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A "MONETARIST" ANALYSIS OF THE GENERATION AND TRANSMISSION OF WORLD INFLATION; 1958-1971

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A widely accepted definition of inflation is that it "is a process of continuously rising prices, or equivalently, of a continuously falling value of money" (David Laidler and Michael Parkin (1975, p. 741)). An important observation suggested by this definition is that, in a world with one money, or equivalently with many monies linked to a single monetary standard via fixed exchange rates, there is one rate of inflation. Of course, index numbers may be computed for sub-aggregates of goods and services, some of which refer to particular geographical areas--countries--but rates of change in these indices do not measure inflation. Rather they measure a mixture of inflation and relative price changes. This observation has important implications for the analysis and explanation of inflation during the last two decades for the period from the middle 1950's to 1971 was characterized by a single monetary standard[1] and hence only one inflation rate has to be explained. This paper attempts to explain that inflation rate. It contains no new theoretical ideas and no new empirical results. Rather it encapsulates in a short space the key results which have emerged from the by now large volume of work on the explanation of inflation in the fixed exchange rate world and attempts to identify the major questions which head the agenda of future research.

1. World Average Inflation in the Fixed Exchange Rate World: 1958-1971

In a world[2] with one monetary standard and one rate of inflation the explanation of inflation must be sought at the level of the world economy rather than at the national level. To study inflation at the world aggregate level is to follow a tradition begun by Jean Bodin (see A. E. Monroe (1924)), and David Hume (1741a) and recently popularized by Robert A. Mundell (1971) and Harry G. Johnson (1972).[3]

However, it in no way forces onto the analysis a monocausal "monetarist" explanation of inflation as presented in those earlier world aggregate analyses. On the contrary, it provides the simplest possible environment, that of a closed economy, for developing an entirely eclectic framework within which to discriminate amongst competing hypotheses on the causes of inflation.

Such a framework was developed in Malcolm R. Gray and Michael Parkin (1976). The framework combines three interacting propositions which are capable of embracing all views on the generation of inflation. First, the rate of inflation is influenced by inflation expectations, excess demand and a variety of cost push factors (including direct wage and price controls); secondly, inflation expectations respond to the history of inflation and to expectations of the movements of the exogenous variables which are believed to cause inflation; thirdly, excess demand is determined by the money supply, fiscal policy, and the behavior of the actual and expected price level. This eclectic view specializes to a variety of extreme positions by assuming some of the potential interlinkages to be either weak or absent. Two such extremes are worth singling out: "cost push" and "monetarist".

The "cost push" extreme denies the connection between excess demand and the rate of inflation but accepts the other propositions. It also adds a fourth proposition namely that the money supply is endogenous and passively responds to movements in prices and aggregate excess demand. Thus, on this extreme view, inflation is caused by cost push factors while a passive monetary policy ensures that real output does not decline (or not often) so that the push factors come through in both the inflation rate and the monetary expansion rate. Further, on this view, the way to control inflation is

to attack it at its supposed source with direct controls on wages and prices, preferably in an internationally synchronous fashion.

The "monetarist"[4] extreme view emphasizes the role of excess demand and inflation expectations (the latter with a coefficient of unity) as the sole proximate determinants of systematic movements in the rate of inflation with push factors affecting (at most), the detailed timing of random (zero mean) movements in its rate. Inflation expectations, however formed, will, in a steady state, line up with the actual rate of inflation. Finally, excess demand depends only on the behavior of the money stock, fiscal policy being unimportant, and further, aggregate excess demand is homogeneous of degree zero in the money stock and actual and expected prices. The policy implication of this view is that control of the money supply is both necessary and sufficient for the control of inflation and that the abandonment of money supply control in favor of aiming for a target real output level, other than zero excess demand, will lead to explosive price level and money supply behavior.

Empirical work on the world aggregate (Group of Ten - (G-10)) economy enables a start to be made in discriminating between these two extremes (and amongst the many intermediate eclectic positions embodied in the three general propositions) stated above. On price setting and expectations formation at the G-10 level, Nigel Duck, et al. (1976) estimated equations of the standard form:

$$\Delta p = \alpha x_{-\tau} + \delta \Delta p^{e} + u \qquad (1)$$

where p is the price level (in natural logarithms), x is proportionate excess demand (measured as the deviation from trend of the logarithm of real output), τ denotes a time lag, e denotes expectation, Δ is the first difference operator, u is an error term, and α and δ are positive parameters.

