Towards a Politico-Economic Analysis of Inflation

By George Zis, Salford*

The study of the causes of inflation in recent years has settled a number of the issues dividing economists and, consequently, has given rise to a greater measure of agreement as to the policies required if the objective of stabilising/reducing the rate of inflation is to be achieved. For example, the proposition that "money matters" can now be dismissed as trivial with few, if any, economists denying the existence of a correlation between the rates of price inflation and the growth of the money supply. But while monetarists would argue that control of the rate of growth of the money supply is both necessary and sufficient for the control of inflation, others would maintain that there is no reason to expect exclusive reliance on monetary policy to yield the desired results. The latter would, therefore, attach only a complementary role to monetary policy. Of course this divergence of views regarding the potency of monetary policy reflects the conflicting interpretations of the correlation between price inflation and money supply growth. Monetarists, in general, subscribe to the proposition that price inflation "is always and everywhere a monetary phenomenon resulting from, and accompanied by, a rise in the quantity of money relative to output".[1] This direction of causation, however, is not accepted by non-monetarists who are inclined to interpret the relationship between price inflation and money supply growth as the outcome of accommodating monetary policies whereby the latter adjusts to the former. Thus the emphasis is placed on, for example, variations in trade union militancy causing changes in the rate of price inflation which, in turn, result in changes in the rate of growth of the money supply. Similarly, few economists would dispute that the long-

* I am deeply indebted to *M. Parkin* for numerous discussions on the issues discussed in this paper. Indeed, I draw heavily on joint work which is forthcoming (Success Stories in the Control of Inflation, Brookings Institution, Washington). However, he is not responsible for any errors nor does he necessarily share views expressed in this paper.

[1] *Friedman* (1966).

run trade-off between unemployment and wage inflation is steeper than the short-run one, though not all would accept that there exists a natural rate of unemployment, i. e. that the long-run *Phillips* curve is vertical. Once it is accepted that monetary policy can affect the rate of price inflation, through its impact on aggregate demand, the differences between monetarists and those economists who emphasize the role of trade union militancy in the generation of inflationary pressures are further narrowed. The monetarist diagnosis of the causes of inflation is not incompatible with the proposition that trade unions can and do affect the rate of inflation. Indeed, *Friedman* (1968) argued that "the strength of labor unions" is one of the determinants of the natural rate of unemployment.[2] It follows, then, that ceteris paribus, changes in the strength of trade unions or in the degree to which it is exerted will have an impact on the natural rate of unemployment so that the rate of price inflation would rise/decline at any given level of unemployment. Whether or not one wishes to describe such a process as cost-push has no anti-inflation policy relevance. The inflation rate is not determined independently of the state of demand in the labour market. But, in these circumstances, the adoption of an inflation rate target would imply that the government is prepared to accept trade union militancy to determine employment levels. This, in turn, raises the question as to what motivates governments to choose between an unemployment rate target and an inflation rate target. The hypothesis that governments pursue policies that, in their judgement, will ensure that they remain in office is sufficiently uncontroversial to be generally acceptable. This, however, implies that economists' policy prescriptions become relevant only when they are politically feasible. The understanding, then, of the post-1945 inflation in advanced countries requires an analysis of the forces inducing governments to pursue the policies which they actually did. A beginning has recently been made in treating inflation as a broad politico-economic phenomenon rather than an narrow economic one. Studies that have adopted this broader framework of analysis fall into two categories: first, there are those which view inflation as a phenomenon potentially susceptible to policy control and, secondly, those which regard inflation as an inevitable consequence of the class conflict characterising capitalist economies, the eradication of which requires necessarily the establishment of a different social system. The objective of this paper

[2] See *Flemming* (1976) for an analysis of the role of unions in the inflationary process as well as for a comprehensive exposition of the theory of inflation.

is to provide a critical appraisal of some of these studies by focussing on their consistency with those which concentrated on the narrowly defined economic determinants of inflation and on their ability to account for the evolution of inflation rates in the major western countries during the last two decades.

I.

Table 1 lists data on the rates of price inflation in ten advanced countries for the period 1958 - 1977 and the weighted average rate of change of prices in fourteen industrial economies over the years 1958 - 1977. It is evident that a comprehensive theory of inflation should account for the existence, the cyclical fluctuations and the gradual acceleration of the inflation rate in all the major countries. Moreover, no theory of inflation would be complete unless it explained why national inflation rates simultaneously accelerated after the mid-1960's. This aspect of the advanced countries' experience reflects a more fundamental feature of the behaviour of national rates of inflation. Figure 1 sets out the standard deviation of the ten countries' inflation rates during the period 1958 - 1977. Abstracting from 1958, when devaluations and the removal of price controls and subsidies resulted in the French rate of inflation climbing to 15.3 % and, therefore, in a high standard deviation, it is evident that the dispersion of inflation rates did not rise as inflation rates accelerated. In fact, throughout the period 1959 - 1973, except for 1963, the dispersion of inflation rates was below 2 %. However, after 1973 dispersion sharply rises, reaching a peak in 1975 and, subsequently, marginally declining to levels still above that associated with 1958. Figure 1, further, would suggest that these trend developments in the dispersion of national inflation rates cannot be accounted for by changes in the degree of convergence/divergence in countries' monetary policies during the period under consideration. Throughout the period 1959 - 1973 there was greater dispersion in the countries' rates of growth of the money supply than in national inflation rates. But as in the case of the latter no rising trend in the dispersion of money supply growth rates after the mid-1960's can be identified. However, after 1973 there is hardly any difference between the standard deviations of the ten countries' rates of price inflation and money supply growth. Finally, it is worth noting that during the 1960's the sharp fluctuations in the dispersion of money supply growth rates were not accompanied by similar changes in the degree of convergence of national inflation rates which remained

