The Demand for and Supply of Inflation: Comment

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COMMENT*

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I. Economic Analysis and "Marxian Questions"

An interesting survey of the inflation problem was published several years ago by the Marxist Digest.[1] The material included contributions by Soviet Russian economists and papers published by West-European Marxists. A major and recurrent theme of the survey emphasized the *proximately* monetary character of inflation. Some papers developed this theme with remarkable explicitness. Other pieces supplemented the monetary theme with an array of institutionalist impressions, frequently drawn from non-Marxian literature.

The pervasive occurrence of the monetary theme is, in Marxist writings, quite remarkable. Moreover, there is clear recognition in several papers that monetary behavior must, in turn, be explained by suitable institutional and political conditions. Substantial monetary accelerations and sustained high levels of monetary growth result from the movements of the monetary base. The base, moreover, is determined by the behavior of the Central Bank. One naturally wonders under the circumstances: Why do Central Banks behave in the way they do? Why do they generate a monetary growth beyond the critical non-inflationary level? And what, in particular, are the conditions that determine large and sustained monetary accelerations?

These questions take us beyond the Central Banks to an examination of budgets and broad aspects of the political process. They merge with what have been considered "political" or "sociological" questions and carry economic analysis over into related political and sociological phenomena. Our searching assessment of the future course of Western societies is, therefore, influenced by an understanding of the "political economy of inflation." Marxian literature has also been groping for such insights. It has failed, however, and will continue to fail in my judgment. This is not the place to argue in detail the nature of the Marxian failure. It is firmly rooted in the traditional "sociological view" of man as a role playing agent with his role

* The comments are associated with work on the inflation problem supported by a grant from the National Science Foundation. The ideas developed emerged from many discussions with Allan H. Meltzer and William Meckling. Their suggestions bearing on the "political economy of the inflation problem" have been exceedingly important to me.

[1] The Marxist Digest is regularly published in Frankfurt, West Germany.

determined by a set of selected social relations independent of institutional incentive structures.

In contrast to the "sociological view" of the world, modern economic analysis sees man as a search organism who responds systematically or rationally to shifting incentives.[2] Such incentives are apparently related to recognizable institutional patterns. Thus, the concept of man as a "prem"—a purposeful, resourceful, evaluating maximizer—gives us an analytical approach to an understanding of societies not available to the older "sociological view." This approach promises more useful answers to "Marxian questions" as well as the problems posed by a "political economy." These programmatic assertions are not without foundations. The old boundaries between the social sciences crumbled and economic analysis has been applied over an expanding range of problems. One would expect that this development will usefully expand our comprehension of the prevailing relations between human behavior and institutional arrangements.

Robert Gordon addresses his paper[3] to some of the "Marxian questions" noted above. Attention is directed to the "sources of monetary growth" "behind" the monetary accelerations. The "central task of a comprehensive theory of inflation" must "identify," in his judgment, "the sources of differences in the rate of inflation and hence of monetary growth." The question, even in monetary analysis, is not entirely new and we find repeated references to the processes "behind monetary growth." The development of "money supply" theory over the past twenty years led to work on Central Bank behavior and the nature and role of those concepts which govern the institutional responses of central bankers to evolving circumstances.

Economic analysis wisely divides the inflation problem into two distinct subquestions. The first concentrates on the relation between monetary growth and inflation and the second enquires into the "political economy" of monetary growth. This procedure was eminently sensible and pragmatically useful. The relation between monetary growth and inflation is essentially independent of the "sources" of monetary growth and those institutional and political circumstances that shape the sources. It also appears that a unified hypothesis is possible for the first question and is applicable to almost any institutional variations we may encounter. The second problem seems less tractable. Apparently, it depends more on specific historical circumstances and resisted thus far a unified analytic approach.

The procedure built into monetary theory contrasts, of course, with the wide array of "institutionalist-structuralist" explanations of inflation based on the "sociological conception" of man. The common and defining charac-

[2] The issue of the underlying conception of man has been the subject of one session at the Interlaken Seminar on "Analysis and Ideology" in May 1975. William Meckling (University of Rochester) contributed a paper for this purpose which confronts the sociological view with the model developed by economic analysis.

[3] Robert Gordon, The Demand for and Supply of Inflation, 18 J. Law & Econ. 807 (1975).

teristic of such explanations is not their emphasis on "institutional" arrangements or "structural" patterns. Rather, it is their implicit (and often explicit) assertion *that prices and wages do not respond systematically and pervasively to market conditions.* The "relative autonomy" of price or wage movements forms the crucial message of "institutionalist-structuralist" explanations of inflation. This "autonomy" of price-wage movements is attributed to specific institutions, be they the mysterious "techno-structure," labor unions, monopolies (not labor unions) or oligopolies, rising aspirations, or the social conflict for income shares.[4] These views create a radically different focus on the "political economy of inflation". The author offers us an interesting mixture in this respect. Some strands of Gordon's paper explain inflation and monetary growth (or unemployment) in terms of an autonomous wage push of labor suppliers. Other strands would less easily accommodate such "sociological intrusions." The major thrust however, directed as it is to the second question of the inflation problem, seems most appropriate and useful at this stage. In the past, inflations were essentially regional phenomena. Today's persistent *world wide* inflation is a new phenomenon and certainly requires a more detailed investigation. The problems and processes "behind" monetary growth deserve the searching inquiry of many economists.

II. Gordon's Analysis

Monetary growth generating inflation emerges in Gordon's view from "implicit demands" for inflation expressed by "pressures for the government to pursue a more inflationary policy, or not to pursue an anti-inflationary policy," or revealed by "taxpayers who resist tax increases," or by "beneficiaries of government programs who resist expenditure reductions," or by "groups attempting to obtain an increase in their share of income. . . ." The government's response to these "pressures" defines an implicit supply of inflation. This general framework should express the author's "thesis . . . that accelerations in money and prices are not thrust upon society by a capricious or self-serving government, but rather represent a rational response of government to the political pressure exerted by potential beneficiaries of inflation."