If the estimated value of α in equation (1) is not significantly different from zero and if there are large systematic errors in prediction (large variance and temporal dependence in u), then there is a presumption in favor of the "cost push" extreme. If, alternatively, α is significantly non-zero, δ is not significantly different from unity and u does not display systematic autocorrelation, then the "monetarist" extreme is not rejected. Using a Box-Jenkins ARIMA procedure to estimate the forecasting scheme to generate Δp^e, equation (4) below, Duck et al. report the following results using quarterly data, 1956-1971 for G-10 (t-statistics in parentheses);[5]

$$\Delta p = \underset{[1.23]}{0.500} + \underset{[3.58]}{0.204}\, x_{-1} + \underset{[6.88]}{0.814}\, \Delta p^e \qquad (2)$$

$$\bar{R}^2 = 0.533 \quad D.W. = 2.144$$

$$\Delta p = \underset{[0.72]}{-0.100} + \underset{[3.31]}{0.184}\, x_{-1} + \Delta p^e \qquad (3)$$

$$\bar{R}^2 = 0.513 \quad D.W. = 2.188 \quad F = 2.465$$

$$\Delta p^e = \underset{[3.22]}{0.309}\, \Delta p_{-1} + \underset{[7.19]}{0.691}\, \Delta p^e_{-1} \qquad (4)$$

$$\bar{R}^2 = 0.378$$

Equation (3) imposes the restriction that the coefficient on Δp^e is unity and the reported F is that associated with the test of the hypothesis that the restriction is true. That restriction cannot be rejected at the 5% level; nor can the hypothesis of no first order autocorrelation; nor further can the hypothesis that the coefficient on x_{-1} is non-zero. Taking all these tests together, it is clear that equations (2)-(4) imply the rejection of one aspect of the "cost push" extreme view and to the non-rejection of the "monetarist" extreme view.

On the determination of excess demand, two things need to be established; the properties of the world demand for money function and the determinants of the world money stock. If there exists a stable world aggregate demand function for real balances, then one further aspect of the "monetarist" extreme position cannot be rejected. If, further, it can be shown that the direction of causation runs from money to prices and not vice versa, then the "cost push" view has to be rejected as failing every test which may confront it whilst the "monetarist" position stands, pending the specification and performance of yet more searching tests.

Gray et al. (1976) estimated demand for money functions for G-10 of the following form:

$$(m^* - p) = k + \beta y + \gamma r \tag{5}$$

$$\Delta(m - p) = \theta((m^* - p) - (m_{-1} - p_{-1})) + u \tag{6}$$

where m is the natural logarithm of the nominal money stock, r is the rate of interest, an * denotes desired, and the following sign restrictions apply to the parameters; $\beta > 0$, $0 \leq \theta \leq 1$, $\gamma < 0$. Gray et al. report the following estimates of the parameters in (5)-(6) on quarterly G-10 data[6] for 1957-1971 (ratios of asymptotic standard errors to parameters in parentheses)

$$k = \underset{[13.92]}{2.20} \qquad \beta = \underset{[25.24]}{0.53} \qquad \theta = \underset{[5.45]}{0.42}$$

with $R^2 = 0.986$.

These parameters were estimated by imposing $\gamma = 0$ and a parameter of first order autocorrelation $\rho = 0$. Freely estimating these parameter changes the estimated values of k, β and θ only slightly and the hypothesis that γ and ρ take on the extreme values imposed cannot be rejected at the 95% level. Further, a permanent income formulation was rejected in favour of that reported above. However, it is worth noting that permanent income and partial adjustment can only be discriminated between on the basis of error structures and so the above results might alternately be interpreted as representing a permanent income demand for money function. Thus, the hypothesis that there exists a stable world demand function for real balances which is interest inelastic cannot be rejected by the data for this period.[7] These results imply that one further aspect of the monetarist position cannot be rejected and that the world aggregate effect of national fiscal policies is primarily on real interest rates and not on output and prices.

