gave to the American Economic Association in 1959.

This Samuelson/Solow argument was enshrined in the doctrine of the trade-off, a proposition that a "price" has to be paid in terms of unemployment for stable prices. In various ways, the unemployment rate

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associated with a stable price level has been identified as a 'natural' rate of unemployment. Friedman and Phelps have developed arguments to the effect that this natural rate of unemployment will be the actual rate of unemployment whenever inflation at a steady rate is both ongoing and fully anticipated. The natural rate theorists hold that the trade-off only exists for transitory and "surprise" rates of inflation which are greater than the anticipated rate.

For example, a zero rate of price inflation may be associated with a 5% unemployment rate when stable prices are anticipated and a 4% unemployment rate may be associated with a 2% unanticipated inflation rate. After 'policy' monetary and fiscal lead to a 4% unemployment rate and a 2% inflation rate, the anticipation of a 2% inflation rate will be built into the system. As this anticipation is building, the unemployment rate will creep up to 5%. Additional fiscal and monetary stimulus is needed if a "surprise" inflation rate in excess of 2% is to yield an unemployment rate of 4%. For example, such stimulus may lead to a 4% unemployment rate and a 4% inflation rate. Thus, the natural rate of unemployment theorists hold that the inflation rate associated with an unemployment rate below the natural rate will tend to "increase" as the anticipated rate of inflation increases. The natural rate of unemployment hypothesis holds that the "trade-off" of Samuelson and Solow depends upon a bluff in the long run, which really isn't so long, the unemployment rate will tend to the rate that would rule with stable price anticipations and the absence of policies to reduce unemployment.

The natural rate of unemployment proposition is a disheartening statement about the limitations of what is possible under a market mechanism.

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except that even Friedman, in the sweeping aside that was cited earlier, throws the "baby" of the natural rate out with the "bath water" of the trade-off, as he recognizes that the "natural rate" is an institutional phenomenon. Friedman defines the "natural rate of unemployment" as the measured rate that would be ground out by the Walrasian system of general equilibrium equations, provided there is embedded in them the actual structural characteristics of the labor and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labor availabilities, the costs of mobility, and so on." [AER, March 1968, p. 8, "The Rule of Monetary Policy."]

As was noted earlier, the system of output prices, employment, wages and profits we observe are not "ground out" by a "Walrasian system of general equilibrium equations". The observations are ground out by market mechanisms. The equations of theory are representations of reality, not reality, and the equations are used to infer propositions that cannot be observed. The key propositions ground out by the Walrasian system are that equilibrium and a tendency towards equilibrium exist. It so happens that the existence of and tendency towards equilibrium can be demonstrated for systems of equations which abstract from capital assets, time, financial interrelations, and "the actual structural characteristics of the labor and commodity markets...". Once the equation systems are extended to include monetary and financial interrelations, then neither the existence of nor a tendency towards, equilibrium has been demonstrated.

Cite: Ch. 14. Arrow & Hahn.
## Inflation and Unemployment

1948 - 1977

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### Inflation and Unemployment (continued)

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**Source:** Economic Report of the President, 1978.
The existence of a "natural rate of unemployment" is not "proven" by theory, it is a consequence of the view that preference systems over commodity flows and labor services, and production functions over commodity flows and labor services determine system behavior. This implies that monetary and financial variables can only induce perturbations. If anything, the view that a natural rate of unemployment exists is an empirical generalization about the operations of an actual economy with specific institutions. It is true that the attempt to maintain employment at low levels has resulted since the middle 1960's in both higher average unemployment and higher rates of inflation. But alternate explanations to inflation and deflation are avoid.

The attached diagram relating the rate of inflation as measured by the consumer price index and unemployment rates during calendar years 1948-1977 shows that no obvious consistent relation exists between the rate of inflation and unemployment rates over the entire period. During the 1960's (1961-1969), the years characterized by the Kennedy-Johnson expansion, there is an inverse relation between unemployment rates and inflation, an inverse relation which seems to assert that at or below 4% unemployment, the cost of slight improvements in the unemployment rate will be a substantially higher inflation. It is also evident that in 1952 and 1953 low unemployment and low inflation rates were realized. No evident relation with the clear message of 1961-69 emerges for the years prior to 1961 and after 1969. Both the years prior to 1961 and the years after 1969 are characterized by "circular" motions, which indicate that at least there are parameters which shift the "inverse relation"
between unemployment and the price level around. If anything, the post-war combinations of unemployment rates and inflation show either that a wide range of inflation rates are compatible with any particular unemployment rate, or that there has been a drift towards greater rates of inflation being associated with greater unemployment rates.