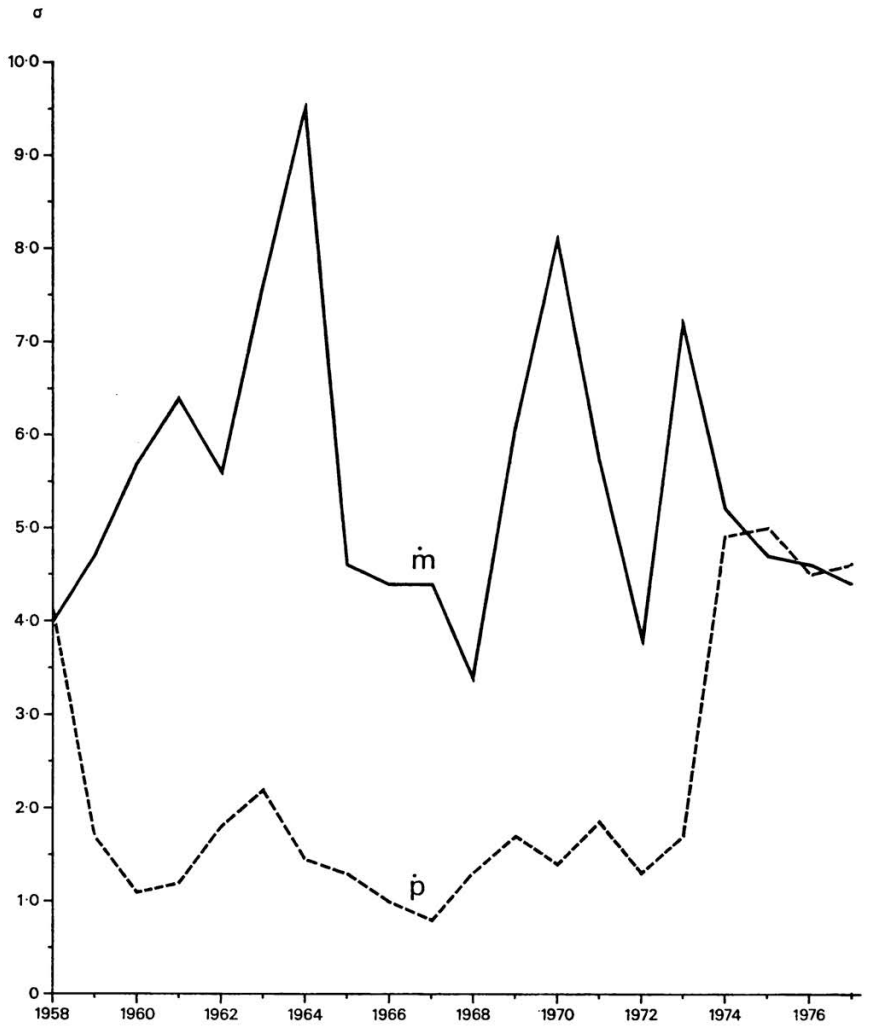

Figure 1

virtually constant. Therefore, a theory of inflation, whether narrow in that it focusses only on the economic determinants of inflation or broad in that it encompasses an analysis of the determinants of governments' economic policies, can hardly be judged to be satisfactory unless it also explains the course of a country's inflation rate relatively to that prevailing in other economies.

Table 1

	1958 - 1962	1963 - 1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Industrial Countries	2.2	2.8	3.9	4.8	5.6	5.1						
U.S.	1.5	2.0	4.2	5.4	5.9	4.3	3.3	6.3	10.9	9.2	5.8	6.5
Canada	1.4	2.7	4.0	4.5	3.4	2.8	4.8	7.5	10.9	10.7	7.5	8.0
Japan	3.3	5.4	5.3	5.3	7.6	6.2	4.4	11.8	24.3	11.9	9.3	8.1
Belgium	1.0	3.5	2.6	3.9	3.9	4.3	5.4	6.9	12.7	12.7	9.2	7.1
France	6.5	3.3	4.5	6.2	5.8	5.5	6.2	7.4	13.7	11.7	9.2	9.5
W. Germany	2.0	2.7	1.7	1.8	3.3	5.4	5.5	6.9	7.0	5.9	4.5	3.9
Italy	2.3	4.8	1.5	2.6	4.8	5.0	5.7	10.8	19.1	17.0	16.8	17.0
Netherlands	1.7	4.5	3.8	7.4	3.6	7.6	7.7	8.1	9.5	10.3	8.8	6.4
Switzerland	1.8	3.7	2.4	2.6	3.6	6.5	6.7	8.8	9.7	6.7	1.7	1.3
U.K.	2.2	3.3	4.8	5.4	6.3	9.4	7.3	9.1	16.0	24.2	16.6	15.8

Source: International Financial Statistics.

Table 2

	1958 - 1962	1963 - 1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Industrial Countries	4.7	6.7	7.9	7.0	6.0	11.3						
U.S.	1.6	3.9	7.5	5.2	3.6	6.7	7.3	7.1	4.3	4.4	5.0	7.2
Canada	5.7	11.0	4.8	—2.4	—4.5	9.5	11.9	11.9	5.2	7.8	6.0	7.3
Japan	15.6	23.2	14.6	18.4	18.3	25.5	22.1	26.1	13.2	10.3	14.2	7.0
Belgium	4.3	7.0	6.4	3.4	—3.5	10.0	14.7	10.4	6.9	11.6	10.3	8.0
France	11.9	10.2	5.5	6.4	1.5	13.7	13.1	9.9	12.2	10.4	15.1	8.3
W. Germany	11.1	6.5	7.9	10.0	6.4	12.4	13.7	5.3	5.9	14.1	10.2	8.3
Italy	13.4	13.3	13.4	14.9	21.8	22.8	18.0	21.1	16.6	8.3	20.5	20.3
Netherlands	6.5	8.7	8.8	9.4	10.6	16.7	17.7	7.4	3.1	18.8	11.6	13.6
Switzerland	9.4	6.1	11.1	9.5	10.0	18.5	13.3	—0.4	—1.7	2.2	6.9	4.7
U.K.	1.8	4.3	4.5	—0.5	7.1	13.3	16.8	10.0	3.5	15.1	14.6	13.5

Source: International Financial Statistics.