The last remaining matter which needs attention before the "cost push" extreme can be completely disposed of concerns the direction of causation. It remains a possibility that inflation is caused by some (exogenous to the model) cost push factors with money passively responding to inflation. If that is the case, equation (2) or (3) has to be interpreted as determining excess demand in a manner analogous to that suggested by Irving Fisher (1911), and, given that level of demand and exogenously given rate of inflation, the demand for money function determines the money stock. This reverse causation story immediately runs into a difficulty given the time lags involved in (2)/(3). It is excess demand lagged one quarter which is best correlated with the difference between actual and expected inflation. Thus, for the reverse causation story to make sense it would have to be argued that excess demand during the current quarter is caused by a discrepancy between actual and expected inflation which is not revealed until the next quarter. The timing makes life difficult for

those who embrace the Fisher aggregate supply interpretation of the relation between excess demand and unanticipated inflation. It is also probably enough to discredit the reverse causation cost push view. If it is not, there is yet a further body of evidence which goes against it. Hans Gernberg and Alexander Swoboda (1975), using the test suggested by Christopher A. Sims (1972) show that "changes in the world money stock have, on the average preceded changes in both world income and the world price level during the last decade and a half."[8]

If the above results are brought together, they constitute a simple, yet complete model of the determination of the rate of inflation and the level of real output. The basic structure, repeated here for convenience is:

$$\Delta p = \alpha x_{-1} + \Delta p^e \tag{7}$$

$$\Delta p^e = \lambda \Delta p_{-1} + (1 - \lambda)\Delta p^e_{-1} \tag{8}$$

$$\Delta(m - p) = \theta((k + \beta y) - (m_{-1} - p_{-1})) \tag{9}$$

$$y = y^* + x \tag{10}$$

where all the variables are as already defined and where y^* is the natural logarithm of "full employment" real output.[9] Solving these equations for Δp and x gives the following:[10]

$$\Delta p = (2 - \frac{\alpha}{\theta\beta})\Delta p_{-1} - (1 - \frac{\alpha}{\theta\beta}(2 - \lambda - \theta))\,\Delta p_{-2} - \frac{\alpha}{\theta\beta}(1 - \lambda)(1 - \theta)\Delta p_{-3} + \frac{\alpha}{\theta\beta}\Delta m_{-1} - \frac{\alpha}{\theta\beta}(2 - \lambda - \theta)\Delta m_{-2} + \frac{\alpha}{\theta\beta}(1 - \lambda)(1 - \theta)\Delta m_{-3} \tag{11}$$

$$x = (2 - \frac{\alpha}{\theta\beta})x_{-1} - (1 - \frac{\alpha}{\theta\beta}(2 - \lambda - \theta))x_{-2} - \frac{\alpha}{\theta\beta}(1 - \lambda)(1 - \theta)x_{-3} + \frac{1}{\theta\beta}\Delta m - (\frac{2 - \theta}{\theta\beta})\Delta m_{-1} + (\frac{1 - \theta}{\theta\beta})\Delta m_{-2} \tag{12}$$

Given the particular values of α, β, λ, θ reported above, these two third order difference equations generate a stable cyclical approach to the steady states (ignoring Δy^*) of $x^* = 0$ and $\Delta p^* = \Delta m$ with heavily damped cycles the period of which is twenty-four quarters. However, for a variety of reasons,[11] the equations are not suitable for a direct simulation test and probably would not track the history of p and x in a very close manner if dynamic simulation were performed. Nevertheless, the structural equations estimated do make it impossible to reject the basic 'monetarist' explanation of world average inflation and do provide a set of simple reduced-form equations for prices and output which qualitatively have properties which the world clearly displays. Full employment ($x = 0$) and proportionality of inflation to money supply growth ($\Delta p = \Delta m$) are only steady state properties of the model advanced and any change in the rate of monetary expansion will be accompanied first by a change in the level of real economic activity and subsequently by a change in the inflation rate.

The discussion so far has treated the money supply as given and not enquired into the process whereby it is generated. Addressing this matter, Parkin et al. (1975) developed a simple model of the world money supply and, based on quarterly G-10 data from 1961 to 1971 concluded that there existed a stable, interest inelastic relation between the world money stock and the world monetary base, the latter defined as the sum of national monetary bases, with a secular increase in the broad money multiplier which they attributed to a gradual adjustment process in working off excess reserves. They also suggested that, up to 1968, the growth in domestic credit had been the main source of base growth but that after 1968, the growth of international liquidity began to dominate. However, they suggested that the relation between international reserves and total world base money was weak

and therefore not exploitable for purposes of world monetary control.