The seeming corroboration of the Phillips hypothesis by British data over the long time span of 1862 to 1957 and the apparent contradiction of the hypothesis by the data for the United States in the post-war period constituted a challenge to econometricians. The challenge is to develop a theory which can be transformed into some equations that may be confirmed with data, to demonstrate that when various complex inter-relations are taken into account, the trade-off between unemployment and price stability remains valid. Being skilled, imaginative, and persistent, econometricians have generated a vast literature which either demonstrates or refutes the proposition that a trade-off exists. However, this literature teaches us about the skill of econometricians when computer time is virtually free, not about the world. Well put!!

A more natural way to follow up on the observations is to accept the evidence of relatively raw data, which indicates that sometimes there is a trade-off of the kind that Samuelson and Solow announced and in other occasions the markets work so that there is no trade-off. Furthermore, it seems almost self-evident from the data that over the thirty years since World War II, but particularly in the years since 1966, there was a marked increase in the tendency for prices to rise. An inflationary thrust seems to be characteristic of our economy.
The natural questions to ask, once the data are accepted as being basically valid, are: "How do 'the actual structural characteristics of the labor and commodity markets' that Friedman refers to in his handwave affect the relation between unemployment and the rate of increase in prices?"; "Are there ways of organizing labor and commodity markets so that the relation between unemployment and inflation differs from that which now seems to rule?"; and "Are there ways of organizing labor and commodity markets so that the economy can have constant, or even falling, prices with close approximations to full employment?".

The structural characteristics of labor and commodity markets have two sets of characteristics. One is the way the economy is being run; the extent of investment and government; the inducements to invest; the monetary policy; the tax system; etc. The second is the institutional structure of labor and commodity markets, in particular, the way in which wages and prices are set in different sectors. This comes down in part to the strength of trade unions, but it also relates to the effects of trade associations, government payment and procurement policies, and the way in which income maintenance programs are carried out.

The data upon which Phillips based his argument was drawn from trade union records in Britain over a long period that encompassed many business cycles. Aside from war times and in spite of the effects of the British Empire and the essentially free immigration that ruled, the business cycle expansions saw a rise in wages even as business cycle contractions saw wages fall. Inasmuch as the business cycle expansions were characterized by increases in investment and business cycle contractions by decreases,
the price level changes that occurred reflected both the changes in money wages and the changes in the composition of output.

In the basic "skeletal economy" model, a price formula:

\[ P_C = \frac{w_C}{A_C} \left( 1 + \frac{w_1 N_I}{w_C N_C} \right), \]

a slack labor market, along with elastic supplies of consumer goods, will result in \( N_C \), and therefore the output of consumer goods, rising even as \( w_1 N_I \), investment payrolls, increases. In these circumstances, the rise in \( P_C \) would largely reflect any rise in \( w_C/A_C \).

Inasmuch as the evidence indicates that the average output per worker tends to increase in the early stages of a business cycle expansion, an expansion with elastic outputs of consumer goods would be associated with modest changes in prices.

On the other hand, if \( N_C \) is largely independent of \( w_1 N_I \), which is true when labor markets are really tight, then the ratio of \( w_1 N_I \) to \( w_C N_C \) will tend to increase as \( w_1 N_I \) increases. In this case, the mark-up on wage costs will increase. Inflation will be larger and more pronounced when expansions either affected the demand for outputs in fixed supply (such as agricultural outputs, strongly) or when expansions tended to create labor shortages.

If we accept that the "consumer budget" of relatively poor countries is largely spent on agricultural outputs and recognize that agricultural outputs were, until recently, characterized by fixed supply and flexible prices, then it is evident that prices would tend to rise and fall relative to wage rates as output of investment goods increased or decreased.