[4] It is frequently denied that such explanations exist. As a matter of fact, they dominate the European literature. A detailed examination of these explanations is under way at my project at the University of Bern. I have dealt on two other occasions in the past with these issues and the reader is referred to the following two papers: "Monetary Management, Domestic Inflation, and Imported Inflation," National Monetary Policies and the International Financial System, ed. by Robert Z. Aliber, University of Chicago Press, 1974, and "Is Inflation Really Intractable?," *Währungsstabilitätin einer integrierten Welt: Beiträge zur Geldtheorie und Geldpolitik,* 1974 by Hessische Landesbank, Frankfurt, Germany. In order to avoid any misunderstanding I emphasize once more that the crucial characteristic of "institutionalist" explanations are *not* the concern about the role and importance of institutions, but their definite *denial of elementary price theory combined with an essentially sociological view of man.*

Sections II and III of Gordon's paper intend to clarify the "demand side" for inflation, section IV presents the "supply side," and section V describes the interaction between demand and supply in the sphere of voter behavior. Section II, entitled as "The Demand for Inflation by Taxpayers" presents a generalization of the well-known Bailey analysis and involves implicitly a normative determination of inflation. Section III develops two distinct versions of a "positive" explanation of inflation in terms of unemployment and cost-push or monetary growth. The formulation proceeds in the tradition of Phillips. Another positive version, omitting any reference to cost-push and cast in the mold of a weak natural rate hypothesis appears in section IV under the title "Supply of Inflations." The last section introduces a political objective function expressed as the fraction of voters voting for the incumbent party and uses previous pieces of analysis as constraints on the arguments in the objective function.

1. *The Generalized Bailey Analysis*

The Bailey procedure, amplified and modified by recent papers on this subject, is used to derive a marginal social cost $\phi(\pi)$ of inflation as a function of the inflation rate π. The second building block is a marginal deadweight cost $\beta(\tau)$ supplemental with a marginal administrative cost $\gamma(\tau)$ as a function of the tax parameter τ. The last building block is the budget equation, that is, $G = \tau Y + \rho(\pi) Y$. The first term describes (conventional) tax revenues and the second term represents "inflationary finance" with a parameter ρ depending on the rate of inflation π with properties derived in the literature on the optimal rate of inflation. The parameter ρ satisfies the equation $\rho = m \cdot \mu = (\pi + \bar{x}) \cdot \mu(\pi)$, where m is monetary growth, π the inflation rate, μ denotes real balances per unit of real income and $\bar{x}$ is the natural real rate of growth. This equation introduces ρ as a function of π. The second expression describes in other terms the deficit as a function of π. An optimizing policymaker chooses now for any given (relative) volume of government expenditures $g(=G \cdot Y^{-1})$ the values of π and τ satisfying simultaneously the conditions defining a social optimum and the budget, that is,

$$\phi(\pi) = \theta(\tau) \qquad \text{where } \theta = \beta + \gamma \tag{1}$$

$$\rho(\pi) + \tau = g. \tag{2}$$

The first equation expresses the equality between the marginal social cost of the inflation tax and of conventional taxation. The second equation describes the budget. These two equations determine π and τ for any given g. Equation (3) describes the responses to variations in g

$$\epsilon(\pi, g) = \frac{\epsilon(\theta, \tau)}{\epsilon(\phi, \pi)\frac{\tau}{\rho+\tau} + \epsilon(\rho, \pi) \cdot \epsilon(\theta, \tau)\frac{\rho}{\rho+\tau}} \tag{3}$$

$$\epsilon(\tau, g) = \frac{\epsilon(\phi, \pi)}{\epsilon(\phi, \pi)\frac{\tau}{\rho+\tau} + \epsilon(\rho, \pi) \cdot \epsilon(\theta, \tau)\frac{\rho}{\rho+\tau}}$$

Both responses are necessarily positive as long as $\epsilon(\rho,\pi) > 0$. With π pushing above a critical level maximizing ρ and $\epsilon(\rho,\pi) < 0$, a necessary and sufficient condition for positive responses of π and τ is expression

$$\frac{\epsilon(\phi,\pi)}{-\epsilon(\rho,\pi)} > \epsilon(\theta,\tau)\frac{\rho}{\tau}. \tag{4}$$

The deficit expressed by $\rho \cdot Y$, increases until π reaches a level maximizing the inflation tax. Beyond this level, further increases in g may still raise π and τ, but the relative deficit ρ declines. It follows that the response of τ with respect to g exceeds unity in this range, so that $1 - \tau_g = \rho_\pi \pi_g < 0$.

2. The "Cost-Push" Augmented Phillips Curve

The second demand component for inflation exploits ideas from the "cost-push" literature. The terminology suffers unfortunately from serious ambiguities with shifting meaning and usages of the term. Gordon views "cost push" as an important "source of pressure for monetary accommodation."[5] The "cost-push" component of "inflation-demand" appears in two distinct versions. The first version uses an aggregative price equation and a wage equation

$$\pi_t = w_t \qquad \text{price equation} \tag{5}$$

$$w_t = \pi_t^e + f[u_t^{NPN} - u_t] + z_t \qquad \text{wage equation} \tag{6}$$

$$m_t = \pi_t + y_t \qquad \text{output market equation} \tag{7}$$

where π is again the inflation rate, w the relative changes in money wages, π^e the expected inflation rate, u the unemployment rate, u^{NPN} the "non-push" normal rate of unemployment and z denotes the rate of "wage-push," whereas x is real growth at a constant rate of unemployment. Two distinct states are recognized. In the first state m is "non accommodated" and in the second state m is "accommodated." Accommodation means that $u = u^{NPN}$ or more generally, u is fixed at a predetermined target level. It follows under the circumstances that

$$m = \pi + x = \pi^e + z + x. \tag{8}$$

Accommodation thus implies that m is raised by the push factor z above its prevailing level in order to hold u at the level u^{NPN}. We also note that monetary growth adjusts under the circumstances passively to revisions of inflationary expectations. Without accommodation π and w are determined by the predetermined magnitudes m and x, in accordance with $w = \pi = m - x$. The wage equation determines in this case for any given π^e the rate of unemployment u as a function of z. The increase in z raises u by an amount depending on m and π^e.