Table 2 presents the rates of growth of the money supply for the same countries and the industrial countries as a whole over the period covered by the data in Table 1. Again we observe a gradual acceleration in money supply growth rates, with all countries reaching a peak between 1971 and 1973. Since 1974 this process has been reversed. Abstracting for the moment from the details of the empirical research on the relationship between the rates of price inflation and money supply growth, it may be pointed out that monetarist policy prescriptions have been founded on the observation that rates of change of prices appear to have responded with a lag to the changes in the monetary policies pursued by the major countries with an implied judgement that governments were guilty of monetary irresponsibility during the late 1960's and early 1970's. The monetarists' diagnosis and policy prescription provoked *Gordon* (1975) to argue that the

"accelerations in money and prices are not thrust upon society by a capricious or self-serving government, but rather represent the vote maximising response of government to the political pressure exerted by potential beneficiaries of inflation. It is not enough, in short, for economists to issue the facile judgement that inflation would end if governments would simply reduce the growth rate of the money supply, because this recommendation unrealistically ignores the reaction of constituents prepared to vote against politicians who carry out such a policy."

As an alternative to conventional monetarist models *Gordon* proceeds to develop a broad politico-economic framework of the determinants of inflation.

II.

The distinguishing characteristic of *Gordon's* analysis is the treatment of the actual rate of inflation as the outcome of the interaction between the demand for and supply of inflation. Of course it is not maintained that any section of the electorate explicitly demands inflation. But pressures on governments to increase their expenditures without generating larger revenues through changes or increases in tax rates and attempts by social groups to alter the distribution of income in their favour can legitimately be conceived as constituting an explicit demand for inflation. If governments responded passively to these pressures then changes in the demand for inflation would account for the evolution of inflation over time. However, there is no reason as to why governments should be expected to supply inflation on demand. On the contrary,

Gordon postulates that the government will so manipulate the rate of growth of the money supply, i. e. supply inflation, as to maximize the probability of winning the next election. Thus inflation may rise/fall though the demand for it has remained unchanged or, alternatively, may remain unchanged if increases in the demand for/supply of inflation are offset by a reduction in the supply of/demand for inflation.

The demand for inflation is postulated to have two components. First, that component which is associated with the use of inflation as a means of raising revenue and, secondly, the part of the demand for inflation that reflects the cost push forces operating in the economy in the form of attempts by social groups to increase their share of national income. Assuming efficient governments, the socially optimal rate of inflation is that rate of change of prices which equates the social marginal cost of the inflation tax with the social marginal cost of collecting conventional taxes. It follows, then, that it is socially optimal for governments to run a budget deficit which is financed by money creation and, further, that the rate of growth of the money supply will depend positively on the share of government spending in total income.

Gordon's analysis also suggests that, in the short-run, variations in the marginal cost of collecting conventional taxes will be the principal determinant of changes in the socially optimal rate of inflation. He hypothesizes that the marginal cost schedule is highly non-linear. Assuming that there exists a long established and smoothly functioning tax system, the marginal cost of increasing tax revenues by raising tax rates is likely to be relatively small. If, however, the country under consideration lacks the administrative and technical capability to operate a tax system similar to that of the U. K. or the U. S., then it follows that the marginal cost of increasing government revenue through taxation will be relatively high. Once, however, resources are invested in the development of the tax system, the marginal cost for any subsequent increases in government revenue through taxation will be less than originally. But when eventually the existing tax system is fully utilised, in the sense that any further increases of existing taxes would raise them to penal levels, then, again, the cost at the margin of increasing revenue through introducing new taxes rises. Therefore, between successive systems of taxation it is optimal to use the inflation tax on a larger scale than within any given system. Finally, *Gordon* argues that whether or not a government will resort to the inflation tax as a source of addi-

tional revenue will depend on the character of the new expenditures that it proposes to undertake. If these are to be temporary, then it will likely be optimal for the government to finance them by increasing the rate of growth of the money supply rather than sustaining the capital cost of extending the tax system in order to increase tax revenues. If, alternatively, the new expenditures were to be permanent, then it may be optimal to incur the capital cost of extending the tax system.

Turning to the second component of the demand for inflation, *Gordon* observes that in a closed economy and in the absence of money illusion there is no incentive for trade unionists to push up wages given the unitary elasticity of price change to wage change. Trade union pushfulness leads to either increased unemployment or accelerating price inflation. However, in an open economy there does exist scope for trade unions to increase labour's share in total income provided the government does not pursue such monetary policies as to result in increases in unemployment sufficiently large to negate the effect of the wage push. Further, *Gordon's* analysis suggests that trade unions may push wages up in order to generate a higher inflation rate and, therefore, increase the real wage rate. Trade unions can potentially succeed in this because workers pay income taxes on their wages while rentiers pay the inflation tax on their assets. Assuming, then, a given level of government expenditures in real terms, a trade union militancy induced higher rate of price inflation will result in increased revenues from the inflation tax and, therefore, reduce the revenue required from income tax. Thus the net of tax real wage will increase as a result of trade union militancy. But if the government is committed to maintaining a given level of unemployment wage push will result in accelerating inflation. Thus the question is raised as to what will determine the government's response to wage push pressures. In the absence of any incentive to adopt a rate of growth of the money supply other than that implied by the optimal rate of inflation, the government would resist trade union militancy by refraining from pursuing an accommodating monetary policy. However, there is no reason why a government should espouse the achievement of the optimal rate of inflation as an economic policy objective. It will do so only if such a choice would enhance the likelihood of it remaining in office. That is, the vote maximising government will choose that rate of money supply growth that is judged to be consistent with the political objective of the party in office irrespective of whether

or not it is the rate implied by the optimal rate of inflation. In other words, *Gordon's* theory of the supply of inflation rests on the proposition that incumbent governments are motivated in formulating economic policy by the objective of vote maximisation and, to this end, they will manipulate the rate of growth of the money supply.

