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THE MONETARY FISCAL APPROACH TO INFLATION:  
A MULTI COUNTRY STUDY

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CHAPTER I: PART A

INFLATION, OUTPUT AND THE ROLE  
OF MONETARY AND FISCAL POLICY

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# Inflation, Output and the Role of Fiscal and Monetary Policy

Karl Brunner and Allan H. Meltzer

## I. The Intellectual Heritage

Beliefs seem to live eternally. Every belief about a particular subject which ever appeared in history is probably still firmly accepted by some group of our contemporary world. Current ideas bearing on inflation seem to satisfy this "ergodic theorem" on the nature of human beliefs. The "Keynesian Revolution" yielded no essentially major new ideas about inflation. It probably influenced, however, the distribution of the major three groups of ideas among social groups. This influence was subtly conditioned by the paradigmatic use of the Keynesian framework. It offered a standardized language system for the convenient organization of inherited ideas bearing on inflation. The largest group consists of explanations which rely on specific institutional patterns or structural properties of the social process. The group includes all varieties of "cost push" apparently fostered by specific institutional arrangements. It also subsumes a wage and price drift induced by demand shifts and the Galbraithian idea asserting a fundamental indeterminacy of price-levels. This indeterminacy is overcome on occasion by the institutions of our "Spätkapitalismus" which encourage somehow a habitual rise in prices and wages. The

fashionable flowering of the institutional explanations of inflation perpetrates an old strand of ideas. This strand survived usually among non analytic economists or non-economists. The Keynesian framework offered new opportunities for this particular heritage. Incorporation into this language system provided coherence and plausibility and focussed analytical attention on intriguing formal manipulation.

The second and third group of ideas are quite small in comparison to the imaginative array of institutional explanations. The second emphasizes the role of the government sector's fiscal policies. The central motor force of inflation, or the crucial necessary condition, is attributed to a large or expanding deficit in the government's accounts. The last group also centers on the financial impulse. It differs, however, with the second group in the description of the nature of this impulse. The financial impulse is essentially identified with the monetary impulse. The inflationary consequences are associated with this impulse independent of the processes producing or shaping monetary growth.

It is important to note that fiscal or monetary explanations of inflation frequently assign a significant role to specific institutional-structural patterns for particular aspects of the inflation process. Still, the various explanations are clearly differentiated according to the sufficient and necessary conditions described to maintain an inflationary

process. Keynes explanation offers an excellent example in this respect.<sup>1/</sup> Inflation emerges whenever total expenditures exceed the value of output at inherited prices. Let  $p$  denote the output price-level,  $x$  represents total output and  $a$  measures the autonomous real absorption of output. The coefficient  $\pi$  describes the proportion of real income allocated to income from non-human wealth,  $s^1$  and  $t^1$  designate the proportion of savings and tax payments out of property income. Corresponding coefficients for non property income are  $s^2$  and  $t^2$ . The value of total output in period  $t$  at inherited prices is  $p_{t-1} x$  and the total expenditures are

$$p_{t-1} \left[ \pi x (1-s^1-t^1) + (1-\pi) x (1-s^2-t^2) \right] + p_{t-1} \cdot a$$

An excess of total expenditures over total output at inherited prices is equivalent to the condition

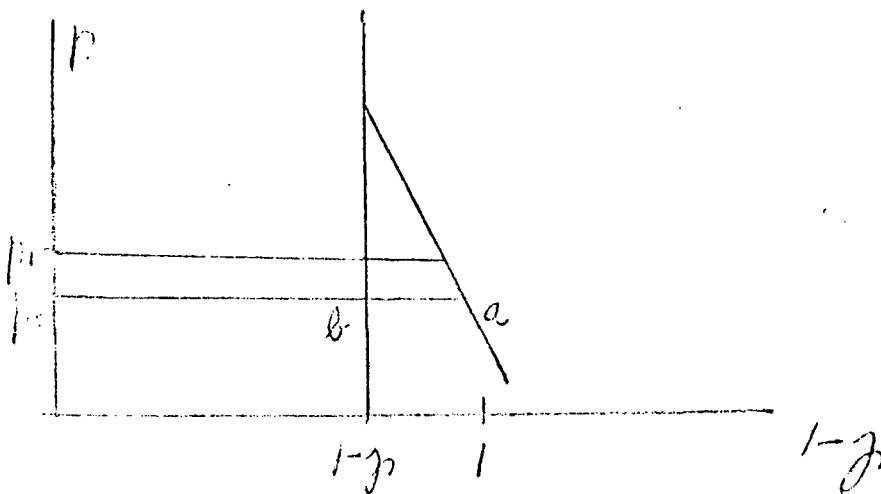
$$\pi(1 + s^1-t^1) + (1-\pi)(1-s^2-t^2) > 1-\gamma$$

where  $\gamma$  is the ratio of autonomous real expenditures to total output.

Whenever this inequality emerges the price-level increases to close the gap. The price level in  $t$  is thus determined by the equation

$$p_t(1-\gamma) = p_{t-1} \left[ \pi(1-s^1-t^1) + (1-\pi)(1-s^2-t^2) \right]$$

But the increase from  $p_{t-1}$  to  $p_t$  closes the gap only temporarily. In period  $(t + 1)$  expenditures  $p_t [\pi(1-s^1-t^1) + (1-\pi) \times (1-s^2-t^2)]$  confront an output value  $p_t x$ . The basic inequality still assures a gap between expenditures and output value. Prices are again pushed up in  $(t + 1)$  and similarly from period to period with the persistence of the underlying inequality. In order for this inequality to erode in response to an inflationary process induced by a relative increase in  $a$  (i.e. of  $\gamma$ ), the proportions  $\pi$ ,  $s^1$  or  $t^1$  must be sufficiently sensitive to the price level. Keynes assumes that all three proportions are functions of  $p$  with a positive derivative. Moreover, he also assumes that the coefficients  $s^1$  and  $t^1$  always exceed the corresponding coefficients  $s^2$  and  $t^2$ . It follows that the expression  $(1 - s^1 - t^1) + (1 - \pi)(1 - s^2 - t^2)$  is a function,  $f(p)$ , of  $p$  with a negative derivative  $f'$ . This condition is sufficient to assure for any given level of  $a$  (or  $\gamma$ ) a unique price-level at which inflation will end. A diagram may clarify the situation.



The output available for consumption is  $(1-\gamma)$  and characterized by a vertical. The function  $f(p)$  is drawn with a negative slope to the right of the vertical. It should be noted that this line is not defined on the left of the vertical. For situations satisfying  $1-\gamma > \pi(1-s^1-t^1) + (1-\pi)(1-s^2-t^2)$  the standard Keynesian analysis invoking downward price rigidity applies.

Suppose  $p_0$  is the initial price at which government policy initiates a larger  $\gamma$ . The gap is defined by the ratio  $p_0 a$  to  $p_0 b$ . The price rises in this proportion to a new position  $p_1$  above  $p_0$  with a lower level of real expenditures. The negative slope of the expenditure function lowers the inflationary gap. Still, inflation persists until an equilibrium price-level  $p$  is reached at which real expenditures and output balance at inherited prices.