More recent work makes it necessary to re-evaluate and modify some of these conclusions. First, Swoboda (1975a) and Genberg and Swoboda (1976) show that there is an asymmetry in the effects of United States base and "rest of world" base on the world money supply arising from the fraction of reserves which the rest of the world holds as deposits with U.S. Commercial Banks and U.S. Treasury Bills as opposed to deposits with the Federal Reserve Banks. This makes U.S. base a "super-high-powered" money and predicts a larger multiplier effect of U.S. base on the world money stock than the bases of other countries. Empirical work performed by these authors confirms their proposition. Secondly, the connection between international liquidity and the world money supply has recently been thoroughly investigated by H. Robert Heller (1976). He shows that there is a well determined distributed lag relation between these two variables with changes in liquidity clearly preceding changes in the world money supply.

The tentative conclusion which emerges from these studies is that the growth in the world money supply has been dominated by, though not completely determined by, the growth of international liquidity and that the growth of U.S. base money has been a key contributor to that liquidity and world money supply growth.

2. National Price Levels and the International Transmission Process

There are two basic hypotheses concerning the international transmission of inflation under fixed exchange rates both of which have been attributed to Hume (1741b). One is that the law of one price has no respect for national boundaries, hence, any discrepancies between prices of similar goods in different countries will quickly be arbitraged away ensuring equality of prices and of rates of price change across countries. It is recognized that measured rates of inflation do differ but suggested that such differences are attributable to trend changes in relative prices arising from different underlying productivity growth rates. Given a national rate of inflation arising from arbitrage, payments balances will ensure that the exogenous world money supply is distributed (endogenous) to each country to validate its price level behavior. There is an important variant of this hypothesis of the international transmission mechanism which separates traded from non-traded goods and has international arbitrage equalizing traded goods prices only with competitive labor and domestic goods markets bringing the inflation rates of wages and non-traded goods prices into alignment with (but not in general to equality with) the world rate of inflation. (See especially G. Edgren, K. O. Flaxen and G. E. Ohdner (1969), Parkin (1972,1974).)

The second mechanism is one which has a rise in the world inflation rate leading to a fall in the relative domestic price level which generates excess demand and a balance of payments surplus. The excess demand and the money supply growth induced by the balance of payments surplus generate a process of rising domestic prices which continues until equilibrium has been restored. A variety of alternative domestic transmission mechanisms are compatible with this international transmission mechanism including those

of the Keynesian-Phillips curve and the mechanical quantity theory (see William H. Branson (1975)).

The two international transmission mechanisms of inflation are clearly not mutually exclusive and a more general formulation would combine them. The simplest way of doing this is to adapt the standard expectations augmented excess demand model of price determination to the open fixed exchange rate economy. This has been done in a series of papers by Rodney Cross and Laidler (1976), Laidler (1976), Franco Spinelli (1976), Andrew Horseman (1976), and Parkin et al. (1976). These studies postulate that domestic prices repond to domestic demand and to the expected rate of inflation where the latter variable is dependent not only on the history of domestic but also of world inflation. If the pure arbitrage story is a good approximation to the world then domestic excess demand will be unimportant in determining domestic price change, and world inflation will be the only influence on inflation expectations. If the other transmission mechanism is the only relevant one then domestic excess demand and inflation expectations based only on domestic considerations will dominate and world inflation will have no important separate influence on the domestic inflation rate.

The broad consensus of the empirical work performed and reported in the studies cited above is that neither extreme is an adequate simplification and that there are elements of both in the generation of national price level movements, at least as far as quarterly and annual averages are concerned. Over longer time averages, the arbitrage process seems much stronger (see Genberg (1976)) and no studies are available which suggest that foreign prices can be ignored when explaining price movements in open economies.

Those studies which have permitted expectations of world inflation as well as of domestic inflation to have a direct effect on domestic inflation have an important implication for inferences concerning the existence or otherwise of a long-run trade-off between inflation and unemployment at the national level. The dominant finding of the studies just cited is that no long-run trade-off exists. Parkin and Smith (1976) show that earlier studies which did display a long-run trade-off can be reconciled with those that do not by analyzing the consequences for parameter estimates of the omitted world inflation variable.