[5] Cost push is "much less a source of inflation by itself without the cooperation of the monetary authorities."

The second version differentiates the price structure in an attempt to motivate the cost-push. The first version denies any cost-push effects on real wages. Moreover, cost-push never raises and can only lower the total real wage bill. One necessarily wonders about the rationale of "cost-push" under the circumstances. The second version separates three types of goods: traded goods F, non-traded goods with flexible prices N and non-traded goods with contractual prices C. The general price equation occurs now as a weighted average of the three components

$$\pi = \mu_1\pi^F + \mu_2\pi^N + \mu_3\pi^C \tag{9}$$

with the components π^F = traded goods, π^N = non-traded goods with flexible prices, and π^C = non-traded goods with contract prices determined as follows

$$\pi^F = \pi^w + e;\ \pi^N = w;\ \pi^C = \pi^e \tag{10}$$

where π^w is the world rate of inflation and e = the relative change in the exchange rate. Lastly, the wage equation is defined as

$$w - \pi = \mu_1\pi^e + (1 - \mu_2)\,[f(u^{NPN} - u) + z] - \mu_1(\pi^w + e). \tag{11}$$

These equations yield the following solutions for w and π in terms of π^e, $\pi^w + e$, and $f + z$. We obtain equations

$$w = \pi^e + f + z \tag{12}$$

$$\pi = \mu_1(\pi^w + e) + (1 - \mu_1)\pi^e + \mu_2(f + z). \tag{13}$$

We notice that

$$\frac{\partial w}{\partial z} = 1 > \mu_2 = \frac{\partial \pi}{\partial z};\ \frac{\partial w}{\partial \pi^e} = 1 > (1 - \mu_1) = \frac{\partial \pi}{\partial \pi^e};\ \text{and also}$$

$$\frac{\partial w}{\partial(\pi^w + e)} = 0 < \mu_1 = \frac{\partial \pi}{\partial(\pi^w + e)}.$$

Inspection immediately shows that cost-push operates more strongly on money-wages than on price inflation. A similar effect is exerted by an increase in the anticipated rate of inflation. The cost-push opens in this manner a wedge between w and π and raises real wages. Worldwide inflation π^w and currency depreciation e on the other hand affect π but exert no effect on w. Real wages are thus accelerated by cost-push or revisions of inflationary anticipations, whereas higher unemployment u or a larger rate of world inflation (or currency depreciation) decelerate the real wage. The effect of a cost-push on the distribution of real income can thus be offset by suitable currency depreciation.

In order to examine the consequences of cost-push we require again the equation

$$m = \pi + x \tag{14}$$

with the same definitions as before. Attention to conditions of steady state removes considerations of a variable velocity. With a non-accommodative monetary policy m is predetermined and for a given y the inflation rate π is fixed by equation (14). The equation (13) determines under the circumstances for any given cost push z, anticipated rate of inflation π^e and "international state" (π^w + e) the unemployment rate u. Insertion of u and the predetermined variables into equation (12) ultimately determines the rate of money wage inflation. An increased cost push z raises in contexts of non-accommodative monetary policy the unemployment rate u sufficiently to offset completely the cost-push effect on π. For given π, (π^w + e) and π^e in equation (13) an increase of z lowers necessarily f by a matching amount. The magnitude of (f + z) remains thus constant and all arguments of the money wage equation are unchanged. A cost-push under non-accommodative policy exerts no effect on price or money wage inflation. Accommodative monetary policy on the other hand implies that π and m are adjusted to satisfy the condition $u^{NPN} = u$ and thus f = 0. An increase in z raises under the circumstances π by μ_2 per unit change in z. The increase in π requires according to equation (14) a matching accommodation of m by the monetary authorities. Lastly, the increase in z raises w by more than π. Cost-push continuously raises therefore, by itself alone, the level of real wages and the real wage bill.

An extension of the analysis to include rational expectations, defined by the equality $\pi = \pi^e$, produces the following solution for w and π:

$$\pi = (\pi^w + e) + \frac{\mu_2}{\mu_1}(f + z) \tag{15}$$

$$w = (\pi^w + e) + \frac{\mu_1 + \mu_2}{\mu_1}(f + z) \tag{16}$$

Acceleration of world inflation and currency depreciation has no effect on real wages in this case. But cost-push still accelerates real wages and rising u decelerates real wages. Moreover, with unadjusted expectations, world inflation π^w and currency depreciation e offset the effect of cost-push on the movement of real wages and the distribution of real income. Such offsetting vanishes under rational expectations. The movement of the real wage ($w - \pi$) depends only on the cost-push factor and the unemployment rate, such that $w - \pi = f + z$.

3. *Phillips Curve and Weak Natural Rate Hypothesis*

Section IV on the "Supply of Inflation" opens with a second version of positive inflation explanation (in contrast to the implicitly normative approach based on inflationary finance). The quantity theory equation is supplemented for this purpose with a Phillips relation:

$$m = \pi + x \tag{17}$$

$$\pi_t = \pi_t^e + b(x_t - \bar{x}_t) \tag{18}$$

where $\bar{x}$ denotes the natural growth rate of output and x is the actual rate. The other signs have already been defined. The solutions for π and x are:

$$\pi_t = \frac{bm_t + \pi_t^e}{1 + b} \tag{19}$$

$$x_t = \frac{m_t - \pi_t^e}{1 + b}. \tag{20}$$

It is assumed in order to simplify that $\bar{x}_t = 0$. Two more equations are introduced to explain the expected growth rate of output and the expected inflation rate:

$$x^e_{t+1} = -x_t \tag{21}$$

$$\pi^e_{t+1} = m^e_{t+1} - x_t \qquad \text{and } m^e_{t+1} = m_t. \tag{22}$$

Equation (21) expresses a regressive pattern. Output is expected to return to the normal output level. Equation (22) uses the proposition that monetary growth in (t + 1) expected in t is equal to actual monetary growth in t. It postulates that the inflation rate in (t + 1) expected in t is equal to the actual inflation rate π_t (= $m_t - x_t$) in t.