It is noteworthy that Keynes' analysis imposes no constraints on the initial impulse setting the inflationary train in motion. Any event which raises total expenditures above the value of full output at prevailing prices sets off an inflation. The Keynesian framework seemed to encourage such eclecticism. Almost any event was thus acknowledged as a potential trigger of inflation. This eclecticism was usually hailed as a major intellectual advance over the monolithic naivety or simplicity of the "quantity theory". Once an economy moved into a range of full-output a wide array of potential disturbances could induce an inflation. However, once started, the institutions and structural properties of



"Spätkapitalismus" would determine whether inflation persisted. The redistribution of income between labor and property, the large and increasing average propensity of property income and the progressive tax schedules eventually terminate inflation and the economy settles down at a higher price-level. We note thus that the institutional-structural properties represented by the propensity to save, the distribution of income and the tax system form sufficient condition for any inflation to be terminated. In the absence of these institutional properties inflation proceeds indefinitely independently of monetary policy and the manner of financing the deficit.

The reader should note some major implications of this inflation analysis. Occurrence and disappearance of inflation are not systematically related with monetary acceleration or deceleration. Limitation and termination of inflation are essentially anchored in a particular set of institutions of modern industrial societies. Keynes offered us in this manner a singularly parochial explanation tailored to the immediate conditions of his environment. But we observed inflations in many countries and in many different historical periods. Inflation emerged and disappeared in social groups dominated by income on labor and land, it disappeared in countries without progressive taxation and constant income distribution. Both emergence and disappearance of inflation are essentially random with respect to the particular institutional-structural

elements elaborated by Keynes. We also note that inflationary experiences yield no support for the implication that inflation lowers the share of labor in national income.<sup>2/</sup>

The classic exposition of Keynesian inflation analysis fails to survive crucial observations. Its inherently parochial conception prohibited a useful explanation of diverse inflationary experiences. The analysis is also inconsistent with price-theory. It implies that the price-level does not depend on the relative behavior of money stock and non-money objects. Occurrence and magnitude of inflation is traced to factors not systematically associated with the behavior of this relative supply confronting systematic demand patterns for money and non-money objects. This implicit denial of price-theory is particularly remarkable in view of the frequently encountered assertion that Keynes "integrated value theory and monetary analysis".

The price-theoretical flaw noted in Keynes' account characterizes many institutional-structural or even fiscal explanations of inflation. This is not a chance coincidence and neither is the dominance of these explanations within the Keynesian paradigm. Keynesian discussions of inflation frequently concentrate on institutional-structural properties of the social process. The Phillips curve has recently provided the organizational focus of such inflation analysis.<sup>3/</sup> It should be recognized that contemporary explanations with an institutional emphasis are substantially

influenced by Keynes critique of inherited price theory. This theory failed to explain why prices do not clear markets in the received sense. Inherited price theory was incapable to explain mass unemployment or "excess capacity" of any other resources. The simultaneous occurrence of rising prices and increasing unemployment noted on various occasions strengthened the sense that "severe market imperfections" obstruct the "influence of supply and demand" and yield an "institutionally determined" price-level. Such "imperfections" could not be subsumed under the received price-theory. Ad hoc explanations invoking cost push, sellers' inflation etc. thus spread rapidly among analytically literate economists. The observed failure of inherited price-theory naturally encouraged explanations relying on special institutional aspects. It also fostered the pervasive denial of a price-theoretically relevant interaction between money and non-money objects characteristic of accounts molded within the Keynesian paradigm. Reliance on "institutional behavior" also shaped an "electic ad hoc" approach to the inflation problem. Examination of inflationary experiences proceeded increasingly in a manner which Schmoller might have approved. The application of econometric methods only enriched the admissible language forms beyond the means available to Schmoller. Economists thus appeared to converge on a state exhibiting a variety of ad hoc descriptions of inflation without any coherent theory of inflation. This trend was reenforced by

Galbraith's ultimate consequence of cost push and sellers' inflation. A basically indeterminate price-level with a habitual drift upwards emerged from the intellectual vacuum left with Keynes recognition that inherited price theory could not cope with short-run variation of utilization rates of resources.

Galbraith's articulation of a neo-primitive position is difficult to reconcile with the observed behavior of price-levels. Tables I and II describe the postwar experience of our major price-indices in the USA. We notice three major phases of deceleration in price movements and a prolonged period of price stability. This characterization of the years from 1961 until 1965 is based on the results established by Kindahl and Stigler which found that a wholesale price index constructed from actual transaction prices fell at an average rate of 2% p.a. over this period. An adjustment of the CPI and GNP deflator for inherent biases would probably yield a constant price-level for the first half of the 1960's.<sup>4/</sup> It is noteworthy that even the uncorrected price indices showed definite signs of deceleration in 1970. Several clues and suggestions indicate that the discrepancy between the movement of the official indices and a properly constructed measure of inflation was substantially widened over the past two years.<sup>5/</sup> Our inspection thus reveals successions of accelerations and prolonged

decelerations of price-levels. This pattern is difficult to reconcile with Galbraithian notions or with any version of cost push or sellers' inflation unfolding more or less independently of changing market conditions. The responsiveness of prices to market conditions signaled by the pattern of decelerations refutes some standard cost push ideas. A reexamination of semi-sociological approaches usually favored with the emphasis on "institutional aspects" may be appropriate. One should also note, however, that the pattern observed yields no comfort or support for traditional price-theory enshrined in most textbooks. Keynes was quite correct in this respect. Received price-theory could not explain the comparatively slow adjustment velocities of prices and thus the variations in utilization rates. But our choice is not limited to received price theory and the Keynesian road. An alternative has emerged which essentially involves a reformulation of price theory. We return thus to Keynes fundamental question of the General Theory.

## II. A Semi-Intuitive Overview

### 1. The Price Theoretical Program

Keynes original program requires a reformulation of price theory. Price theory need not be abandoned in the manner implicitly suggested

by standard macro theory. It contains propositions bearing relevantly on our observable environment. These propositions are highly confirmed and yield powerful explanations of observable patterns which cannot be dismissed. Economic theory must offer explanations covering this range of phenomena and standard macro-theory yields nothing in this respect, and only poor results in its own realm. We contend therefore that it would appear appropriate to reconstruct price theory in order to execute both Keynes and Irving Fisher's original program.

This reconstruction requires essentially two developments. Responses to market stimuli must be generalized to assets and liabilities and their yields or costs. Furthermore, neither information nor readjustments of resource utilization patterns are produced at zero marginal (or average) cost. The production, processing and comprehension of information involves investment of resources with alternative uses. Similarly, the readjustment of resources requires application of other resources. The pervasive occurrence of information and readjustment costs has been thoroughly disregarded by traditional formulations of price theory. Their full recognition permits a satisfactory resolution of the otherwise perplexing observations pertaining to "inflexible wages and prices". The proposed reformulation does not involve any radical break with the evolution of economic analysis. It is

on the contrary a most natural outgrowth of this evolution. It removes the troublesome failures of inherited price theory and effectively enlarges its explanatory power. This development also erodes the separation of economics into two distinct and logically unrelated branches, micro theory and macro theory. There is only one piece of economic analysis, price-theory. The only difference occurs in the realm of application and range of problems. The price-theory of monetary and fiscal processes will continue on a substantially more aggregative level than other applications of price theory.