The inflation process therefore depends in part upon the nature of market organization. If price flexibility is the dominant characteristic
of the market for consumer goods, then a rise in investment will lead to increased demand and higher prices of consumer goods. This will tend to precipitate wage pressures from the suppliers of labor to augment the effects of increased labor demand upon wage rates. On the other hand, if supplies of consumer goods tend to increase as demand increases, then the demand for labor in consumer industries is augmented when investment employment increases even in the absence of strong price increases labor demand conditions are conducive to wage increases.

The formulation of the trade-off between unemployment and inflation rested upon the behavior of wages and prices in an institutional set-up that differed markedly from the current set-up. Three "institutional" differences can be noted. The present United States economy is characterized by: (1) the existence of effective partial trade unionism; (2) the existence of a big government, along with the acceptance of the responsibility of the government for maintaining some approximation to full employment; (3) a great weight in the economy of industries that use expensive and relatively long-lived capital assets. All of the above were missing or took quite different forms in the period in England when the Phillips rules were formulated.

Point 1 means that periods of slack will tend not to be associated with falling money wages and therefore the downward pressure on prices will be attenuated. The demand-creating aspects of "big government", which is one aspect of point 2, tend to maintain, and may actually increase, the mark-up on unit labor costs that can be realized during slack periods. However, big government has another aspect in that the tax schedules that are used to finance big government result in a rise in the supply prices
of outputs.

As government, either in its profit or output taxes or through legislation and social programs, mandates costs, it also, through its expenditures, generates the income that will validate the costs. If, for example, the government raises Social Security taxes and Social Security and other benefits, then the rise in the supply price of output due to the rise in labor costs is matched in the aggregate by expenditures out of the Social Security receipts. Because of the possibility that Social Security recipients might save some of their receipts, the simultaneous impact on supply price and demand is attenuated. A type of Say's Law applies to government expenditures, every time government taxes raise the supply price of output, government spending generates incomes which tend to validate the higher price. It is not just the government deficit that generates inflation. Even a balanced government budget, if total government expenditures are rising relative to incomes, will result in rising prices. Thus, as the reaction to rising unemployment in the years following the middle 1960's has taken the form of increased transfer payments, followed by increased Social Security taxes, a chronic inflationary bias has been associated with the way our big government operates in a cyclical environment.

The United States economy has been more unstable in the years since the credit crunch of 1966 than in the years before the credit crunch. It is also true that the years since the mid-1960's have been years in which transfer payments have increased relative to
the economy and the special Social Security tax has increased fast. Fundamentally, aggregate demand has been sustained since the middle 1960's even when financial market conditions and the prospective profitability of investment in a stable price environment indicated that a recession was due. The sky did not fall in 1966, 1969-70, and 1974-75 exactly because the government's fiscal position sustained aggregate demand and profits. However, these profits that were sustained and increased reflected higher per unit mark-ups on smaller volumes. Inflation resulted from the way we staved off debt deflation. A full employment commitment in a financially unstable economy means that the combination of unemployment and inflation rates will drift upwards and to the right. The Phillips Curve of an economy with our peculiar big government shows that there is a positive association between unemployment rates and inflation rates.

The third institutional difference between our economy and the economy of the era from which Phelps-Brown drew his data is the increased significance of capital intensive modes of production in the economy. This means that the normal functioning of the economy requires "stability" in the cash flows that are generated by means of mark-ups on labor costs. In the basic profit and price formula, the wage bill in investment goods is important. If the wage rate in investment goods is increased even as investment employment is maintained or increased, then the mark-up on unit labor costs in consumption will tend to increase. This means that it is easier for firms in general to validate their debts. Once the "increased" mark-up in wages in consumer goods forces a decline in the purchasing power of wages in consumption, the "stage is set" for an inflationary process that includes increases in money wages.

As money wages increase, even if the mark-up due to $\frac{W^I}{W^C}$ does
not increase, the cash flows per unit of output available to validate debt increases. The inflation of a business cycle expansion eases the cash payment commitments due to debts and thus tends to induce further investment. An expansion tends to generate conditions that are conducive to further expansion until feedbacks from sales expansion and wage increases affect the costs and financing terms of investment. If, in a world with long-term money contracts, money wage increases are either unexpected or, if expected, are also expected to be reversed quite soon in a downturn, then the wage and price increases of an expansion will not induce further investment spending and further wage and price increases. In these circumstances, wage and price increases will be associated with increased investment and a lower unemployment rate.