Equations (19) to (22) immediately yield the difference equation:

$$\pi_t = \frac{1}{1 + b}\,\pi_{t-1} + \frac{b}{1 + b}\,m_t \tag{23}$$

$$x_t = \frac{1}{1 + b}\,x_{t-1} + \frac{1}{1 + b}\,(m_t - m_{t-1}). \tag{24}$$

The solutions are (for constant m)

$$\pi_t = m + \left(\frac{1}{1 + b}\right)^t (m_o - m) \tag{25}$$

$$x_t = \left(\frac{1}{1 + b}\right)^t (m - m_o) \tag{26}$$

where m_o is the inherited monetary growth and $(m - m_o)$ expresses a jump to a new maintained growth m. We note that a disruption of an inherited monetary trend dislodges output from natural output. Actual output converges subsequently monotonically to its natural level. Equation (21) implies on the other hand that expected output remains throughout the adjustment at the natural level. The systematic and persistent error in expectations induces no revisions. But this really does not matter. Equation (21) does not feed back and expected output does not affect the process. Equation (21) is actually quite irrelevant under the circumstances specified. It is also noteworthy that (17), (18) and (22) yield an "accelerationist" proposition, viz.

$$\pi_t - \pi_{t-1} = bx_t. \tag{27}$$

Output levels beyond the natural level thus induce an acceleration of inflation, and output levels below the natural level decelerate inflation.

4. *The Voter, Policy and Inflation*

The last section attempts to combine the "supply of" with a "demand for" inflation. Gordon introduces for this purpose two postulates. He assumes first that the "incumbent party" wishes to maximize the share V of votes received. V is a function of π, τ, u (or x) and g. The second postulate covers the selection of constraints imposed on the maximization of V. This choice is ambiguous. Four possible constraints are available and described in Table 1: the generalized Bailey analysis in section 1(C1), the cost-push analysis in section 2 (C2), the analysis in section 3(C3) and a combination of C1 and C2. The combination of C2 and C3 is either contradictory (for $z > 0$) or redundant (for $z = 0$). In the first case ($z > 0$) the combination is inadmissible and in the second case it is equivalent with C3. The combination C1 and C3 is similarly redundant. With C1 we accept the implication that $\pi = \pi^e$ and $x = \bar{x}$. The combination is thus equivalent with C1.

An inspection of Table 1 shows that different patterns emerge. Some constraints remove all but a single maximizing variable g. Other constraints admit g and τ as maximizing variables. The variation in constraints produces therefore a range of distinct propositions about the interaction between the "supply of" and "demand for" inflation.

TABLE 1:
SUMMARY OF PATTERNS RESULTING FROM DISTINCT CONSTRAINT SETS

1. with constraint set C1:
   The solutions from C1 are: $\pi(g)$, $\tau(g)$
   Note also that u is constant or $x = \bar{x}$ (natural growth rate)
   The objective function after suitable replacement is

   $$V[\pi(g), \tau(g), u, g]$$

   Maximizing variable: g.
2. with constraint set C2
   The solutions from C2 are: $u[v(g-\tau) - x, \pi^e, z]$ and $\pi = v(g-\tau)-x$
   The budget equation $m = v(g-\tau)$, with v the income velocity, was used for this purpose.
   The objective function is

   $$V[v(g-\tau)-x, \tau, u[v(g-\tau)-x, \pi^e, z], g]$$

   Maximizing variables: g, τ
3. with constraint set C3
   the solutions are: $\pi(m, \pi_{t-1})$ and $x(m, \pi_{t-1})$
   Replace m with the aid of the budget equation $m = v(g-\tau)$
   The objective function is

   $$V[\pi[v(g-\tau), \pi_{t-1}], \tau, x[v(g-\tau), \pi_{t-1}], g]$$

   Maximizing variables: g, τ
4. with constraint sets C1 and C2
   The solutions from C1 and C2 are combined to yield $u(g,z)$, $\pi(g)$ and $\tau(g)$
   Note also implication from C1: $m = \rho(\pi) \cdot v(\pi)$. This follows from the definition of the ρ-function. Suitable replacement in the objective function determines

   $$V[\pi(g), \tau(g), u(g,z), g]$$

   Maximizing variable: g

III. The Critique

Application of economic analysis to explanation of political and social processes derives from the view that man is a search organism systematically responding to incentives confronting him. It was emphasized earlier that the recognition of a "resourceful, evaluating, maximizing man" is the fundamental contribution of modern economic analysis. The usual discussion of *homo oeconomicus* and "economic versus non-economic motives" rather misses the relevant aspects in this respect. Demand and supply on the usual markets, the behavior on "political markets" or in non-market social interaction, thus emerge from the response of purposefully resourceful and evaluating men, that is, from systematic responders to prevailing incentives defined by market opportunities and properties of non-market institutions. Gordon's terminology expresses this general line of thought. The paper programmatically addresses a "demand for and supply of inflation."

The organization also suggests the interpretation intended by the author. The political aspects affecting the resulting inflation are summarized by the incumbent party's objective function V. Important political facts are introduced by Gordon as parameters shaping the properties of the V function. The V-function represents the "supply of inflation." The "demand for inflation" on the other hand is represented by the admissible constraints.[6] The following sections examine first the so-called demand components for inflation and consider lastly the interpretation of interacting supply and demand.

1. *The Generalized Bailey Analysis*

This analysis imposes a normative rule to determine an optimizing inflation rate. It describes the conditions for a socially optimal inflation policy and derives the dependence of such optima on the relative magnitude of government expenditures g. The analysis yields no information about the central question emerging from a "prem-analysis," viz. who is actually expected to execute such optimization? The analysis presented offers no institutional arrangement exposing individuals to incentives which produce accommodations expressed by equations (1) and (2). In this sense the analysis remains purely normative without claim to observable relevance. Any discussion of observable facts associated by the author with this analysis remains therefore purely suggestive and without any logical basis. No facts could in principle disturb the analysis.