The basic idea centers on the interaction among assets, liabilities and also between these stock magnitudes and their new production. Economic agents, whether firms or households, adjust their balance-sheet or wealth position in response to relative prices and yields of assets or liabilities. Their response involves both a change in the structure and the absolute magnitude of the wealth position. The two aspects are intimately connected and actually determine the crucial linkage between the play of asset prices initiated by a monetary impulse and the resulting adjustment of the pace in economic activity. The nature of the monetary mechanisms may be traced in the context of a simple wealth statement for banks and the public. The two statements should be understood as generic descriptions of any agent's wealth position. Several aspects of the statement require some attention. The term "real capital" must be interpreted in a most inclusive way. It

reaches beyond the standard plant and equipment. It includes inventories

Banks		Public	
cash assets	deposits	cash assets	liabilities to banks
loans	other liabilities	securities	securities
securities	net worth	loans	other liabilities
		real capital	net worth

of any good associated with households or firms. Human capital is also summed under the term but frequently requires special consideration.

In a first approximation the wealth items listed are divided into four broad classes. The partition is unavoidably quite fuzzy. It nevertheless recognizes an important distinction shaping the behavior of monetary processes. Economic agents do not possess uniform information over all asset types. The cost of information associated with distinct assets, and particularly their marginal information costs varies substantially between different assets. Similarly, the marginal information cost concerning market opportunities and potential investors differs sharply as between different types of liabilities. Moreover, the cost of readjusting a balance-sheet position depends on the type of assets and liabilities involved. Some portions of an agent's wealth position can be adjusted at very low cost and other portions require substantial cost. The cost of readjusting wealth positions depends also on the speed of transforming the position. The



marginal cost of readjustment rises with its speed. And of course various types of assets and liabilities differ radically in this respect. The marginal cost of some items responds sensitively to increased speed, while the cost of others suffers only a minor rise. The cost functions introduced can be used to determine (with a considerable measure of arbitrariness) four classes of wealth items, viz. money (cash assets), securities, loans and real capital. These classes describe an ascending order in the marginal cost of information and readjustment. This statement applies essentially to the average situation of broad groups of assets. On many occasions and for diverse purposes finer differentiation will be necessary. Some issues in monetary analysis for instance, require an explicit recognition that marginal information costs of currency and demand deposits differ substantially and affect the responses of the money supply process to environmental changes. It should be noted that the explicit recognition of both information and readjustment costs yields a clear delimitation of the realm of inherited price theory. Traditional price theory becomes applicable whenever the marginal cost of information and readjustment is comparatively insignificant. This range of application is certainly not empty, it includes in particular the long-run patterns of resource allocation. But the condition of application eliminates most important short-run allocation problems. For this range of phenomena the reformulation of price theory will be most fruitful and promising.

2. A Major Issue: The Range of Substitution Relations Between Money and Non-Money Objects.

It has been argued that the stability of the demand function forms an essential characteristic of the Non-Keynesian analysis. Both existence and stability of money demand are however fully incorporated into Keynesian analysis. Their denial occurs mostly in the context of rationalizations of Central Bank policy exploiting the paradigmatic language forms. Still, there exists an aspect of money demand behavior which characterizes a central difference between Keynesian analysis and the price theoretical conception of the transmission mechanism. The two conceptions differ essentially in the range of substitution relations assigned to money. In the Keynesian context money substitutes only with "bonds". There occurs no substitution between money and a wider range of non-money objects. It follows that an excess supply of money is identical with an excess demand for bonds. It also follows that what appears as a substitution of goods for money in case expenditures increase in response to an enlarged money stock must be recognized as a mistaken impression. The initial excess supply of money induces an excess demand for "bonds", interest rates are lowered and aggregate demand expands in response to lowered interest rates on "bonds". A larger income ensues which induces larger expenditures. The resulting substitution of non-money objects for money is purely apparent, it is the consequence of the money-bond substitution,

the interest elasticity of aggregate demand and the fixed payment schedules imposed on all transactions involving money and non-money objects beyond bonds. The crucial role of the exogeneous payment system should be fully recognized. It excludes the substitution relation between money and non-money objects and explains the volume of transactions independent and in the absence of such substitution relation. The price theoretical alternative rejects this very center piece of standard macro-theory.

The payment system results from the interaction of optimizing agents. Optimization behavior involves substitution over the whole array of assets, liabilities and service yields. Payment patterns, reflected by the average balance and the volume of transaction, are simultaneously determined by substitutions between money and non-money objects. It follows that monetary impulses shape transactions and influence activity and prices through a multitude of substitution relations and are not constrained to a narrow channel defined by the money-bond substitution and the interest sensitivity of aggregate demand. It also follows that the transmission of monetary impulses does not depend on particular institutions, e.g. the existence of a well organized securities market, or even an extensive credit market. Whatever the institutional context of a social group may be, money and non-money objects will be meshed by a network of substitution relations.

The mode of their functioning depends of course on the costs governing information acquisition and adjustment of inherited position via exchange or production. It should be noted that changes of these marginal costs modify the detail of the transmission channels. We suspect that changes of these costs accompany for one reason or another the agents continuous sampling of market conditions. These changes will be reinforced by modifications of a social group's real opportunities defined by technology and endowment. It follows that the very existence of a wide range of shifting substitution relations linking money and non-money objects obstructs any analysis of monetary processes designed to explicate with an extensive allocative detail the nature of the transmission process. It would appear more useful to follow a research strategy which traces crucial aspects of the enveloping gross contours implied by the working of the general mesh of substitution relations.

The reader should also note another consequence of the pattern of generalized substitution relations. The Keynesian liquidity trap only arises because money is coerced into a single substitution direction. The trap vanishes with the generalized substitution relation. Robert Eisner recently introduced the high interest level liquidity leak into Keynesian analysis.<sup>6/</sup> It is argued that at sufficiently high levels of interest rate money balances vanish and are replaced completely (i.e. also transaction balances) by assets bearing pecuniary returns. It is

noteworthy that this leak is difficult to reconcile with the Keynesian position concerning the range of relevant substitutions. We developed at another occasion an analysis of the use of money and explained the productivity of money in terms of the saving in information and adjustment costs offered by the optimal choice of transaction arrangements. We also mentioned that sufficiently high costs of holding money induce a search for alternative transaction chains involving assets which promise to yield a similar monetary productivity at a smaller cost. With costs of holding money sufficiently high the inherited money is gradually replaced by new types of transaction-dominating assets. Inflationary experiences demonstrate, however, that holding costs reach astonishing levels before this substitution is initiated. Moreover, once we admit this substitution it is difficult to maintain the Keynesian constraint on the range of substitution relations.