A further matter on which these studies shed some light concerns the specific foreign prices which have the main direct impact on domestic prices. Three broad possibilities have been suggested. Early post-war studies emphasized the role of import prices; the "Scandinavian" approach emphasizes export prices while the arbitrage approach suggests a broad index of all foreign prices. Studies can be found which show all to be important and the only direct attempt to compare some of the alternatives, by Laidler (1976), suggests that a broader index is better than a narrower one.

All the studies referred to above deal only with the proximate determinants of prices. Laidler (1975) has incorporated a price setting mechanism of the above type into a complete macro-model and shown that, whilst there is no ambiguity that a rise in the world inflation rate raises domestic inflation, there <u>is</u> an ambiguity about its impact effect on domestic output which could fall if the impact on the price level exceeds that on the money stock. Spinelli (1976) has applied the Laidler model to the Italian economy and found it to have a high degree of explanatory

power and to completely outperform an alternative "cost push" explanation for that country. The alternative "cost push" explanation of inflation at the level of the individual country has further been investigated by Peter D. Jonson (1976) for Australia and George Zis (1976) for the Group of Ten and again shown to be easily rejected.

3. Concluding Remarks

The preceding summary account of theoretical and empirical work on the generation and transmission of inflation in a fixed exchange rate world does not itself require a summary. It is worthwhile, however, to try to highlight the outstanding issues which need further attention. First, a fully consistent structural model of world average inflation capable of providing a close dynamic tracking of world output and price level movements remains to be built. Secondly, the precise effects on the world money supply of domestic credit creation in the United States and in the smaller countries need to be further clarified. Thirdly, the details of the international and domestic transmission mechanisms need further specification. A key to the advancement of knowledge in these last areas will be the explicit comparison of competing hypotheses, all too little of which has been undertaken to date.

Footnotes

*I am grateful to George Zis for countless hours of discussion on the subject of this paper over several years and to Robin Bade, Peter Howitt, and David Laidler for comments on an earlier draft.

[1]There were only six changes in exchange rates among the major currencies between 1956 and 1976; the revaluations of the D-Mark in 1961 and 1969 and the Dutch Guilder in 1961; and the devaluations of the French Franc in 1958 and 1969 and of Sterling in 1967.

[2]The "world" here is the aggregate of countries which (ignoring the minor exceptions noted above) maintained a fixed exchange rate with the U.S. dollar and full convertibility. The "world" as used in much of the empirical work to be reported below is the "Group of Ten"; i.e., Belgium, Canada, France, Germany, Italy, Japan, The Netherlands, Sweden, United Kingdom, and United States.

[3]Recent contributions which have also taken a world aggregate view are: Harry G. Johnson (1975), Arthur B. Laffer and David I. Meiselman (1975), David Laidler and A. R. Nobay (1976), Michael Parkin and George Zis (eds.) (1976 a,b), Edward S. Shaw (1975), Alexander K. Swoboda (1975b), Ronald L. Tiegen (1975), and H. Joannes Witteveen (1975). For an excellent doctrinal history on the approach see Jacob Frenkel (1976).

[4]I do not want to devote any space to defending this definition of "monetarist". For an extensive discussion of this and related issues, see Jerome L. Stein (1976).

[5]For full details of data sources and methods, and estimation procedures, see Duck et al. (1976).. The results reported here are not the best fitting but the simplest reported by Duck et al. A more complex expectations scheme than that embodied in equation (4) gave even better results in the price equation.

[6]For full details of data sources and methods, and estimation procedures, see Gray et al. The m variable is narrow, M1, money; income is real G.N.P. aggregated over G-10 with quarterly data based on linear interpolation of annual data and the interest rate is that on Eurodollars.

[7]Splitting the data period between the (overlapping) first and last 40 observations reveals considerable structural stability although, for the last 40 observations, the interest rate does become significantly non-zero; its coefficient estimate is -0.034 with an asymptotic standard error of 0.016.

[8]Hans Genberg and Alexander K. Swoboda (1975, p. 21).

[9]Models with similar structures and properties to this have been suggested by Laidler (1973), and John Vanderkamp (1975).