However, if money wage increases are not only expected but it is also expected that they will continue, then investors will begin to seek out those investments whether they finance output or not, which are expected to maintain their capital value. Various "commodity" and "artifact" bubbles will ensue, be it housing, gold, stamps, diamonds, or what you will, and financing terms will begin to be modified so as to allow for anticipated inflation. Once interest rates fully reflect an anticipated inflation rate, then realization of inflation at the anticipated rate will not ease financial flow obligations. The inflationary process will not lead to further investment. Fully anticipated inflation, or even partially anticipated inflation, means that the connection between investment activity, employment, and price increases is ruptured. The rate of inflation is no longer inversely related to the unemployment rate. Inflation can accelerate even as
unemployment increases if money wages have a built-in momentum and
transfer payments not only sustain, but increase, the mark-up on money
wages.

The Phillips Curve of Phillips and Phelps Brown was a valid generali-

ation of historical observations. It reflected the institutional condi-
tions of a specific era. For it to be valid, the institutional changes
that occurred could not break the profits, employment, and investment
connections. In the big government/trade unionized economy we now have
the link between inflation and investment spending has been broken. As a
result, inflation has become a secular rather than a cyclical phenomenon.
The Phillips Curve generalizations are no longer valid. (1961 - 69 ?)

The significance of the money wages and mark-up analysis of the in-
flationary process is that it allows for a variety of types of inflation:
Inflation can be an "open" wage increase phenomenon; it can reflect the
composition of demand; and it can be due to an exercise of previously
unused or newly uncovered monopoly power. This view of inflation is in
sharp contrast to the simple assertions that inflation is everywhere a
monetary phenomenon or that inflation is the result of wage increases
exceeding productivity increases. Both the monetary observation and the
wage/productivity observation may be true of most, or even all, observed
inflations, but both phenomena are parts of processes or measures of
results, they are not the driving mechanisms. Furthermore,
control of money supply or of money wages, may be inefficient ways of
controlling inflation, for money supply and money wages are but symptoms,
rather than causes, of the ailment.
VI. The Financing of Wages

In a decentralized market economy the general level of compensation of workers employed in the production of consumer goods and services and of those employed in the production of investment goods is composed of a myriad of wages and other conditions of employment which are determined in particular bargains or contracts that are struck between employers and employees. In our economy, a large proportion of such bargains or contracts are struck between "collectives", such as trade unions and organized bargaining units of employers in an industry, rather than between individual workers and atomistic "employers" who deal with each other in one-on-one negotiations. Furthermore, there are now limits on the wage and conditions of employment contracts that are set by minimum wage laws, hours of work legislation and legislation dealing with safety, supplements and various "conditions in the shop." In addition, inasmuch as labor has to be "trained" to fit into a firm's production process, this is a counterpart to the existence of highly specialized capital-assets, it is often in the interests of employers to make working conditions "pleasant" in order to minimize quit rates.

The cost of labor covers not only the pre-tax pay packet of workers, but also the employment costs that rule, whether they are mandated by government, trade union contracts, or the "employers" interest in constraining turnover. Items like medical care supplement to wages which ties medical care to employment with a particular employer are likely to be a "preferred" situation for some employers over an equal or even lower cost scheme that makes medical care independent of the particular employer or even whether the beneficiary is employed.

The level of wages that enter into discussions of inflation is an average
of many different items. Any change in the level of wages is usually made up of quite disparate movements in different wages of different items.

Our model of price and profit determination allows for various composite wages: wages in consumption goods production, investment goods production, and government employment are specifically identified. In this model the possible disparate movement of different classes of wages and the factors causing such disparate movements are natural foci of attention. The way various labor costs are determined is important to determining the course of the costs that must be recaptured in prices.

In a decentralized market economy, an increase in the general level of money wages will start with increases in money wages in the particular portions of the economy where the contracting workers and employers have reason to believe that funds to pay higher money wages will be forthcoming. Inasmuch as higher money wages imply higher unit technologically determined average and incremental costs, the dominant expectation has to be that a higher per unit flow of cash will be forthcoming from sales proceeds. Furthermore, because every employer has money costs which are mandated by liability structures and business styles, the expectation has to be that rising prices will not seriously compromise the gross difference between sales revenues and technologically mandated costs. Wage increases will rarely be agreed upon which are "guaranteed" to bankrupt the employer.