### 3. The Adjustment Process Initiated by a Monetary Impulse

This section traces some major aspects of the substitution and wealth adjustment process initiated by a monetary impulse. Consider now a monetary impulse unleashed by a reduction in requirement ratios imposed on banks. This action modifies the volume of available cash assets relative to loans and securities. In the context of prevailing security prices and loan-rates banks will be induced to readjust their

balance-sheet position. The change raises their cash assets beyond the level desired at the existing market situation. The immediate adjustment will be governed by the nature of the cost functions introduced above. The cost differentials between securities and loans implies that short-run adjustments dominantly affect securities. Security prices rise and holdings are redistributed between banks and public. The public acquires money (deposits) in the process and unloads securities to the banks. The resulting wealth position of both banks and public will not persist however. Both were modified into a provisional equilibrium between cash assets and securities. But this modification disrupts the over-all balance and induces further adjustments involving assets, or liabilities, with larger marginal costs of information or readjustment. Concentration of the short-run adjustment on securities is a wealth-maximizing strategy which enables economic agents to obtain information about other assets (or investors) and readjust other assets (or liabilities) at lower costs. The delayed adjustment of banks loan-portfolio is thus a natural consequence of the costs considered. Still, banks will

gradually move from securities into loans. The public will also change its wealth position. The initial operation raised the public's cash assets relative to loans, real capital and liabilities. Moreover, security prices rose relative to the asset price of real capital. There emerges consequently a gradual conversion of cash assets or securities into loans, repayment of liabilities and real capital. The repayment of liabilities coincides with the banks' increased loan supply and thus lowers loan-rates. This development is reinforced by loans directly supplied by the public. And lastly, the asset price of real capital increases in response to the public's attempt to readjust the wealth positions. Many types of real assets are directly traded on a market on which the relevant asset price is formed. Other real assets have an indirect market. The Stock Exchange continuously assesses the value of ownership titles. And this value determines implicitly the asset price of specific pieces of real capital. The asset price of real capital, neither directly nor indirectly traded in a market, may be specified in a somewhat different manner. One may associate a "shadow price" with any wealth position and yield structure.

The increase in cash assets thus induces a gradual adjustment of the agents' shadow prices attached to various pieces of real capital. This trend will be strengthened by the lower cost of incurring new liabilities.

The increase in asset prices partly absorbs the initial excess volume of cash assets. This increase induces also further repercussions. It affects the demand for substitutes of real capital ownership. The demand for the services or the products of real capital increases. At this stage the monetary impulse begins to work directly on economic activity and the price-level of output. The increase in the value of wealth resulting from rising asset prices also raises the demand for products and services. Consumption expenditures thus increase both as a result of a substitution and a wealth effect emanating from rising asset prices. Rising asset prices affect moreover the supply of assets, i.e. the production of new assets. New output of real capital is a close substitute of existing real capital. An increase in the asset price thus induces a substitution of new capital for existing real capital. Investment expenditures expand together with consumption expenditures.

The accelerated pace of economic activity induces a revision of yield expectations attached to specific assets. These expectations are gradually raised and reinforce the initial increase in asset prices of real capital. A feedback into the financial markets works at this stage to raise interest rates. The sequential revision of expected yields of real capital induces agents to incur liabilities for the purpose of acquiring real capital. It also induces



agents to convert securities into real capital. Both responses raise interest rates on securities and loans. At this stage banks will experience a substantial increase in loan applications. In the context of their acquired information patterns pertaining to customers this implies that loan-extension proceeds at comparatively lower costs. The banks' net yield on loans thus rises more than the observed loan-rate. Banks will therefore readjust their position by converting securities into loans. Their supply of securities lowers security prices to induce the public to hold the enlarged supply in the face of their original attempts to move more extensively from securities into real capital. This feedback explains the difference between short-run and long-run effects of monetary policy on interest rates associated with financial assets. Expansionary policy lowers interest rates in the short-run, but increases these rates in the longer-run.

#### 4. The Operation of Fiscal Policy

The discussion of fiscal policy forms the proud centerpiece of standard macro-theory. The doubts concerning monetary policy based on interest elasticities interpreted in terms of borrowing costs were matched with an exuberant faith in the power of fiscal policy. Such policy was not mediated by unreliable links forged by interest elasticities. The effect of fiscal policy on economic activity remained a simple affair of more (or less) expenditures inducing more (or less) income and consequently inducing more or less expenditures. No reliance on tenuous and "unrealistic" relative price effects was required. A tradition of non-analytic but frequently

verbalized attitudes grew up in this context. Fiscal policy operates "directly" on economic activity, monetary policy works only "indirectly". This was supplemented by suggestions that there is a positive correlation between the length of a chain of repercussions and the degree of unreliability of this chain. At this stage one never failed to quote Shakespeare concerning the slippiness of cups before reaching the lips. Moreover, most of these discussions appear to make statements about the world. It is usually asserted that fiscal policy is "direct" whereas monetary policy is only indirect. Such language is highly misleading. The statements should be suitably reformulated as assertions about the income-expenditure model. Their ascription to our observable environment depends on adequate confirmation of such models. This confirmation does not exist at this stage. It follows therefore that there exist no empirical grounds for the contentions made that fiscal policy operates "directly" and monetary policy "indirectly".

But what remains of fiscal policy and what are its consequences once one rejects the Keynesian paradigm? The systematic development of a relative price theory of economic activity can barely afford to disregard the role and position of fiscal mechanisms. It appears that fiscal policy operates just as "indirectly" as monetary policy and works its effect through the same relative price mechanism. There is no a priori reason why the effect of fiscal policy should be speedy relative to the effect of monetary policy. The same forces govern the responses of economic activity to both fiscal and monetary policy.

We note just in passing that the feedbacks induced by a persistent deficit are difficult to subsume under the standard income-expenditure formulation. The absence of a creditmarket confines the feedback to a change in money demand via a change in wealth resulting from the public's absorption of government debt. A price-theoretical approach explicitly centers the feedback in the creditmarkets. This analysis thus requires a formulation breaking in some crucial respects away from the standard IS-LM paradigm. The analytic development of the next section will bear on this point. It should be recognized that major econometric models cast

The following paragraphs examine changes in taxation or the consequences emanating from variations in the government's demand for current output or resources. We begin with changes in tax rates. Modifications in taxes may pertain either to excise taxes or taxes on yields of assets (incl. human capital). Excise taxes may apply to both new production or existing assets. And in the case of yield taxes we distinguish between taxes attached to specific assets and taxes attached to the ownership of assets. The reader will note that the argument is substantially influenced by the heritage of incidence theory. The latter's focus was traditionally directed to other questions and usually removed our major issue by holding total income constant and addressing its enquiry to purely allocative aspects. But the examination explored processes which are essential to the transmission of fiscal impulses which cannot be subsumed under the governing paradigm.

a. The Influence of Excise Taxes.

Larger excise taxes on new production lowers the yield of resource-owners supplying the relevant product. The implicit rate of returns on their assets declines and their wealth position will be readjusted in favor of securities, repayments of liabilities or other real assets. An excise tax with sufficiently wide incidence lowers therefore interest rates on financial assets. It will also lower the asset price of real resources and thus retard their investment expenditures. The price of newly produced resources competing with existing resources has relatively risen. Demand for new production thus abates, modified however by lower rates on financial assets. The same increase in excise taxes raises on the other hand the price of output to the customers. In case of an essentially non-durable output a higher price relative to wealth lowers demand. Real consumption thus declines. In case of a durable output, i.e. the production of a new asset, we observe a relative decrease of the asset price due to the excise tax on the newly produced real capital. The relative decline in asset prices of resource owners acquiring this product induces a shift in demand from new production to existing real capital. Investment expenditures thus decline. In summary, excise taxes on new production are converted in a deflationary impulse by the relative price mechanism.