Various forces are suggested as potential determinants of the supply of inflation. The greater the wage rigidity is the more pronounced will be the impact effect on the level of real output of an increase in the rate of growth of the money supply and the less the rise in future inflation. Therefore, the structure of the labour market will influence the government's willingness to supply inflation. Further, institutional characteristics will affect the degree to which governments will manipulate the rate of growth of the money supply in pursuit of their vote maximisation objective. Thus the more time consuming and procedurally difficult it is to enact tax changes the more inclined governments will be to use the inflation tax. Similarly, the constitutional or legal position of the central bank vis-à-vis the government will exert an influence on the availability of monetary policy as an instrument that can be used by parties in office with a view to maximising their votes in the next general election. One would, therefore, predict that, ceteris paribus, legal and constitutional differences would result in, say, France pursuing a more expansionary policy than Germany. An additional determinant of the vote maximising rate of inflation is the degree to which social groups that either lose or gain from inflation dominate the policy decision making of existing political parties. Thus in countries where no party identifies with the interests of the rentiers but where trade unions can pursue their broad social objectives through well established social democratic parties, monetary policy will be more expansionary than in countries where the losers from inflation can exert greater political influence either through a political party or because trade union interests do not dominate the policy orientation of any of the existing parties.

The final determinant of the supply of inflation is the proximity of the general election. How this will affect the rate of growth of the money supply will depend on the utility function of the voters. An increase in the rate of growth of the money supply leads to a temporary fall in unemployment and to a higher equilibrium rate of inflation. If voters, whose utility function is postulated to depend on present and future output and price changes, have a zero rate of time preference, then an

increase in the rate of growth of the money supply will leave them worse off since unemployment returns to the natural rate and the equilibrium inflation rate rises. Therefore, there will not be an incentive for the government to increase the rate of growth of the money supply prior to a general election. If, alternatively, a high rate of time preference is assumed and voters attach a high weight on real output growth in their utility function, then the vote maximising government will tend to accelerate the rate of monetary expansion as the general election approaches. Of course, the expected future rise in the inflation rate and unemployment level sets a limit to the extent that a government will increase the rate of growth on the money supply prior to an election. That is, the slope of the short-run *Phillips* curve is a principal constraint on the vote maximising government.

In contrast to *Gordon, Nordhaus* (1975) in developing his model of the political business cycle assumed that voters have a "decaying" memory of past events and, secondly, that they are myopic in the sense that their voting decision depends only on how the economy has performed with respect to inflation and unemployment since the last election. The impact on the post-election rates of unemployment and inflation of policies adopted before the election are assumed to have no effect on voters except in as far as it will influence their decision in the election after the next. The assumptions of a decaying memory and myopia logically result in the proposition that the vote maximising government will pursue such policies between elections as to result in cyclical fluctuations in the rates of inflation and unemployment. That is, expansionary policies aiming at a reduction of unemployment will be adopted as the general election approaches. The vote maximising level of unemployment which the government will seek to achieve immediately prior to an election depends on the slope of the short-run *Phillips* curve and the weight attached on current inflation by voters when deciding for which party to vote. The expansionary policies will be reversed after the election but as the country gradually approaches the next election the government will again introduce inflationary measures. Thus *Nordhaus* describes the typical cycle as follows: "immediately after an election the victor will raise unemployment to some relatively high level in order to combat inflation. As elections approach, the unemployment rate will be lowered until, on elections eve, the unemployment rate will be lowered to the purely myopic point". It must be emphasized, however, that though the

decaying memory and myopia assumptions feature prominently in *Nordhaus'* analysis of the short-run, the basic proposition regarding the conduct of economic policy of the vote maximising government is not crucially affected by abandoning these assumptions. This much, of course, is evident from the exposition of *Gordon's* analysis of the supply of inflation. Relaxing these assumptions will, ceteris paribus, increase the value of the vote maximising level of unemployment but for incumbent governments there will still exist an incentive to engineer pre-election booms.

The existence of parliamentary democracy, however, is not a necessary condition for the politically optimal rate of inflation to cycle. *Sjaastad* (1976) has presented a model which necessarily can only be applicable to dictatorships. Assuming that the inflation tax is the state's principal source of revenue, he showed that the dictatorship will have an incentive to mislead the population as to the nature of its future policy. Continuous deception will result in the actual rate of inflation being permanently different from the expected rate of change of prices. By engineering such a difference between the actual and expected rates of inflation the "dishonest" government will maximise its inflation tax revenue. That is, it will accelerate the rate of growth of the money supply while persuading moneyholders that the inflation rate will be reduced and will adopt contractionary policies as it "announces" that its forthcoming policies will lead to an acceleration in the rate of inflation. The proposition, then, that the inflation tax revenue associated with a fluctuating inflation rate is larger than that which would accrue from a stable rate of inflation, rests on the assumption that the population is continuously fooled into believing that the actual rate of inflation is alternatively higher and lower than that which prevails, on average, over a succession of periods. Bearing in mind that one dictatorship usually follows another and the quality of information available to decision makers, often even in democratic countries, the assumption underlying *Sjaastad's* basic proposition is not as implausible as it may appear.