The addition of a supplementary hypothesis converts the initial normative analysis into an empirical assertion with cognitive claim. The addition required is a "public interest" hypothesis of representative government. This hypothesis plays an important role in the "transubstantiation" of

[6] Gordon classified the analysis of section 3 under "supply." This makes little sense even in the context of the highly problematic labelling used in the paper.

normative statements bearing on economic policy into claims about reality. Its application assures us that there will emerge an optimizer imposing the socially necessary equality between marginal social costs and benefits. The bureaucracy and legislative bodies of representative government actually protect in this view the public interest and create the welfare maximizing condition. The Bailey analysis remains thus purely normative or requires a public interest interpretation of "government." Both cases pose serious problems for the combination of C1 with the political objective function V. This problem will be discussed further in the last section.

2. The Cost-Push Analysis

We encounter here an obvious intrusion of "institutionalist" ideas. The cost-push factor z occurs as an autonomous magnitude unrelated to and independent of market conditions. One single sentence refers to the possibility that z depends on labor unions' anticipations about the accommodation policies pursued by monetary authorities. In order to avoid the implicit denial of price-theory the cost-push factor would have to be specified more definitely in terms of such anticipations. Moreover, the operation of a cost-push would have "to be motivated" in terms of an expected advantage to labor suppliers or their representatives. The first version of the cost-push model simply introduces an autonomous z with a mysterious reason for its emergence. The second version attempts to justify the emergence of a positive z in terms of the resulting gains in the real wage bill and real wages. But this implies a constant shift in the distribution of real income. This redistribution should be observed after adjusting for productivity, tax effects and particularly for the impact of world wide inflation and currency depreciation. Proponents of cost-push have not offered such evidence. Their idea conflicts on the contrary with a body of analysis represented by the theory of a "prem," which contributed over many years to an expanding knowledge about social processes. The idea of an *autonomous* cost-push forms under the circumstances either an unfortunate regression or at best an open question still to be answered by future research, requiring astute reformulation in terms of economic analysis.[7]

The analytic summary of section II.2 implies that a cost push working

[7] Michael Parkin recently informed me that an explicit incorporation of crucial institutional changes affecting labor supply in the United Kingdom adequately explains the observed wage explosion of the later 1960's. The improvement of unemployment benefits shifted the labor supply relative to demand and created an excess demand captured apparently by the "expectations augmented Phillips relation approach." Gordon incidentally notes that the cost-push literature "is rather thick on description and thin on the analysis of causation." The reader will also note that the discussion of "The Determinants of Changes in the Rate of Push" yields no information and no hypothesis is advanced. Gordon finds the "most striking evidence in favor of wage push . . . provided by Perry, who finds a wage-push dummy variable necessary to explain the wage explosion" of the late 1960's outside the USA. This dummy variable clearly hypothesizes that an autonomous process operated on wages. And this view does clash with other views about wage-price adjustments.

according to the first model can only operate over a transition period characterized by $\pi \neq \pi^e$. A comparatively stable cost push would eventually yield $\pi = \pi^e$, that is, anticipations would adjust to the prevailing experience. At this stage the operation of the cost-push factor is simply offset by increased unemployment with a rate of inflation π essentially independent of the cost push. The model thus implies that $\pi > \pi^e$ is a necessary condition for the relevant operation of the cost push. But this condition is not sustainable. Even the authorities' attempt to fool the public most accommodatingly by accelerating m, in order to maintain a permanent wedge between π and π^e absorbing the z-effect, is eventually self-defeating. A sufficient number of economic agents will find it advantageous to learn from experience and learn to anticipate quite adequately the authorities' behavior. The cost-push factor in the first version could thus not explain our historical phenomenon, that is, the prevalence of long-run inflations and its observed variations.

The second version of the cost-push model seems to avoid the dilemma implied by the first model. Equations (15) and (16) show that the operation of international influences, expressed by the term $(\pi^w + e)$, provide a wedge between π and $(\pi^w + e)$ in the wage and price equation reflecting the effect of the cost-push factor z. Once π^e was adjusted to π in the first model no wedge was left to absorb the effect of z. Such a wedge is however provided in the second model. The difference $\pi - (\pi^w + e)$ [or $w - (\pi^w + e)$] mirrors the z-effect operating at a constant $u = u^{NPN}$. Thus it follows that even with the condition $\pi = \pi^e$ underlying equations (15) and (16) the wedge remains. Accommodating monetary policy may thus persist even with fully anticipated inflation. The cost-push still determines under the circumstances both inflation and monetary growth. We should note however a peculiar implication: Under a fixed exchange rate system (that is, $e = 0$) any positive cost push, that is, for any $z > 0$, domestic inflation π *always* exceeds world-wide inflation. We obtain with $z > 0$ and $u = u^{NPN}$, that $\pi > \pi^w$. Cost push of any degree supplemented with an accommodating policy (that is, $u = u^{NPN}$) implies that world inflation is less than domestic inflation. But this proposition holds for *any* country and we reach thus the conclusion: If all countries have a positive cost push supported by an accommodating monetary policy, *all* countries suffer an inflation rate π *exceeding* the average of their π. That implication involves a remarkable piece of arithmetic. It could of course be avoided by holding forever that $\pi \neq \pi^e$. But the denial of $\pi = \pi^e$ over a long run seems hardly acceptable.