Suppose now that excise taxes on existing assets are raised. This action increases the market price of assets and lowers the supplier's net

asset price (i.e. the net reservation demand price). The first price determines the repercussions with respect to investment expenditures. It should be emphasized again in this context that our argument only traces effects in a first approximation over a shorter-run. The increase in the market price of real capital accelerates the demand for newly produced real capital. An increase in excise taxes on existing real capital exerts thus an expansionary effect on economic activity. An excise tax on financial assets raises however the cost of borrowing to the issuer of these instruments. This effect dampens investment demand. Moreover, the increase in the gross market price of existing assets induces substitutions of foreign for domestic assets. The extent of such substitutions depend on the degree of openness of an economy. We conclude that excise taxes on existing assets exert significantly different effects in open or closed economies. The greater the degree of openness the larger becomes the deflationary component of such a tax. Contrary to standard macro theory taxes are therefore not uniformly deflationary in the context of our relative price theory.

The emergence of two asset prices, the market price and the net price, corresponds to the appearance of two distinct implicit rates of return. The existence of the two prices affects the efficacy of monetary mechanisms. The divergence of the two prices introduces an obstruction into the transmission of monetary impulses. Stock prices must rise by some critical amount correlated with the magnitude of the excise tax before the repercussions are transmitted to the demand for existing real capital. A portion of the impulse is thus absorbed and cushioned by the excise tax on real

assets. A comprehensive system of excise taxes on financial and real assets thus impairs the smooth operations of wealth adjustments which transmit monetary impulses to economic activity. It contributes to increase length and variability of monetary lags. On the other hand it also cushions the economy against irregular and erratic behavior of the monetary system.

b. The Influence of Yield Taxes.

Larger yield taxes attached to specific resources lower the expected net yield and thus the implicit rate of net return. Wealth will be adjusted in favor of other assets. The effect thus depends essentially on whether the specific yield taxes are raised on financial or real assets. In case yield taxes apply to financial assets the public substitutes real assets or service yields or real consumption for financial assets. This lowers security prices, raises market rates on financial assets, raises asset prices on real resources and expands real consumption. The increase in asset prices activates demand for newly produced real capital. An increase of yield taxes on financial assets induces thus an expansive effect. It should be noted, however, that this effect will be the weaker the closer the substitution relation between the securities involved and money. The outcome is also substantially modified in the context of an open economy. In case the marginal information costs about foreign creditmarket have been lowered by repeated exposure to foreign assets an increase in yield taxes on domestic financial assets induces dominantly a substitution of foreign financial assets for the domestic assets. This substitution involves a

loss of international reserves. The resulting decline of the monetary base initiates a supplementary deflationary impulse. The total effect consists thus of a pure substitution component operating via higher domestic interest rates and an induced monetary effect working via the decline of the base.

Larger yield taxes on real assets or human capital on the other hand are deflationary for both closed and open economies. They lower expected new yields and lower the value of human capital. Lower wealth retards real consumption. The decline in the expected net yield on real capital lowers its implicit rate of return. Economic agents attempt to unload real capital and substitute securities (or money). These attempts raise security prices and lower asset prices of real capital. Investment expenditures thus fall and interest rates on financial assets are lowered. These substitution processes are magnified in an open economy with low information costs about foreign assets.

An increase in yield taxes attached to the ownership of assets shapes relative asset prices in a manner depending on the asset structure and the distribution of financial and real assets in the wealth position of those agents mostly affected by the tax rise. If real assets constitute a sufficiently large portion of their holdings, asset prices of real capital decline and the consequences are deflationary. If tax increases work mostly on groups with wealth positions dominated by financial assets the consequences are mildly expansive in a closed economy. A wealth position dominated by real capital would thus assure us that an increase in a generalized yield tax is

deflationary. The deflationary impact will be amplified for open economies experiencing substantial policing costs concerning the yields received by residents on foreign assets. Larger policing costs foster under the circumstances the substitution of foreign for domestic assets.

Our discussion of tax effects may thus be summarized as follows. The effect of taxes is neither uniform nor "direct". It follows that variations in the structure of taxes and a shifting incidence of ownership related yield taxes will be associated with substantial differences in responsiveness of economic activity to given changes in total tax liabilities. This variability of tax effects is reinforced by aspects disregarded thus far. Our discussion proceeded implicitly with the assumption of permanent changes in tax schedules. Transitory changes, or changes which are expected to be transitory, exert different effects, most particular because wealth (i.e. present values of future net yields) is less affected by such tax changes. We note finally that the effectiveness of tax policies with respect to aggregate demand increases in general with the degree of openness of an economy.

c. The Influence of Government Demand for New Production or Services.

The analysis of government expenditures must also be subdivided. We distinguish government demand for new production and demand for existing real assets. The first case is further partitioned into demand for products emanating from real assets and for services supplied by labor. An increase in demand for labor services raises human wealth. This raises real consumption and contributes to expand economic activity. It also modifies,



however, the anticipation level and supply price of suppliers of labor services. Our subsequent account of the sequential revision of supply prices demonstrates that this mechanism generates a deflationary counter-effect to the expansive effect induced by a rising government demand for labor. An increase in the government's wage bill thus induces some cross currents which moderate the net impact on economic activity.

An increased demand for new products raises their output price. It also raises the expected yield of resource owners affected by government demand. This increases the implicit rate of return on their real assets and induces a reallocation between financial and real assets in portfolios. This response raises interest rates on financial assets and asset prices of the real asset types used by the group under consideration. Their investment expenditures thus expand. This is not the complete story however. There are resource owners not affected by the increase in government demand. Their asset prices are unchanged, and for at least some the price of new capital goods to be acquired has risen. Their investment expenditures will be retrenched. The higher asset prices of the first group increase, however, the market value of wealth and thus induce an accelerated rate of real consumption. An increased demand for non-durables would raise their output prices and also the asset prices of the real capital involved in their production. An expanded government demand for new products thus raises consumption of the private sector but induces some cross currents with respect to investment expenditures. An uneven distribution of government

fosters these cross currents. The magnitude of the net effect cannot be determined without specification of price response patterns and the distribution of government demand. A more detailed examination of the problem would reveal that a decline in total private expenditure is neither logically impossible nor highly improbable. An increasing utilization rate fosters actually responses in the price of private output to expanded government demand which lowers the aggregate net effect on output. Under the circumstances the economy responds increasingly with a shift in the relative output absorbed by the private sector and the government sector.

Consider lastly an increase in government demand for existing assets. Increased government demand for financial assets involves an open market operation and unleashes a monetary impulse. An increase in demand for existing real capital contributes to raise asset prices. Two effects follow. It increases wealth in output units and thus expands the rate of real consumption. It also lowers the relative price of new output and consequently accelerates the demand for new real capital.