There is less clarity as to what determines governments' policies in *Rowthorn's* (1977) model of the determinants of inflation. The analysis rests on the observation that "conflict is endemic in the capitalist system" and seeks to demonstrate "how conflict over the distribution of income affects the general level of prices in advanced capitalist econo-

mies". Negotiated wage settlements imply a given distribution of income between workers and capitalists. But capitalists will not necessarily pursue the pricing policies that would result in that distribution of income which is implied by the agreed wage settlement. It is, therefore, possible for conflict to emerge as the desired share of profits exceeds the agreed one. The capitalists are able to attain their desired share of profits by increasing prices at a rate higher than that anticipated during the wage negotiations. Thus, through unanticipated inflation the capitalists can change the distribution of income in their favour and at the expense of the workers. The "aspiration gap", i. e. the difference between the negotiated and desired shares of profit, determines the actual rate of inflation between successive rounds of wage settlements. The aspiration gap, in turn, "is determined by the market power of workers and capitalists and by their willingness to use this power". The level of demand is identified as one "amongst the many different factors of an economic, political or ideological nature" which is of crucial importance in the determination of the market power and its use by workers and capitalists. The higher the level of demand the more aggressive will both classes in conflict be. Therefore, there is a positive relationship between the aspiration gap and the level of demand. But capitalists' intentions cannot be frustrated by powerful trade unions since they can always raise product prices at a rate higher than that anticipated. Since inflation is the outcome of class conflict the only channel through which changes in the rate of growth of the money supply can influence the rate of inflation is by increasing/decreasing the aspiration gap. The money supply growth rate will have such an impact as changes in monetary policy are assumed to affect the level of demand which, in turn, determines the extent of social conflict. *Rowthorn*, however, emphasizes that allowing for the money supply growth rate to have an indirect impact on the rate of inflation does not imply that his analysis is simply another variant of conventional monetarist explanations. The latter are rejected because they rest on the proposition that the capitalist economy is essentially stable. Instead, Marxists would maintain that the class conflict which arises from the production relations in a capitalist system results in the inherent instability of the market economy. But, of course, rejecting the monetarists' view of capitalism does not necessarily imply the adoption of the Marxist theory of the development of society. *Goldthorpe* (1978), for example, draws attention to the general tendency even among non-Marxist sociologists

to view the capitalist economy as inherently unstable. The sociologists' evaluation of the nature of the market economy provides him the basis for a sociological analysis of inflation which leads him to the conclusion that "the current inflation derives ultimately from changes in the form of social stratification giving rise to more intense and more equally-matched social conflict than hitherto". Three "interrelated processes of change" in the form of capitalist economies' stratification have combined to generate an intensification of social conflict and, therefore, result in, among other things, stronger inflationary pressures.

Goldthorpe first draws attention to the decay of the status order. The market economy generates class inequalities which have a material basis. However, the emergence of capitalism did not eliminate the status inequalities of the pre-capitalist era which have "a symbolic and moral basis". But the past status order underwent various changes until a stage has now been reached that with the development of capitalism it has become increasingly incompatible with the resultant social features associated with the advanced capitalist economy. The weakening of the status order has revealed class inequalities to be the direct consequence of the capitalist mode of production and deprive the prevailing distribution of income of any moral justification. Thus class inequalities have become increasingly unacceptable and as no social constraint is any longer imposed on wage earners they attempt to exploit fully their market power with the view to increasing their share of income. That is, the decay of the status order results in the intensification of the class conflict.

Secondly, as all members of society have progressively come to enjoy the same civil, political and social rights there has developed a greater "equality of conditions of conflict". But the realization of citizenship has sharpened "the contrast between the principled equality of rights that it bestows and the unprincipled inequalities thrown up by the market". Further, the realization of citizenship generates pressures for equality of rights which extend beyond the civil, political and social spheres. Specifically, *Goldthorpe* argues that such pressures are currently directed at the sphere of production and are manifested, for example, by workers proclaiming that they have a "right to work". Thus governments are deprived of the option of containing inflationary pressures through the adoption of contractionary monetary and fiscal policies. On the contrary, deflationary policies which necessarily operate

with a strong class bias will result in an intensification of the class conflict and, therefore, are unlikely to reduce the rate of inflation.

Finally, *Goldthorpe* identifies the emergence of a "mature working class" as the third change in social stratification contributing to more intense inflationary pressures. Maturity is defined in terms of the "degree of homogeneity in ... social backgrounds and patterns of life experience". But the prevalence of stable political conditions over a long span of time and the existence of a well established trade union movement have reinforced the impact of demographic developments in assisting the emergence of a mature working class in Britain. However, though maturity does not necessarily imply the adoption of revolutionary objectives, it does result in workers' lack of commitment to the capitalist economy's basic principles.

Given these three changes in social stratification, then inflation can be viewed as means through which governments can influence the further escalation of social conflict in capitalist economies[3].

III.

The above studies would suggest that a country's rate of growth of the money supply and, therefore, rate of inflation will depend on the slope of the short-run *Phillips* curve, the voters' myopia and strength of memory, the size of government expenditures, the constitutional rules relating to the conduct of fiscal policy, the range of the tax system, the relative autonomy of the central bank, the development and cohesion of the trade union movement, the distribution of income and the degree of intensity of the class conflict as well as the institutional conditions under which it evolves. If these, however, are the ultimate determinants of national monetary policies, then one would not expect any systematic relationship over time among countries' rates of growth of the money supply. This necessarily follows from the sharp differences in labour market structures, constitutional constraints and trade unions' ideological orientations characteristic of the major economies. There-

[3] Of course there is no implication that the five studies surveyed exhaust the literature on inflation as a broad politico-economic phenomenon. However, they are not unrepresentative of the growing volume of studies that aim to broaden the theory of the determinants of inflation. See the studies as well as the bibliography in *Hirsch* and *Goldthorpe* (eds.), (1978).