In a world where nothing else changes, a rise in prices of a product is expected to decrease sales. The condition that a money wage and the resultant price increase shall not seriously impair the viability of an employer implies that a rise in the technologically determined costs and
let us assume an equal proportional rise in the mark-up, will lead to a percentage fall in sales that is at most equal to, and hopefully smaller than, the rise in the offer price. The condition that the quantity demanded shall not fall by a percentage greater than the rise in the offer price implies that product demand must be inelastic or at most of unit elasticity.

If the fall in the quantity demanded exceeds the percentage rise in mark-up over technologically determined costs, then the gross flow of profits to validate the liability structure, the price paid for capital assets, and the business style of the affected firms, will fall unless demand is inelastic, the gross profit flows of firms or on industry which raises wages and prices will be compromised.

If we exclude the special case in which profit flows are so large initially that an anticipated fall in unit profits has been built into the anticipated profits that go into determining capital-asset prices, a rise in wages that lowers output appreciably will lead to a fall in the anticipated profit flows that are capitalized to yield asset prices, and thus to a fall in the market valuation of the firms. Firms cannot be expected to cavalierly accept such developments. The ruling situation in market economies in which increases in money wages take place cannot conform to the elastic demand assumption that are typically made for individual units in competitive markets. The propositions that money wage payments of both capital goods and consumption goods producers are usually funded from sales proceeds and that firms will not readily compromise the cash flows that are needed to validate (1) debts, (2) the market valuation of their capital-asset, and (3) business style implies either that the individual demand curves are inelastic or that
individual demand curves have risen, are rising or are expected to rise.

An inelastic demand curve confronting a particular firm defines a "monopoly" or "oligopoly" situation. If a firm is a constrained monopolist so that there is some unexploited monopoly power and the rise in wages relaxes the constraint, then the rise in money wages will be accompanied by use of previously unexercised monopoly power. Thus, firms will agree to a rise in money wages when there is some unused market power, or if some increase in market power is anticipated. Simple wage push inflation can only occur in market structures where the exercise of monopoly power is constrained and where the money wage increase relaxes the constraint. The fact that wages are costs which private business must recover in prices indicates that a symbiotic relation exists in industries which are dominated by a few firms between firms and trade unions. Wage increases are grounds which can be advanced for exercising monopoly power in situations in which the existence of monopoly power has to be camouflaged.

Higher money wages will not compromise gross profit flows if output demand curves are shifting to the right or upward. Such rightward or upwards shifting demand curves exist when a particular output is gaining market acceptance. A new product whose market is increasing will require both more labor and will have prospects for increased total revenue. This can be a source of money wage increases. Firms which are enjoying the benefits of the market acceptance of an innovation enjoy both rising demand curves for their output due to the acceptance of their product and inelastic demand curves if the innovation gains a monopoly position, however transitory. New firms enjoying success in
the marketplace require additional labor if they are to exploit their market advantages. Higher wages and other terms of employment are ways to attract labor from other firms and industries. The "classic" example of the "expanding" dimensions of the economy pulling labor to higher wage and worker income parts of the economy is the shift of labor from agriculture to industry.

Money wage increases can also reflect the increase in particular demand curves that accompanies a business cycle expansion. A business cycle expansion is never a simple multiplicative expansion of all "demand curves". A business cycle expansion does not mean that all demand curves shift so that a% more output would be bought at a constant money price, or that a% more would be paid for any particular output. Every business cycle expansion is characterized by some particular set of strong increases in demand. Cyclical money wage increases will radiate from the wages of labor that produce those products whose demands are increasing strongly, or which are expected to increase strongly. This implies that the dispersion of the rate of increase in money wages will reflect the differences in the increase in demand for particular types of output. In "big government capitalism" the dimensions of the economy that lead in the expansion of income often reflect policy measures and not infrequently are associated with institutional changes. Economic policy and changes in financial and other economic institutions can cause differential changes in money wages and employment that occur.