Our discussion of government expenditures may be compactly summarized as follows. An increase in government demand for real assets is unambiguously expansionary, at least in the shorter-run. An increase in the demand for new production of durables and non-durables or labor services is somewhat ambiguous however. It induces cross currents of undeterminate magnitudes depending on a variety of environmental conditions. As in the case of taxes the effect is neither uniform nor "direct". This conclusion of our analysis pertaining to government expenditures could explain the peculiar instability so frequently observed in the estimates of "the multiplier". An increase in government expenditures dominated by a demand for new production could exert the small effect (or perhaps even negative effect) on private

aggregate demand so frequently observed in estimates of macro models, particularly for periods exhibiting comparatively low unemployment rates. Our analysis implies that the composition of government expenditures affects the degree of ambiguity to be expected. The larger the proportion of labor service payments plus acquisition of existing assets the more reliably can we expect an expansive effect in the shorter run private economic activity.

#### 5. An Explanation of Inflexible Wages and Prices

Our previous discussion concentrated on a first approximation to the shorter-run consequences of monetary and fiscal policy. This procedure clarified the broad structure of the relevant mechanisms transmitting monetary and fiscal policy impulses to the pace of economic activity. The analysis of monetary-fiscal mechanism remains essentially incomplete at this stage however. We would still be puzzled about variations in the unemployment of resources, and why wages and prices are so inflexible. One also requires an explanation why monetary and fiscal impulses are not rapidly absorbed by changes in the price-level and modify instead levels of employment and output. The traditional invocation of unions and other selected monopolists offers no satisfactory theoretical solution. We would still lack an explanation why permanent price inflation coexists in numerous countries with variations in output and unemployment. We also observe that economic activity decelerates (or accelerates) at radically different

growth rates of the money stock. Moreover, a useful analysis should determine the factors which shape length and variability of the lag in monetary impulses on economic activity and explain the short-run differences in output responses and price-level responses.

A unified answer can be developed for these problems by a suitable completion of our price-theoretic analysis. Two cost functions have already been introduced to explain broad differences in asset types. One was associated with the production of information and the other with the production of changes in resource utilization patterns. The same cost functions are necessary conditions for our explanations of inflexible wages and prices. It is the purpose of the following account to establish that "inflexibility of prices", particularly downward inflexibility, is not the unfortunate (or fortunate, make your choice) by-product of unions, social conventions or the "military-industrial complex". In a less than "perfect" world where information is valuable and adjustment of resources to new arrangements is costly "inflexible" prices emerge as a rational (i.e. wealth-maximizing) response to environmental changes. If information about evolving market structures and the reallocation of resources were available without cost, resources would move instantly in the directions determined by the changes in demand and supply. In the context of a "full-information world" with no adjustment costs, economic resources would never be "idle", and markets would always be cleared. But this is not our world. Information must be produced, or gathered, at a positive social and private opportunity

cost. Resources with alternative uses must be invested to collect, evaluate, and comprehend information about market positions. The more information one requires, and the more rapidly one wishes to collect a given amount of it, the greater will be its cost. Similarly, the readjustment of inherited resource-utilization patterns also necessitates a specific allocation of resources with alternative uses. Readjustment involves costs which rise with both its magnitude and its speed.

Once we recognize the crucial role of the costs of information and adjustment, we can arrive at a more intelligent understanding of the nature of the market process. Idle resources will then appear as a rational attempt to minimize the costs of information and adjustment in the face of shifting demand and supply patterns. Consider, for instance, the position of a landlord having lost some tenants and being left with a number of vacant apartments. There is always a sufficiently large reduction in the rent which would lure new tenants immediately. Nevertheless, landlords rarely choose this option. The likelihood of his taking this action would be substantially greater if the landlord could immediately terminate the tenure of provisional low-rent tenants. But this action is precluded by the tenants' behavior. They insist, as a rule, on some minimal period of assured tenancy. This behavior is a consequence of the readjustment costs noted above. If readjustments imposed by others proceeded without inconvenience, i.e. without cost, tenants would be indifferent between two

apartments differentiated only by the existence or absence of an advance notice before having their lease cancelled. The existence of readjustment costs thus induces tenants to prefer contracts requiring advance notice and preferably longer advance notice. This latter condition is due to the greater costs of readjustment when it must be done at greater speed. Under these circumstances the landlord will reject the option of immediately luring a tenant by lowering the rent. The market has informed him so far that he can rent the apartments at the accustomed prices. He has at the moment no information which would rationally justify a lowering of his rents.

Keeping an apartment vacant, coupled with a continuous sampling of the market and calling information to the attention of potential buyers, thus forms an alternative to immediate and large rent reductions. Both alternatives involve costs: the direct purchase of other resources (advertising, real estate agents, etc.) or the allocation of one's own resources (showing customers around, etc.). The latter includes most particularly the cost of the immediately available lower revenue foregone by holding the apartment vacant. The resampling of the market yields, on the other hand, information on the maximum price obtainable. The more a supplier samples the market, the greater is the probability that he will find someone willing to pay a higher price; and the higher this price, the greater the return for the landlord. The marginal return does not increase however. It falls with the extent of resampling. The marginal cost of resampling on the other hand does not fall and probably even rises.

A landlord consequently will reach a point where he will maximize his profits. A bargain is struck at the best price sampled at the moment. Under this wealth-maximizing action, however, emerges an unused, an "idle" resource, viz. vacant apartment. Yet simply to call these apartments "idle resources" is dangerously misleading. It conveys an impression of functionless, useless, and inefficient waste; and this is not necessarily the case. Vacancy emerges from a rational use of resources in the face of incomplete information and substantial adjustment costs. Holding apartments vacant implies, under the circumstances indicated, a more economical usage of resources, in response to the relevant operation of informational and adjustment costs. And the occurrence of the vacant apartment is correlated with an "inflexible" rent. The same conditions explaining vacancy also explain price inflexibility.

The same formal analysis applies to any asset, as, for example, labor. The workers' search for jobs and the employers' search for employees, the collection of information about jobs and employee characteristics, do not proceed without substantial costs. Moreover, the adjustment of the supply of labor services to the range of new job opportunities is not costless; neither is the hiring and firing of employees. A discharged worker could always find a job, quite immediately, at a sufficiently low wage. Yet if the market indicated up to the time he was discharged that he could reasonably expect to find jobs at accustomed conditions and the inherited wage, he would reject the options of an immediate job at lower wages and prefer to sample the market

through appropriate search activities. The search would involve costs of various types, foremost of course the potential wage forfeited by remaining unemployed and searching for a job of the same type and wage as the old. The nature of the prevailing relief and unemployment benefit systems modifies this cost, and thus affects the outcome substantially. This sampling of the population of potential buyers of labor services supplies the unemployed worker with an expanding volume of information. If the market situation for his general skills is fundamentally unchanged, the repeated resampling yields a rising maximal wage offer. The rate of increase diminishes, however, with repeated sampling; and the worker will accept employment when marginal adjustment and information costs (modified by benefits) threaten to exceed the expected increment in the maximal wage offered.