fore, a broad politico-economic theory resting on the above determinants of inflation would predict that the degree of convergence of national inflation rates would tend to fluctuate erratically and reflect the extent to which countries' money supply growth rates diverge. A country's inflation rate is a national phenomenon in the sense that it is determined principally/solely by domestic socio-political developments, independently of the rest of the world. That is, the prevailing exchange rate system has no, or negligible, impact on national inflation rates. But a theory of inflation, however broad in encompassing non-economic influences that gives rise to such a prediction is not only inconsistent with the rapidly growing empirical evidence on the importance of the prevailing exchange rate system in the determination of countries' inflation rates but also fails to explain the course of inflation in the advanced countries during the post-1948 period. As Figure 1 suggests, the dispersion of money supply growth rates and the absence of any pattern in its development over the period 1958 - 1977 are not inconsistent with the hypothesis that countries' monetary policies are the rational response of vote maximising governments. Socio-political differences could potentially explain the degree of divergence in national monetary policies, as well as its fluctuations. But none of the studies surveyed is consistent with the degree of convergence of domestic inflation rates until 1973 and the subsequent rise in dispersion. It follows, also, that none can account for the apparent disappearance of the difference between the dispersions of money supply growth and inflation rates since 1973. The same criticism, of course, can be made of the majority of studies that have focussed on the narrow economic determinants of inflation, whether of a monetarist or costpush persuasion. However, Figure 1 presents no problem of explanation for these studies that have hypothesized that under fixed exchange rates inflation is a world phenomenon determined by the growth rate of the world money supply with national monetary policies determining countries' balance of payments. Thus, for any given rate of growth of the world money supply and, therefore, world rate of inflation, the degree of convergence of national money supply growth rates will determine the countries' aggregate payments' imbalances and not the divergence of national inflation rates. Under flexible exchange rates, assuming that all countries in the rest of the world maintain constant rates of domestic credit expansion, fluctuations in a country's money supply growth rate will result in changes in both its rate of inflation and exchange rate.[4]

Open economy monetarism contrasts sharply with Friedmanite type of analyses. The latter rest on the assumption that national "restrictions and controls" result in the "notion of a single price in the world (being) no longer valid".[5] Thus their emphasis on the individual government's responsibility in generating domestic inflationary pressures through the pursuit of monetary policies aimed at employment and/or interest rate targets which, when combined with the observation that monetary policies operate with a long and variable lag, leads to the policy prescription in favour of the adoption of a monetary rule. To interpret this type of studies as implying that fixity of exchange rates would, at worst, be a nuisance in maintaining a given rate of growth of the money supply but could not frustrate such a policy, would not be a misrepresentation of their line of argument. Open economy monetarism, in contrast, suggests that for a country on fixed exchange rates the adoption of a monetary rule independently of monetary policies in the rest of the world, aimed at same target rate of inflation is not economically feasible. Such a country, depending on its adopted rule relative to money supply growth rates in the rest of the world countries, will experience balance of payments surpluses/deficits while its inflation rate will be determined at the world level by the rate of growth of the world money supply. It follows, then, that the individual country can determine its own rate of inflation only to the extent that its own monetary policy affects the world money supply growth rate. The larger the country, in terms of the size of the domestic money supply relative to the world money supply, the more able it will be to pursue an inflation target monetary policy. However, this relative independence can provide only a short-run basis for the pursuit of some given rate of growth of the domestic money supply. That is, the "large" country, just like the "small" country, cannot pursue a monetary policy independently of the rest of the world. Suppose that national monetary policies are such as to result in global balance of payments equilibrium and an actual world rate of inflation which is equal to the expected rate of change of prices and let the large country's government decide to increase the rate of change of the domestic component of the monetary base. Through the impact on the rate of growth of the world monetary base the large country's decision

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[4] See *Genberg* (1976) and (1977), *Genberg* and *Swoboda* (1977), *Laffer* and *Meiselman* (eds.) (1975), *Parkin* and *Zis* (eds.) (1976 a) and (1978 b), *Krause* and *Salant* (eds.) (1977), *Johnson* (1977) and *Frenkel* and *Johnson* (eds.) (1976).

[5] *Friedman* (1976).

will result in the increase of the world rate of inflation and, therefore, its own rate of change of prices. The demand for cash balances in the rest of the world will rise which, assuming that other countries do not change their monetary policies, will lead to the large country developing a balance of payments deficit. Therefore, the large country's volume of foreign exchange reserves will determine the length of time during which the new rate of domestic credit expansion can be maintained. Ultimately, reserves losses will force the government to reverse its policy in order to restore balance of payments equilibrium. If, alternatively, it was assumed that the large country's government decided for an inflation rate below the prevailing rate and to this end it adjusted its policies, then a balance of payments surplus would develop. However, the accumulation of reserves does not eventually force by itself a policy reversal. Such a reversal would occur if the large country had some given reserves target. But in the absence of such a target, countries in the rest of the world would eventually be forced by reserves losses to adjust their policies so as to restore balance of payments equilibrium.[6] That is, the large country cannot generate by itself a sustained increase in the world rate of inflation but can force a reduction. It also follows that the period for which a country, endowed by a given volume of reserves, can induce an increase in the world rate of inflation will be the longer, the larger the country is. Similarly, the larger the country is, the faster will be the response by the rest of the world to a reduction in the former's rate of domestic credit expansion and, therefore, the more speedily will global balance of payments equilibrium at a smaller rate of growth of the world money supply, be restored. But, of course, if the currency of the "large" country is an international reserve asset, then it can generate a permanent increase in the world rate of inflation since reserves losses in this case will not eventually result in a policy reversal. However, the balance of payments surplus experienced by the rest of the world may provoke a monetary reaction by the other countries. Thus, if they have reserves targets, sustained surpluses will gradually result in the accumulation of excess reserves which can only be eliminated by the surplus countries accelerating their rates of domestic credit expansion. In doing so, they will contribute to a rise in the world money supply growth rate and, therefore, in the world rate of inflation. Assuming that the large country does not counterreact,

[6] See *Williamson* (1973) for a survey of the literature on the demand for foreign exchange reserves.

global balance of payments equilibrium will be restored at a higher rate of inflation than that following the original increase in the large country's rate of domestic credit expansion. But if the large reserve currency country attempts to maintain its balance of payments deficit then, necessarily, the world inflation rate will accelerate and balance of payments disequilibria will persist.