The eras of relative tranquility (1952-1965) and of relative turbulence (1966 to date) since World War II have witnessed shifting patterns of
government intervention, government spending programs "start up and fade away," and the spread of institutions and usages that reflect governmental benevolence towards particular outputs, industries, and incomes. These shifting patterns of government impact upon the private economy affect what expenditures can be financed and thus have tended to generate variations in relative wage rates. The leaders in the movement of overall wages have often been employments that benefit most from the impact of the proximate government intervention. In our system of decentralized wage determination, the skills or industries that gain an advantage because of government programs become the leading sectors in the propagation of inflation, both in the supply price of outputs, by way of labor costs and in generating demand that leads to wage and profit increases. Wage and income increases are often the result of government policies that have objectives other than increasing the wages of some employments. For example, Medicare and Medicaid were not overtly designed to increase the market power of the sellers of medical services.

In private businesses, the demand for output funds the wages paid in producing output. If the output is a consumption good, then wages will be recovered by the sales revenue from the output, which, in turn, is mainly derived from total wage income. If the output is an investment good, then the wages paid will be initially financed by the interim financing and then by the "take out" financing scheme of the buyer. Wages paid in the production of investment goods are financed because it is anticipated that profit flows will validate the debts and equities of the firm that acquires the investment good. This need to recapture labor costs in sales revenues or in profits over time, sets a limit to the price of capital assets and thus to wage rates in producing investment output.
Wages in the production of consumption goods are financed by the wages that are paid to consumption and investment goods workers, and by the portion of incomes from profits, government employment, and transfer payments that finance demand for consumption goods. In a similar manner, wages in the production of investment goods are limited by the amount of financing of investment, both interim and take-out financing, that is available. Both interim and take-out financing break down into internal and external financing. Thus, the rise in the wages in investment goods production is limited by the price that business can afford to pay for capital assets, which in turn is limited by available financing. But available financing is limited by bankers' views as to the cash flows that the investment goods, once they become capital assets, are expected to generate.

In a business cycle expansion the demand for investment goods increases. The movement to the right of the demand curve for labor to produce investment goods not only increases employment, but also allows wage, profit, and price increases to take place. Once investment goods employment increases the demand for consumption goods, consumption goods output, employment in consumption goods production, and the gross profits of consumption goods producers all increase. An initial increase in investment goods employment and wages fans out and leads to rising employment, wages, and prices in consumption goods, but this process is limited by exactly those financial market reactions which lead to first increased financial layering and then to fragile financial structures that are conducive to cyclical downturns. These cyclical downturns may or may not be associated with a financial crisis.
Because of the limitations of finance, the leading sector in wage increases, the wage rates in investment goods production, have only a limited power to lead. Essentially, a strong inflationary thrust is not possible in a simple market economy because the cash flows to finance open-ended expansion of investment are not forthcoming from the banking system. This lack of available finance reflects both the inelasticity of banking resources and the lack of faith by bankers and financiers that cash flows to validate higher priced investment output will be forthcoming.

From time to time in the history of capitalism the natural skepticism of bankers and financiers has been overcome by a belief that a new era has dawned. The belief in the dawning of a new era has usually reflected the emergence of new financial instruments. When such a "new era" mentality emerges, the expansion of investment financing may be carried so far that open inflation, in which money wages and prices chase each other, appears. However, the feedback from open inflation to the demand for financing has typically resulted in higher interest rates, increased financial layering, and a stripping of liquidity from firms and business in the emergence of a fragile financial structure with all of the consequences for economic instability that have been chronicled. Innovation in finance, including "government" developments such as the emergence of central banking and the discovery of fiscal policy, have been associated with the emergence of instability and have been precursors of threats, if not of realizations, of financial crisis.

This interpretation of inflation as the result of increased private investment spending leading to both higher profits and larger demand for labor
is not valid for the United States in the recent past, especially in the years since the middle 1960's. The classical investment cycle inflation, which produced the evidence for the Phelps-Brown and Phillips research, was essentially a self-limiting process. The fundamental price pressure in the world studied by Phelps-Brown was a downward pressure on prices due to technological progress.