The market situation may, however, change fundamentally during a worker's search for one of two reasons: either because a change in the general supply conditions has permanently lowered the relative demand for his special skills, or because the aggregate demand for output is falling. In the first case, the information collected through persistent resampling of the market will always disappoint the worker. The low wage offers experienced will induce him eventually to readjust his anticipations and, consequently, his labor supply decision. This readjustment presents him with a choice between two courses of action: either to accept employment at substantially lower wages on the basis of unspecialized or unchanged skills, or to invest



some resources (and thus incur additional costs) in order to acquire new skills. In either case, he will eventually find employment - after possibly a substantial revision of anticipations and matching reservation prices.

In the second case, a different situation emerges. The initial anticipation level and reservation price of the discharged worker correspond to the information previously available through his employment. The unemployed worker thus samples the market with the anticipation of finding a similar job at the accustomed wage. But while he slowly acquires information, aggregate demand declines and thereby changes the phenomena sampled.

The maximal wage offers fail to rise in the manner expected and may even fall. Anticipation-level and reservation price will gradually be adjusted downwards, in the absence of legal or institutional constraints. Nevertheless, they will lag behind the decline in aggregate demand. An indefinite period of unemployment will eventually be absorbed as soon as the aggregate demand stabilizes, even without a subsequent increase, though such an increase would be a necessary condition for absorption of unemployment in the case where institutional constraints prevent a downward adjustment of wages. Otherwise, this increase in business activity accelerates absorption.

This outline of an economic analysis of unemployment may be summarized in the following manner: Unemployment is broadly determined by:

- (a) the nature of the costs governing information gathering and adjustments

in the types and directions of the labor supply (relief and benefit systems and opportunities for choice between employment and non-employment activities may play a crucial role at this point); (b) the magnitude and frequency of relative shifts in demand for products; (c) the magnitude and frequency of shifts in the supply conditions of product markets, particularly in the underlying technology shaping production; and (d) the comparative variability of aggregate demand for output. The variability of the conditions just listed relative to the prevailing speed of information diffusion and the associated adjustment speed of anticipations and reservation prices actually determine the broad course of unemployment.

It follows from these considerations that larger marginal adjustment and information costs, and large and frequent demand shifts compounded by an accelerating technological impact on production tend to raise the average level of unemployment generated by the market process. Furthermore, the larger the relative variability of aggregate demand for output, the larger are the fluctuations of unemployment around its average as determined by the above set of factors.

The analysis outlined above, based on general economic theory, provides an interpretation of unemployment and price-wage "inflexibility". It also determines a balance of social costs, the social cost of unemployment juxtaposed with the social cost of lowering average unemployment or holding its level below some ceiling. One may also use this analysis to investigate

the nature of institutional arrangements which contribute to reduce both types of costs and, most particularly, assure a continuous close balance of the types of costs.

The analytical outline above can be extended to subsume the behavior of any asset owner supplying assets or asset-products. We obtain in this manner a systematic explanation of sequential revisions of supply (or demand) prices in response to modifications of anticipation levels induced by continued resampling of relevant markets. The interaction between monetary-fiscal impulses, capital accumulation, impulses released by financial-technological innovation and the response mechanism of the system represented by the sequential revision of supply prices actually explains the emergence and characteristics of economic fluctuations. And perhaps the most crucial property of the system contributing to the fluctuations observed in our past are the relatively high costs of rapid information diffusion, rapid information absorption and speedy resource readjustments relative to the large variability of monetary impulses. This interaction of supply price adjustment and variability in monetary impulses explains the puzzling monetary phenomena listed at the beginning of this section. It explains in particular the co-existence of permanent price inflation and economic fluctuations in output and employment. Furthermore, presence or absence of "money illusion" becomes systematically associated with the relevant occurrence of marginal information costs. Rational behavior is thus not equivalent with absence of

"money illusion". The analysis also explains the different role of the growth rate in the money stock and its accelerations. The growth rate bears dominantly on long term price behavior, whereas the accelerations (or decelerations) bear dominantly on levels of output and employment. An adequate analysis of unemployment and price-wage inflexibility forms thus a crucial analytic ingredient in our understanding of monetary processes.

#### 6. Implications Concerning Inflation

We return at this stage to our original problem, i.e. persistent rise in the price-level of output. In particular, we wish to trace the role of monetary and fiscal policy in inflation processes. It is useful to remember that inflation involves a persistent change of the exchange ratio between money and non-money objects. Price theory implies that maintained changes in the relative supply-demand balance between money and non-money objects is a necessary and sufficient condition for the persistent changes in the exchange ratio mentioned. The recent articulation of neo-primitive ideas denies of course this elementary proposition. We submit, however, to the reader that the neo-primitive position has not offered a viable alternative to price theory: The inflation problem is thus examined within the general price theoretical framework outlined in the previous sections.

We recognize three distinct processes possibly initiating and perpetuating an inflation. We describe them as Wicksellian, Keynesian and

Humean inflation impulses. The labels serve a somewhat dramatized distinction and should not be understood to represent a precise explication of ideas developed in the appropriate literature.

The Wicksellian inflation is initiated by an autonomous increase in the expected net yield on real capital and persists with the maintained increase of this net yield. This persistent increase induces continuous readjustments in the public's wealth positions. The perpetual increase in the expected real rate lowers the desired money holdings, raises asset prices of real capital, expands aggregate demand for output. These repercussions set the systematic revision of output prices in motion. Anticipations will adjust once inflation proceeds on its course. This adjustment accelerates inflation for some time. It should be noted that under an effective system of progressive taxation the rate of autonomous increase in the expected net yield on real capital must accelerate in order to maintain a given rate of inflation. Inflation will end without any monetary or fiscal actions once the expected net yield stabilizes. Monetary policy could however moderate or eliminate a "Wicksellian inflation" by suitable reductions of the money stock. Fiscal policy can effectively contribute to the moderation of Wicksellian inflations or deflations by using a surplus to lower the money stock and deficits to increase the money stock. We note also that a constant Wicksellian inflation is accompanied by an increasing real rate of interest. Moreover, once inflationary anticipations influence market rates of interest two major consequences follow: The

nominal rate of interest increases in the context of a Wicksellian inflation by more than the (constant) anticipated rate of inflation, and moreover, the nominal rate rises continuously even with a constant rate of fully anticipated inflation. This behavior of real and nominal rate characterizes the Wicksellian inflation.

The Keynesian inflation consists of two separate strands, one pertaining to the government sector's expenditure policies and the other to tax policies. The first strand exhibits some similarities with Keynes' classic discussion of inflation examined in our introduction. Consider a state with persistent (relative) expansion of the government sector's real demand for the private sector's output. This expansion is financed by new issues of securities. The relative increase in the government's demand for output involves a perpetual reallocation from the private sector to the government sector. This reallocation is achieved by a continuous increase in the price-level of output. This increase is required to induce either an increase in private output or lower its rate of absorption by the private sector. The latter event prevails at sufficiently high levels of resource-utilization. The compression of private real demand is accompanied by a matching decline in the private sector's real balances. Similar to the previous case appropriate monetary and fiscal policy effectively moderates or even removes a Keynesian inflation. There exists another similarity. The real rate of

interest rises continuously while this type of Keynesian inflation lasts. The persistent increase of the stock supply of government securities raises their yield. This induces readjustments of wealth positions which raise also the real yield on real capital. It follows that the asset price of real capital increases by less than the price-level of output. Moreover, with the emergence of inflationary anticipations nominal rates will increase more rapidly than the real rate. We obtain thus also for the Keynesian inflation that nominal rates increase by more than the anticipated rate of inflation and proceed to increase even with a constant rate of inflation.