Open economy monetarists would explain the acceleration of inflation since the mid-1960's in terms that are not inconsistent with the above line of argument.[7] As is evident from Table 2 the U. S. monetary policy during 1962 - 1968 resulted in the acceleration of the world money supply growth rate. The latter, however, despite it being weighted by countries' G. D. P.s, did not decline as steeply in 1969 and 1970 when the U. S. money supply growth rate was sharply reduced. The changes in monetary policies of countries that had experienced large balance of payments surpluses, e. g. Germany, Switzerland, Japan, Italy, following the tightening of monetary policy in the U. S., are consistent with the hypothesis that their foreign exchange reserve exceeded the desired levels and, therefore, domestic objectives were pursued more rigorously. But as the degree of divergence of national money supply growth rates increased sharply during 1968 - 1970, payments imbalances rapidly deteriorated though there was little change in the dispersion of national inflation rates. Divergent monetary policies, then, led to the breakdown of the Bretton Woods system.

The *Gordon* and *Nordhaus* analyses by assuming that the vote maximising rate of inflation is not affected by the prevailing exchange rate need little modification if applied to a large reserve currency country such as the U. S. Indeed, the former contains many suggestions as to why the U. S. in fact accelerated its rate of money supply growth rate during the mid-1960's. First, one could infer that U. S. monetary policy would tend to be more inflationary under fixed than under flexible exchange rates. If countries are committed to maintaining a fixed exchange rate then the tax base on which the reserve currency country can impose the inflation tax extends throughout the world in contrast to the conventional tax base that necessarily covers only domestic residents. Thus there was a strong incentive for the U. S. to employ money creation in order to finance its increased government expenditures. This incentive was reinforced by the fact that the rise in government spending partly

[7] See studies referred to in (4).

reflected the escalation of the war in Vietnam and to this extent it may have been viewed as temporary. If there was the expectation that military spending would be reduced before long, then again there would emerge an incentive to resort to money creation in the short run. The unpopularity of the war and the cost of altering conventional taxes rapidly because of constitutional constraints were additional forces increasing the political attractiveness of financing the expanded government expenditures by increasing the rate of growth of the money supply.

Since the empirical relevance of the *Gordon* and *Nordhaus* analyses rests on the ability of the individual country's government to generate the vote maximising rate of inflation the question arises as to whether they in fact provide any useful insights for the understanding of the monetary policies of countries that are not sufficiently large to affect, when acting individually, the world money supply growth rate. Allowing for the monetary autonomy available in the short run to "small" countries' governments which arises from the existence of non-traded goods, can provide a basis for integrating propositions derived from the *Gordon* analysis and open economy monetarism.

If all prices were determined at the world level, then any attempt by the vote maximising government of a small country to increase its popularity by generating a pre-election boom would largely result in a balance of payments deficit with negligible effects on the level of economic activity. Indeed, the high degree of international capital mobility would lead to the latter being rapidly reversed. However, the existence of non-traded goods, whose prices are determined at the domestic rather than the world level, implies that the balance of payments deficit immediately after the introduction of expansionary monetary measures will be smaller as part of the increase of the money supply will be absorbed by rises in the non-traded goods' prices. The country's rate of inflation will rise above the world rate and the non-traded goods sector will expand. Reserve losses, however, will force a reversal of monetary policy which will restore equilibrium relative prices and eliminate the balance of payments deficit. If, alternatively, different rates of productivity in the two sectors are assumed, then a country's "inflation" rate will continuously diverge from the world rate.[8] Be that as it may, the point remains that under fixed exchange rates the small country's government does retain a measure of monetary autonomy

[8] See *Parkin* (1974) and (1977) and *Swoboda* (1977).

which can exploit for the purposes of vote maximisation. The larger the country's volume of reserves the longer and/or the more its inflation rate can deviate from the world rate. Similarly, the larger the proportion of spending on non-traded goods is, the greater will be the degree of national autonomy in pursuing a rate of growth of the money supply different from that required for balance of payments equilibrium. It can, therefore, be argued that the size of the country, the volume of foreign exchange reserves and the size of the non-traded goods sector, rather than the slope of the short-run *Phillips* curve, will be principal constraints on the small country's government when determining its response to the demand for inflation. Intuition would suggest that the vote maximising rate of inflation for a "small" open economy on fixed exchange rates will be less than that which a closed economy model would predict. But since under fixed exchange rates the average level of inflation is determined at the world level, the introduction of exchange rate flexibility may not necessarily involve an increase in countries' rates of inflation.[9]

Accepting, then, that open economy monetarism is not incompatible with the *Gordon* and *Nordhaus* analyses raises the question of whether rational governments will prefer fixed or flexible exchange rates. Flexibility of exchange rates results in the segmentation of the goods and money markets and increases uncertainty. It follows, therefore, that the short-run trade-off between inflation and unemployment is worse under flexible than under fixed exchange rates. This in turn implies that, ceteris paribus, the vote maximising level of unemployment and rate of inflation will be higher under flexible than under fixed exchange rates. Thus rational governments will tend to prefer the latter. However, fixity of exchange rates is compatible with a variety of institutional arrangements. An international monetary system which rests on the use of a national currency as an international reserve asset will have an inflation bias since it provides an incentive for the reserve currency country to use the inflation tax rather than conventional taxes as a means of increasong revenues. But such a bias will not necessarily emerge under a system which provides for increases in international liquidity to be decided not by a single country but by the world community. In this context it is not, perhaps, irrelevant to draw attention to the fact that the major countries in Europe have persistently favoured

[9] This issue is discussed by *Claassen* (1977) and *Corden* (1977).

fixed exchange rates. Their opposition to the Bretton Woods system was directed against the use of the dollar as a reserve currency and the benefits thus conferred to the U. S. rather than against fixed exchange rates. Further, their distaste for flexible exchange rates has provided the basis for the recent attempts to establish the European Monetary System. One may, therefore, conclude that a comprehensive theory of inflation must explain governments' decisions with respect to the prevailing international monetary arrangements. It is less than clear how the *Goldthorpe* and *Rowthorn* analyses could be modified to explain the course of international inflation and, therefore, interesting though they may be, they do not particularly enhance our understanding of the post-1945 development of the world economy.