The problem seems to arise because the analysis does not recognize *all* the relevant long-run relations. The relation between currency depreciation (or appreciation) e on the one side and the relative evolution of domestic and world inflation on the other should be properly imbedded into the analysis. The relation $\pi = \pi^e$ is already incorporated as a relevant longer run condition. But we should also include another long-run condition, viz. the depen-

dence of e on π and π^w. The connection is approximated with $e = \pi - \pi^w$. Equations (15) and (16) thus imply

$$f + z = 0 \tag{30}$$

$$w = \pi. \tag{31}$$

Under proper specification of relevant long-run conditions we obtain thus for the second cost-push model the same general result established for the first model. In the longer-run, when anticipations on *domestic output* market and on the *foreign exchange* market are approximately adjusted, cost push can only affect the unemployment rate. Long-run inflation cannot be influenced by the cost push. "Cost-push inflation" remains according to both models used by Gordon essentially a *shorter-run* phenomenon operating over a transition period with a horizon determined by the speed of anticipation adjustments. It follows that an autonomous cost push fails to explain *long-run* inflationary trends. Moreover, there still remains the problem whether such a cost push really exists. Its operation implies under a constant exchange rate and the conditions $\pi^w < \pi$ a continuous redistribution of real income expressed by a persistent relative increase of the real wage bill independent of the tax structure and transfer policies. Moreover, the degree of redistribution is systematically associated with the level of inflation. Should we believe these implications? They certainly describe possible states of the world. I submit, however, that no relevant evidence has been submitted in this respect by proponents of cost push.

3. *The Interaction Between "Supply and Demand"*

Section I suggests that a "public interest government" representing the "will of the people" generates a "demand for inflation" in order to maximize welfare associated with any given level of government expenditures. The "demand for inflation" in section II appears from the operation of the "cost-push factor" z. Section III contains on the other hand no element which could be interpreted as a demand or a supply component. It simply offers one of the available standard descriptions of inflation applicable as a constraint on the maximization of the V-function. In all cases maximization of V determines optimal values of fiscal policy parameters g and τ. These values determine simultaneously the inflation rate π and monetary growth m. Inflation emerges thus from the interaction of a political process represented by V and an economic process represented by C1, C2 or C3.

But let us proceed beyond the formal properties and examine more closely the content of the framework developed. One encounters immediately a difficulty involving the relation between the Bailey analysis C1 and the intended political process "behind" the V-function. In case one leaves the Bailey analysis on the level of normative articulation there is no explanation why the political process would adopt the task of assuring Bailey optimality.

Acceptance of a public interest hypothesis is difficult to reconcile with any sensible interpretation of the V-function which represents, one would understand from Gordon, the self-interested behavior of the "incumbent party." The Bailey analysis simply does not fit into the analysis and contributes nothing to a useful explanation of the "political economy of inflation." It offers an interesting piece of normative public finance but is a blind alley for our purposes.

The Bailey analysis C1 yields another difficulty for the political question addressed. The analysis only holds for fully adjusted anticipated inflation satisfying the condition $\pi = \pi^e$. This condition underlies the derivation of the marginal social cost function $\phi(\pi)$. But these long-run conditions imply that the unemployment rate u is constant and that x is equal to the natural growth. Political manipulation confined to g can only affect inflation and the magnitude of the government. The real variables u and x are beyond the range of optimal political manipulation. This result extends to any combination involving C1. Once the complete set of long-run conditions is satisfied, that is, $\pi = \pi^e = \pi^w + e$, the real variables u (or x) moved beyond any possibility of politically motivated adjustments. But the political process seems dominated by short horizons and unstable attention spans and appears impressed with a rhetoric couched around unemployment and real growth. This observation seems to eliminate any relevant use of the generalized Bailey analysis.

Application of C2 or C3 (or similar structures) separately yields of course the pattern desired for the shorter horizons governing political processes. Manipulation of fiscal policy affects the real variables and the rate of inflation. The analysis reveals under the circumstances most explicitly that effective political manipulation cannot survive in a world characterized by President Lincoln's famous dictum. Manipulation will remain effective only in case "all the people can be fooled all the time," that is, people who will not learn from any experience. The public's learning on the other hand confines divergences between π and π^e or between π and $\pi^w + e$ to a limited range. This learning process erodes the effective range available for manipulation. But politicians and "incumbent parties" also learn, and they would learn about the erosion of the manipulation range. One wonders thus how this approach explains the emergence of a persistent and world-wide inflation and particularly the future prospects of inflation. This explanation seems somewhat unclear in the present formulation. The apparatus remains formal and evolves little content beyond a few suggestive and somewhat obsolete comments on presence or absence of a rentier class or other "social facts." The descriptive comments were not really integrated with the formal framework. There is little analysis supporting the list of "social factors" and explaining their relevant operation in the "political economy of inflation." The concept of an "incumbent party" also poses some difficulties. It yields a framework denying the relevant interaction between "incumbents" and "challengers,"

or between politicians and bureaucracies, and lastly between both politicians or bureaucracies and the media. It would appear that these interrelations form the nucleus of future analysis of the "political economy of inflation." So I turn in the last portion of my comments on the "suggestive outline of a programmatic statement" for research which emerged recently from many discussions with Allan H. Meltzer, William Meckling, and Michael Jensen.

IV. Programmatic Suggestions for a "Political Economy of Inflation"

A critique should be supplemented with at least some suggestions of an alternative or supplementary approach to the problem under consideration. Substantial progress can be expected in future years from imaginative applications of economic analysis to non-market institutions including the political process. It seems particularly important at this stage to exploit the *basic substance* of price theory for the development of a better understanding of the working of political institutions and bureaucracies.

Any approach to the political economy of inflation is necessarily conditioned by the accepted explanation of inflation. The questions pursued under the "institutionalist" explanations will be radically different from those raised by a monetary explanation of longer-run inflationary trends. I dismiss here the first set of explanations, but I also wish to acknowledge that, in view of their influence and frequent articulation, a searching examination will be necessary at another occasion. The political economy approach envisaged here is thus determined by the monetary explanation of inflationary trends. We should ask with Gordon: What happens "behind the monetary evolution," what are the "sources of monetary growth" and why do Central Banks foster this pattern? These questions push us to an examination of the government sector and of the government budget. The link between the political process and the budget will be the subject of one chapter (or one volume) on the political economy of inflation. Another chapter (or volume) will explain the behavior and ruling conceptions of Central Banks. It will also include a description of the resulting interaction between budget and Central Bank. These chapters (or volumes) may not be sufficient but they surely form necessary strands of a more comprehensive understanding of the inflation problem. There are at the moment no chapters or volumes and most of the work lies ahead. So I concentrate my comments on portions of a suggestive program to be worked out in the future.