The rising real rate of interest mirrors the reallocation of resources imposed by the government's expenditure policy. A growing share of resources is absorbed by the government sector. This reallocation proceeds substantially at the cost of private capital formation. This modification is fostered by the increase in market rates on financial assets and the relative decline in asset-prices of real capital in terms of output prices. The shift in resources out of private capital accumulation affects the future growth rate of private output and output per labor unit. This effect will prevail even in case the government sector uses the resources absorbed for public capital formation. It should be noted that we observe a similar real effect expressed by a shift from private capital accumulation to governmental use of resources in case of a constant deficit with constant government expenditures. This deficit raises market rates and real rates

above the otherwise occurring level and trenches on the level of private capital formation. Contrary to the businessmen's perception of Keynesian ideas this deficit affects both output and price-level only to a minor extent. It exerts dominantly, and particularly in the longer-run, an allocative effect.

The other strand of Keynesian inflation occurs in response to persistent reductions in tax rates on income from wealth, particularly non-human wealth. The consequences of this tax policy impulse are similar in some respects to the Wicksellian process and differ from the first strand of Keynesian inflation with respect to the real effects. There occurs in the present case no reallocation of resources from private capital accumulation to government absorption. The movement of interest rates separates the present case from the previous cases however. The gross real rate falls, whereas nominal rates fall somewhat less as inflationary anticipations are impounded into the market rates on financial assets. This account should be qualified in specific respects. In case tax rates were sufficiently high to lower the utilization and impair the efficiency of real resources via the reaction of resource owners, lower tax rates induce an increase in the output produced. This event may be interpreted as an increase in the marginal productivity of real balances. Its effect offsets the inflationary effect of the increase in net real yields on real capital resulting from the lower tax rates. It follows that the inflation effect may be delayed for some time in case the tax impulse is initiated at sufficiently



high tax rates.

Humean inflation centers the impulse on the behavior of the money stock. A persistent (relative) expansion of the money stock induces continuous wealth adjustments which affect aggregate demand. Prices of output and real capital rise in response to this monetary impulse irrespective of the conditions governing this impulse. Humean inflation may modify the real rate but not persistently and within a range controlled by the rate of inflation. The nominal rate adjusts to the anticipated rate of inflation and once adjusted will not increase persistently under a constant rate of inflation.

The Wicksellian-Keynesian inflation on the one hand and the Humean inflation on the other are thus distinguished by the impulse factor generating and maintaining inflation. They are also clearly differentiated by the associated behavior of nominal and real rates of interest. There is no a priori reason to identify observed inflations with one particular type of inflation. Accelerated government demand, lowered tax rates, increased net yields on real capital or accelerations of the money stock may have contributed with shifting weight to our inflationary experiences. Observations drawn from inflationary episodes yield fortunately some information bearing on this issue. It is important in this context to distinguish between large (in magnitude or time span) inflations and moderate inflations. The inflationary episodes of 1951, 1957 and 1965 to 1971 in the USA belong to the latter

category. Large inflations or inflations persisting over many years belong essentially to the Humean category. The magnitude of this inflation excludes a Keynesian explanation. It simply cannot be explained adequately in terms of the government sector's real demand for output. The latter's behavior is not consistent with the pattern required for a Keynesian inflation. The same observations also eliminate the second Keynesian strand. Moreover, a Wicksellian explanation is not supported by observations bearing more or less directly on the real rate of interest. Lastly, both magnitude and timing of inflation are clearly associated with the movement of the money stock. We conclude that large or persistent inflations dominantly form a Humean phenomenon.

Moderate inflations and episodic inflationary experiences require separate attention. The Wicksellian or Keynesian impulse probably contribute on occasion to temporary spurts of inflation. These spurts can always be tempered however by suitable adjustments of monetary and fiscal policy. The episode of 1956/57 in the USA offers the best opportunity to recognize a Wicksellian impulse. It also demonstrates the episodic nature of this impulse and the eventual prevalence of monetary deceleration. But even moderate and somewhat temporary inflationary experiences are usually associated with monetary accelerations. Moreover, it appears that termination of all inflationary experiences are preceded by a monetary deceleration. We conclude thus that most moderate inflations were either dominantly Humean inflations or substantially aggravated by Humean inflation.

This proposition is confirmed by the examination of the role of monetary and fiscal policy in the USA, Italy, and Germany. All the major, but still moderate, accelerations in prices observed in Germany, Italy and the USA follow a period of monetary acceleration. We also note that monetary decelerations were followed in all three countries by a deceleration of price movements. This pattern reinforces our surmise that the Wicksellian or Keynesian impulse explain at most a minor and transient portion even of moderate inflationary experiences. An examination of the subsequent studies also reveals that monetary policy provided the major thrust to the Humean impulse. The reader will also notice the occurrence of an independent range of monetary policy in spite of the fixed exchange rates and interdependent credit markets. Major decelerations in Germany and Italy were clearly initiated by autonomous domestic policies and were not the response of foreign decelerations transmitted via the balance of payments to the domestic monetary system.

The price-theoretical framework underlying our analysis thus centers the inflation problem on the magnitude and persistence of an excessive monetary growth. The same analysis also explains another aspect of the inflation problem. The last section interpreted the mesh of market interrelations as a system producing and disseminating information involving a sequential adjustment of output and prices. The account emphasized the operation of information and adjustment costs and the resulting difference

in the adjustment velocities of prices and output. It follows that even persistent inflations experience variations in the utilization rate of resources. Output and employment accelerate and retard while prices continue to rise whenever monetary growth is sufficiently variable relative to the absorption and dissemination properties of the markets communication system. An acceleration of the money stock relative to the inherited trend induces within a few quarters an accelerated increase of output. Similarly, any deceleration relative to the inherited trend retards and, if sufficiently large, lowers output temporarily. The deceleration of output and employment is eventually transmitted to prices. The speed of transmission is difficult to gauge. It seems to depend on the magnitude of the inherited trend, the magnitude of the deceleration and the remembered variability of the monetary impulse in the recent past. These variables crucially influence the public's information bearing on the future course of price movements. A persistent monetary deceleration accompanied with a rapid dissemination of reliable information that inflation can be expected to subside will effectively retard observed price movements with little delay and only minor lapses in output and employment. In the absence of such an information process monetary deceleration will affect actual prices with a substantial delay. Output and employment suffer under these circumstances substantial retardations. This pattern is clearly visible in the moderate inflation experiences examined. The very nature of the communications and information process with the continuous decay of old information and acqui-

sition of new information should make us very skeptical with respect to any thesis implying constant or highly predictable patterns of delay. But the same properties of the communication process also establish that a persistent monetary deceleration eventually penetrates the system and forces an adjustment of actual price movements. The experiences examined substantiate this conclusion.