IV.

Attention was drawn to the recently emerging efforts to develop a theory of inflation that is not confined solely to the economic determinants of the rate of change of prices. The studies surveyed reveal the sharp differences between the broad economic and the sociological analyses of the determinants of inflation. The latter which tend to view inflation as a manifestation of the class conflict in capitalist societies inevitably have no anti-inflation policy implications. Price stability, presumably, could only be achieved if the social system were changed and capitalist class divisions eliminated. In contrast to these, the studies of *Gordon* and *Nordhaus* can provide a basis for policy prescriptions. However, all were criticized on the grounds that they treated inflation as an essentially national phenomenon and neglected the impact of alternative exchange rate regimes on a country's inflation rate. This neglect, it was argued, results in these studies failing to explain the dispersions, the absence of a relationship between them, and changes in them of the inflation and money supply growth rates over the period 1958 - 1977. Instead, it was suggested that changes in the convergence of national inflation rates, given the nationl monetary policies that were pursued over this period, are entirely consistent with predictions derived from what may be called open economy monetarism. It was concluded that a comprehensive theory of inflation must necessarily focus on the prevailing exchange rate regime as the principal determinant of countries' inflation rates. This leads to the proposition that a broad politico-eco-

nomic theory of inflation should explain why countries adopted the international monetary arrangements which have prevailed since 1945. The *Nordhaus* and *Gordon* analyses make no suggestions towards this direction, though they could be modified to allow for economies being open assuming a given set of rules governing international monetary relations. It was further suggested that the vote maximising government would favour fixity of exchange rates though a system which allowed a national currency to be an international reserve asset would be neither economically viable nor politically acceptable. Such a system, it was also maintained, has an inherent inflationary bias in contrast to a system which used an international reserve asset such as the S. D. R. or the proposed E. C. U. These arguments, then, lead to the conclusion that the stabilization/reduction of current inflation rates would be facilitated if exchange rates were fixed, if not at a global, at least on a regional level, and to the suggestion that research on the inflationary bias and political feasibility of alternative paths towards a new international monetary system would yield policy recommendations.

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Zusammenfassung

Eine wirtschaftspolitische Analyse der Inflation

Die immer stärker werdende Akzeptierung der Behauptung, daß „money matters" und daß daher die Steuerung des Geldmengenwachstums notwendig sei, obwohl sie allein zur Kontrolle der Inflationsrate nicht ausreicht, ging mit einem immer stärker werdenden Interesse an den Determinanten nationaler Geldpolitik einher.

Dieser Beitrag untersucht eine Anzahl von Studien, die versucht haben, die Determinanten der Inflation unter weitangelegten wirtschaftspolitischen Bedingungen zu analysieren.

In diesen Studien wird die Inflation als ein hauptsächlich nationales Phänomen dargestellt. Deshalb können sie keine hinreichende Grundlage für eine Erläuterung der Konvergenz und, seit 1973 Divergenz der Inflationsraten der großen westlichen Industriestaaten liefern. Es wird in diesem Beitrag der Versuch unternommen, *Gordons* Studie so zu modifieren, daß sie für eine offene Volkswirtschaft angewandt werden kann. Deshalb wird gefordert, daß eine wirtschaftspolitische Theorie der Inflation erklären sollte, warum Länder den internationalen Währungsabkommen beigetreten sind, (die seit 1945 vorgeherrscht haben) und warum feste Wechselkurse in Verbindung mit dem Gebrauch eines internationalen Zahlungsmittels wie etwa der SDR oder ECU, einen Erfolg der Bemühungen der Regierungen erleichtern würde, die Inflationsrate zu stabilisieren oder zu reduzieren.

Summary

Towards a Politico-Economic Analysis of Inflation

Increasing acceptance of the proposition that "money matters" and, therefore, that control of the money supply growth rate is necessary, though not necessarily sufficient for the control of the rate of inflation has been accompanied by a growing interest in the determinants of countries' monetary policies. This paper surveys a number of studies which have sought to analyse the determinants of inflation in broad politico-economic terms. It is observed that these studies treat inflation as an essentially national phenomenon. Therefore, they cannot provide an adequate foundation for an explanation of the convergence, and divergence since 1973, of the major countries' inflation rates. An attempt is made to modify *Gordon's* study to apply for an open economy. It is argued that a politico-economic theory of inflation should explain why countries adopted the international monetary arrangements which have prevailed since 1945 and that fixity of exchange rates combined with the use of an international asset, such as the S.D.R. or E.C.U., would facilitate success in governments' efforts to stabilize or reduce the rate of inflation.

Résumé

Une analyse de politique économique de l'inflation

L'acceptation sans cesse croissante de l'affirmation que "l'argent compte" ("money matters") et que dès lors le contrôle de la croissance de la masse monétaire est indispensable, même si elle ne suffit pas seule à maîtriser le taux d'inflation, s'accompagne d'un intérêt lui aussi toujours croissant pour les facteurs déterminants de la politique monétaire nationale.

Le présent article dissèque un certain nombre d'études qui avaient tenté d'analyser les déterminantes de l'inflation sous des conditions très poussées de politique économique.

Ces études présentent l'inflation comme un phénomène principalement national. Elles sont inaptes par conséquent à développer un fondement suffisant pour expliquer la convergence, puis dès 1973 la divergence des taux d'inflation des grands Etats industriels occidentaux. L'article entreprend de rechercher comment modifier l'étude de *Gordon* de manière à la rendre applicable à une économie nationale ouverte. L'on préconise donc qu'une théorie de politique économique de l'inflation puisse expliquer pourquoi des pays ont adhéré à l'Accord Monétaire International (les plus nombreux depuis 1945) et pourquoi des taux de change fixes allégeraient, en liaison avec l'usage d'un moyen de paiement international comme les DTS ou l'ECU, les efforts des gouvernements en vue de stabiliser ou de réduire les efforts des gouvernements en vue de stabiliser ou de réduire les taux d'inflation.