The program for analysis views politicians as entrepreneurs selling a product consisting of ideas and proposals addressed to a wide range of voter groups. They compete aggressively and actively in the political marketplace. The outcome of this entrepreneurial activity is substantially affected by constraints on competition and by the nature of the market. The latter is defined by the distribution of costs and benefits associated with the proposals

and the pattern of information costs. Changes in crucial aspects of the market, or changing constraints, explain changes in political behavior. They also explain the accelerating expansion of the government sector, and the drift into permanent deficits with a permanent inflation.

The central propositions guiding the analysis of political processes and institutions can be stated as follows.[8]

1. Politicians are entrepreneurs competing in a market for votes and influence. They compete with proposals, programs and the systematic exploitation of non-cognitive aspects of language. The politicians prefer more votes and influence to less votes and influence. They also share with other men a preference for higher permanent real income.
2. Costs and benefits associated with *general* programs are more evenly distributed than the costs and benefits of *specific* programs.
3. Information costs about costs and benefits of *general* programs are *large* relative to benefits.
4. Information costs about costs and benefits of *specific* programs are relatively *small* to "positively affected group" and comparatively *large* to "negatively affected group."
5. The marginal cost of political operation (for example, lobbying in various forms) is much smaller for *established* than for *potential* organizations.

Two principal constraints confined economic policymaking in earlier decades. They were the gold standard and the notion of a balanced budget. These rules disconnected monetary trends from the budget and associated monetary growth with the balance of payments. The reestablishment of a fixed exchange rate system in Bretton Woods attended to the form but not the substance of the rules of the game associated with a fixed exchange rate system. Moreover, the gradual diffusion of a "New Economics" eroded any sense of responsibility for a balanced budget. The "Umwertung aller Werte" justified by the "New Economics" converted attention to budget balance into an irrational or socially irresponsible attitude. The removal of constraints was supplemented by subtle but farreaching changes in the political market. Mass education on the college level produced a large market exhibiting patterns typical of the intelligentsia. Appropriate rhetoric and felicitous phrasing concentrated on suitable fashion words filtered by the mass education industry, substantially expanded the political market. The emergence of televison opened further opportunities to political entrepreneurs at zero cost in terms of their own resources.

The link between the politicians' entrepreneurial behavior and the budget, given the Central Banks' political responses, forms for our purposes an

[8] These propositions emerged from extensive discussions with William Meckling and Allan H. Meltzer.

important issue. This entrepreneurial competition thrives on a continued search for *new* proposals, *new* programs, *new* twists, modifications, or *extensions* of existing programs. It encourages a continuous search for suitable means to focus public attention. This is a necessary strategy for politicians to establish themselves in the competitive political market. Continuous market research and sampling of the public market with the aid of an expanding staff is therefore a competitive necessity for the politician.

There are no rewards in attempts to abolish existing laws or programs. This strategy has no competitive market value. According to proposition 4 above, the beneficiaries of a program know the significance with respect to their wealth or political power of a curtailed program. "Outside groups" will barely appreciate their own welfare gain resulting from the cut in a program. Insiders' opposition to a proposed reduction tends to override consequently the feeble support of "outsiders" for the change. The basic postulates also imply that "outside groups" can reasonably expect larger returns for any given costs by investing efforts in lobbying for *new specific* programs adjusted to their special benefits. The returns from political investment in organizing opposition to the other groups specific programs are comparatively small relative to the cost of investment. It follows that extensive assaults on existing programs are quite infrequent. It also follows that proposals to cut programs are neither frequently offered by politicians (with a few exceptions immediately ridiculed by the media) nor frequently advanced by "investors in the political marketplace." A political entrepreneur finds thus in general that offering "new programs" or "variations on existing themes" assures a higher survival value in the political market. A recent article in The Banker noted with interest that in the budget debates proceeding in the British Parliament over ten years not a single MP ever proposed a single time to cut expenditures.

The politicians' appraisal is reinforced by the media. An examination of commentators in the press and on television demonstrates a preference for "fresh ideas," a *new* rhetoric or a *new* fad. The media rhetoric prefers a *new* word to almost any thoughtful proposal to abolish or reduce an obsolete or dangerous program. The media themselves find a higher market value with new words in the mass college education market. Attention to old programs, inherited legislation or institutions may infrequently have some market value. But such occurrences form usually the initial preparations for "more, better, new and larger programs." Political entrepreneurs find it more advantageous to propose new legislation favoring this or that other group as a way of "offsetting" the negative effect of previous legislation. But the global welfare effects are not offset. Total welfare is further reduced, government programs increase, the budget balloons and the range of influence open to a bureaucracy expands.

The asymmetry in the distribution of costs and benefits and also the asymmetry in the distribution of information costs summarized above estab-

lishes that emergence of new programs dominates removal of old programs. They also determine that *specific* programs dominate *general* programs. The capital value expected by organizers proposing *general* and *undifferentiated* tax reductions or expenditure increases is quite small compared to the returns achievable for the same efforts invested to effect *specific* and *highly differentiated* programs. Complex and differentiated programs concentrate benefits on a smaller (interested) group with comparatively low information costs and impose diffuse costs on the "outsiders" who suffer high costs of information and organization. It will in general not be worth much effort for members of an outside group to organize opposition to a specific and specialized program before or after its imposition. The capital value of investing political activity in specific new programs, differentiated for specific purposes with suitable complexity, tends to be much higher. This pattern of asymmetry in the distribution of costs and benefits explains the entrepreneurial choices of the prevalent types of programs and proposals offered by politicians. This analysis also reveals the unavoidable emergence and increasing range of complexity in tax law or regulatory arrangements. "Tax loopholes" should be understood as a necessary result of the process. The indignant rhetoric attacking and condemning "loopholes" reflects on the other hand the entrepreneurial opportunities politicians acquire from their own previous endeavors. This analysis suggests furthermore the fundamental irrelevance of most chapters in the theory of economic macro-policy and implies that systematic and deliberate macro-policies are somewhat improbable. The prevailing pattern of macro-policy results from a political process of detailed and specific allocative struggle covered by a rhetoric occasionally borrowed from textbooks on macro-policies. The role of monetary rules appears in this context in a new light. They define a constraint on the political process and are intended to move some portions of macro-policy beyond the allocative process of the "political market." The constraint is expected to lower the range of haphazard performance. An adequate explanation should also include the influence of Central Bank organizations on prevalent monetary policy procedures and the effect of a traditional Central Bank clientele or established Central Bank bureaucracy on the conceptions guiding policies.