Prior to World War I, two types of downward pressure on prices were evident, one reflecting technological progress that led to increased productivity, and the other reflecting both insufficiency of total demand and the pressure on asset prices when debtors attempt to fulfill their liability payments by selling assets. During the 1920's, downward pressures on prices due to technological progress were evident even as an unstable and fragile financial structures was created. In the years following 1929, the downward trend of prices due to technological progress was joined by downward pressure on wages and output prices because of insufficient total demand and widespread attempts to "make position" by selling financial and capital assets.

Since World War II, the downward pressure on prices due to technological progress has been offset by money wage increases and increases in the mark-up on technologically-determined costs. Even in successful years of the post-war period, such as the first five years of the 1960's, there was some slight upward pressure on prices. Mainly because of big government, in the guise initially of defense but now increasingly in transfer payments and state and local government expenditure, no period of substantial duration with large-scale insufficiency of aggregate demand has occurred since World War II. The cash flows associated with the
government deficits during recessions have sustained profits, thereby minimizing the need to try and make position by selling assets.

The increased portion of state and local government in the economy and the veritable explosion of transfer payments over the post-war period have tended to raise the mark-up on wages in the prices of consumer goods. Over the past decade this increase has been sufficient to disappoint the expectations of blue collar workers that the purchasing power of the take home pay packet will increase. As a result, a pressure to raise money wage rates in excess of the money wage increases induced by higher aggregate demand has become evident. Thus, the self-limiting inflation that mirrored the private investment cycle has been replaced by an open-ended inflation that reflects the explosion of demand for private output due to a combination of government spending and rising money wages.

The growth of demand for consumer goods that is not directly financed by wages derived from the production of consumer goods but indirectly financed by sale proceeds or business debts, loans to banks or on take-out instruments, can be illustrated in many ways. One simple illustration of what is involved is in the growth of state and local government receipts, especially as Federal Grants-in-Aid have grown.

You have seen in the 1970's (late 1960s) but especially since 1973, oil crises is the influence of overseas elements on inflation in the U.S.
Federal Grants-in-Aid, State and Local Governments, Related to Total Receipts (Billions of Dollars)


<table>
<thead>
<tr>
<th>Election Years</th>
<th>Total Receipts</th>
<th>Federal Grants in Aid</th>
<th>% of Receipts</th>
<th>Federal Grants-in-Aid</th>
<th>Four Year Growth Rates</th>
<th>GNP</th>
<th>Receipts as % of GNP</th>
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</thead>
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<tr>
<td>1948</td>
<td>$ 17.7</td>
<td>2.0</td>
<td>11.3</td>
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<td>259.1</td>
<td>6.83</td>
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<td>2.6</td>
<td>10.2</td>
<td>6.6</td>
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<td>35.0</td>
<td>3.3</td>
<td>9.4</td>
<td>6.0</td>
<td>420.7</td>
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<td>6.5</td>
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<td>16.9</td>
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<td>84.8</td>
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<td>17.0</td>
<td>---</td>
<td>753.0</td>
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<td>1968</td>
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<td>18.6</td>
<td>17.4</td>
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<td>12.34</td>
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<tr>
<td>1972</td>
<td>177.4</td>
<td>37.5</td>
<td>21.1</td>
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<td>1171.1</td>
<td>15.15</td>
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<tr>
<td>1976</td>
<td>264.7</td>
<td>61.0</td>
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<td>12.2</td>
<td>1706.5</td>
<td>15.51</td>
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<tr>
<td>1977</td>
<td>294.5</td>
<td>67.6</td>
<td>23.0</td>
<td>---</td>
<td>1890.4</td>
<td>15.59</td>
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<tr>
<th>Annually</th>
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<th>% of Receipts</th>
<th>Annual Growth Rate ((Y_t-Y_{t-1})/Y_{t-1})</th>
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<tr>
<td>1968</td>
<td>107.2</td>
<td>18.6</td>
<td>17.4</td>
</tr>
<tr>
<td>1969</td>
<td>119.7</td>
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<td>152.6</td>
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<td>1972</td>
<td>177.4</td>
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<tr>
<td>1977</td>
<td>294.5</td>
<td>67.6</td>
<td>23.0</td>
</tr>
</tbody>
</table>

Growth Rates Per Year: entire interval
Receipts: 9.70%
Grants-in-Aid: 12.10%

Source: Table B7, Economic Report of the President, 1978
Before the huge explosion of grants-in-aid from the Federal Government, the wages that state and local governments could pay were limited by the monies these governments could raise from their local resources. Inasmuch as state and local governments are in competition with one another for business and population, there was a trade-off between taxes and services, and the pressure for services combined with a reluctance to tax led to frugality in both wages and number of state and local employment.