We note in passing a subtle difference in the marketing situation for political and commercial entrepreneurs. Private and social costs of propaganda and advertising coincide approximately for the latter. They are forced to use their own resources for this purpose. "Self serving propaganda" by commercial interests occurs also in a clearly recognizable form as "commercials" on television or as printed advertising. Political entrepreneurs on the other hand can market their ideas at little cost to themselves. This observation extends to bureaucratic organizations and government agencies. The "non-advertising" part of newspapers, television newscasts and television "documentaries" contain a good portion of "advertising" by agents or

institutions in the political process. Proposition 5 above bears particularly on the role of established bureaucracies. The difference in marginal costs of political operation assigns a dominating influence to large bureaucracies compared to the mass of the citizens. The marginal cost of political activity for the established bureaucracy of HEW is a small fraction of the cost encountered by any random group of citizens. Moreover, political survival (or more appropriately attention to permanent income) creates a wide range of common interests between bureaucracies and politicians.[9] Organized bureaucracies offer to competitive politicians low-cost opportunities for political support. In return, politicians offer marketing opportunities for a bureaucracy's programs and long-range interests.

This sketch is most certainly not a theory. It describes at best a program for research bearing on central aspects of the political process. It integrates the asymmetry of information costs and potential rewards between various voter groups as a characteristic of the competitive political market with an interpretation of politicians as competitive entrepreneurs. This asymmetry includes the costs and rewards of changing beliefs over a wide range of policy issues. This aspect is closely associated with a somewhat dubious formulation of the "rationality hypothesis." The general idea of the rationality hypothesis should be an integral portion of the theory to be evolved. But this idea should not be identified with the view that agents on the political marketplace act according to correct beliefs. They indeed act rationally according to their prevailing beliefs. But these beliefs are frequently incorrect. It would be quite irrational to expect a general prevalence of correct beliefs at any moment in time. This expectation is as irrational as the desire for perfect information, the absence of all fraud or "total non-pollution. The cost of changing or adjusting beliefs exceeds for many voters the rewards of such investments. Existing or inherited beliefs will continue under most circumstances. The frequency of appropriate and factually relevant beliefs increases probably with the agent's stake in the issue, measured in terms of his wealth position. Even accustomed beliefs will be changed in general when the cost of their cultivation rises rapidly. We can find many examples to this effect in history.

Gordon mentions in passing that the horrendous inflation of 1920/21 in Russia contributed substantially to the Sovietization of Russia. Inflation has probably not been deliberately used for this purpose, but the process is nevertheless noteworthy. Revolutionary or radical leftwing groups will compete for attention in the political market with vast promises over an open ended range of programs. These promises unavoidably raise expenditures

[9] William Meckling suggests that this proposition is confined to representative government. A substantially different pattern should emerge under "direct democracy." It appears that the opportunities for politicians *not* to represent their constituency are much larger under representative government. This issue of the externality creating effects of representative government deserve special examination.

relative to tax revenues and Central Banks will be forced to finance the deficit. A competitive process dominated by leftwing groups will also produce government programs which substitute various controls for the private sector's price adjustments. There emerges an "Allende process" of expanding liquidity problems, increasing bankruptcies or financial support by the government sector and eventual "nationalization." Inflation appears thus as an important intermediate, even if unplanned, step in a political process ending with a socialist society. The process was at work in Chile and may proceed in England over the next years.

But let us return to the contemporary scene in the USA. Suppose the "sketch of a theory" for a political economy of inflation moves on the right "cognitive track." What can be expected? It appears to me that we should anticipate permanent budget deficits with permanent inflation. It would be highly unrealistic to expect any substantial self-control by Congress to moderate expansion of the budget. Moreover, this analysis also implies that the welfare analysis of a steady state developed by Gordon's first demand component remains somewhat irrelevant even when we include the absorption of resources by the government sector. The competitive entrepreneurship among politicians explains the shifting weight assigned to issues and the perennially changing "priorities." Emergence of inflation or a sustained inflation offers competitive opportunities to political entrepreneurs. They can offer "new measures" or "effective measures," and satisfyingly accuse the administration of "doing nothing," "lacking compassion" or political will. Past experiences in many countries suggest that accelerating inflations are thus followed by an array of "anti-inflationary programs." If such measures effectively retard inflation, the emerging recession produces yet another change in "priorities" within a year or less. If anti-inflationary measures are useless and disruptively costly (controls), "priorities" bearing on these measures will also be rearranged in due course. These changes in policies produce erratic fluctuations in output and raise uncertainty about the rules of the game. The society experiences a welfare loss beyond the magnitude suggested by the steady-state analysis, a welfare loss attributable to the average output loss, the misallocation resulting from off-and-on controls or their changing interpretation or implementation and the deadweight loss due to the investment of resources used to cope with the pronounced uncertainty produced by the political process. The inherent properties of the political process, the competition for attention and influence modified by peculiarities of the marketplace, assign little probability to the evolution of a steady-state inflation. Analysis also renders doubtful any understanding couched in terms of a social optimizing that bears on government expenditures, tax programs and monetary policies. The political process seems inherently unstable and essentially incapable of settling down. Political competition enlarges and complicates programs, enlarges the government sector and produces increasingly uncertain and erratic rules of the game. An essential feature of the

entitlement structure encouraging the development of a market is the tendency to associate costs and benefits for any given action. The political process produces just the opposite. It produces a systematic dislocation between costs and benefits. It amplifies consequently the range and opportunities of conflict and fosters investments in activities with vanishing social returns and large private returns.