The Federal Government, as the sovereign, is not as directly constrained

| State and Local Government Total Receipts and Grants-in-Aid Growth Rates 1948-1977 |
|-----------------------------------------------|-----------------------------------------------|
| Interval | Growth Rates % per Year |                               |
|         | Receipts | Grants-in-Aid | GNP |
| 1948 - 1960 | 8.60 | 9.8% | 5.60 |
| 1960 - 1968 | 9.60 | 13.1% | 6.80 |
| 1948 - 1968 | 9.00 | 11.2% | 6.00 |
| 1968 - 1977 | 11.20 | 14.8% | 8.60 |
| 1948 - 1977 | 9.70 | 12.1% | 6.90 |
| 1948 - 1966 | 8.70 | 10.97% | 5.93 |
| 1966 - 1977 | 11.32 | 14.06% | 8.37 |

Source: 

by its ability to tax as state and local governments, and, typically, it did not concern itself with the possibility of business and population moving from region to region because of tax advantages. The ability of a sovereign state to run a deficit is only limited by the domestic aversion to inflation and by the weight attached to exchange rate stability.
In 1948 the total receipts of state and local governments were $17.7 billions, or 6.83% of Gross National Product. In 1929 total receipts of state and local government were $7.6 billions, or 7.35% of the 103.1 Gross National Product. State and local government in 1948 was slightly smaller relative to Gross National Product than in 1929. In 1977, state and local government receipts were $294.5 billions, or 15.59% of Gross National Product. State and local government has been a "leading" sector, growing significantly faster than Gross National Product over the period as a whole and in various sub-periods such as 1948-60, 1960-68 and 1968-77.

However, the growth rate of state and local government receipts has been due to both the taxes collected by state and local governments and to grants-in-aid received from the Federal Government. Whereas Gross National Product in current dollars increased at a rate of 6.89% per year over the years 1948-1977, grants-in-aid have increased at a 12.1% annual rate. From being around 10% of total state and local government receipts in the 1950's, grants-in-aid have been running in the neighborhood of 20% of total state and local receipts in the 1970's. Not only has state and local government spending been a leading sector in the growth of the economy, but Federal Grants-in-Aid financing has been a leading sector in the growth of state and local government financings. While total receipts of state and local governments grew by a factor of 16.6 in the 29 years after 1948, Grants-in-Aid grew by a factor of 33.8.

During the years of chronic and persistent inflation both total receipts and Grants-in-Aid of state and local government increased at an accelerated rate. Over the years 1968-1977, Grants-in-Aid increased at an annual rate of 14.3%. Total state and local government receipts were 12.34% of
Gross National Product in 1968. An increase of that which is 12.3% of Gross National Product at a rate that far exceeds the non-inflationary growth potential of the economy, usually estimated as around 3 1/2% per year, will impart an inflationary thrust to the economy.

This inflationary thrust to expenditure by state and local governments has been facilitated by the growth of Grants-in-Aid. Not only were Grants-in-Aid 23.0% of state and local government receipts in 1977, but many Grants-in-Aid programs are of a matching variety in which a part of the funds are supplied by the Federal Government, with the proviso that the state or local government share some of the expenses of whatever it is that was being aided. Thus, a rise in state and local government taxes is often induced as state and local governments provide their contribution to whatever purpose the grant-in-aid serves.

Because of the limitations upon wage increases due to the need of the wage payer to finance wages, it is evident that the initial impulse for any sustained increase in the demand for labor or in wage rates must come from either the financing of investment or from the Federal Government. The above is qualified in detail, but not in essence, by the ability of households and state and local governments to go into debt. The business cycles since World War II have been characterized either by an absence of financial trauma or a quick aborting of embryonic debt deflations. In these cycles, recoveries have often been led by consumer demand. Consumers went into debt to finance housing construction or to acquire consumer durables. The debt behavior of households in the mild cycles of the first part of the era since the end of World War II has meant that a goodly portion of the funds to pay workers who produce household durables as well as single family houses during business cycle expansions has...