[10]Equations (11) and (12) are different from those reported in Parkin (1976). The equations here are correct and those in my earlier paper contained an error in the specification of the demand for money function which lead to an error in the difference equations.

[11]The key reasons for this are that y in the reported demand for money function was based on annual national income accounts with quarterly data obtained by linear interpolation while x in the price equation was based on deviations from trend in a quarterly G-10 industrial production index. These inconsistencies are being adjusted in work currently underway.

Bibliography

Bodin, Jean, "Response aux paradoxes de Malestroit touchant l'Encherissement de toutes Choses et le Moyen d'y remedier" (English translation is Arthur Eli Monroe (ed.), Early Economic Thought (Cambridge, Mass.: Harvard University Press, 1924).

Branson, William H., "Monetarist and Keynesian Models of the Transmission of Inflation," American Economic Review, Papers and Proceedings, Vol. 65, May 1975, 115-119

Claassen, Emil and Pascal Salin, Recent Issues in International Monetary Economics (Amsterdam: North-Holland, 1976).

Cross, Rodney and David Laidler, "Inflation, Excess Demand and Expectations in Fixed Exchange Rate Open Economies: Some Preliminary Empirical Results," in Parkin and Zis, (1976a), 221-254.

Duck, Nigel, Michael Parkin, David Rose and George Zis, "The Determination of the Rate of Change of Wages and Prices in the Fixed Exchange Rate World Economy, 1956-1971," in Parkin and Zis (1976a), 113-142.

Edgren, G., K. O. Flaxen and G. E. Ohdner, "Wages Growth and the Distribution of Income," Swedish Journal of Economics, Vol. 71(3), 1969, 133-160.

Fisher, Irving, The Purchasing Power of Money (New York: Macmillan, 1911). (Latest edition, New York: A. M. Kelley, 1963.)

Frenkel, Jacob A., "Adjustment Mechanisms and the Monetary Approach to the Balance of Payments," in E. Claasen and P. Salin (1976).

Genberg, Hans and Alexander K. Swoboda, "Causes and Origins of the Current Worldwide Inflation," Discussion Paper, G.I.I.S., Ford Foundation International Monetary Research Project; Graduate Institute of International Studies, Geneva, November 1975.

Genberg, Hans and Alexander K. Swoboda, "Worldwide Inflation Under the Dollar Standard," mimeo., Graduate Institute of International Studies, Geneva, 1976.

Genberg, Hans, "A Note on Inflation Rates Under Fixed Exchange Rates," in Parkin and Zis (1976a), 183-188.

Gray, Malcolm R., and Michael Parkin, "Discrimination Between Alternative Explanations of Inflation" in Michele Fratianni and Karel Tavernier, (eds.) Proceedings of Conference on Money, Banking and Credit in Open Economies, Catholic University of Louvain, Louvain, Belgium, 1973.

Gray, Malcolm, R. Ward and G. Zis, "The World Demand for Money Function: Some Preliminary Results," in Parkin and Zis (1976a), 151-177.

Heller, H. Robert, "International Reserves and World Wide Inflation, I.M.F. Staff Paper, Vol. XXIII, No. 1, March 1976, 61-87.

Horseman, Andrew, "The Relation between Wage Inflation and Unemployment in an Open Economy," in Parkin and Zis (1976b), 175-200.

Hume, David, "Of Money" in Essays, Moral, Political and Literary (1741a) (latest edition, Oxford University Press, 1963), 289-302.

Hume, David, "Of the Balance of Trade" in Essays, Moral, Political and Literary (1741b) (latest edition, Oxford University Press, 1963) 316-333.

Johnson, H. G., "Inflation and the Monetarist Controversy," Professor Dr. F. De Vries Lectures. (Amsterdam: North-Holland, 1972).

Johnson, H. G., "World Inflation and the International Monetary System," The Three Banks Review, No. 107, Sept. 1975, 3-22.

Jonson, Peter D., "World Influences on the Australian Rate of Inflation," in Parkin and Zis (1976b), 237-258.

Laffer, A. B., and D. I. Meiselman, The Phenomenon of Worldwide Inflation, American Enterprise Institute for Public Policy Research, Washington, 1975.

Laidler, David, "The Influence of Money on Real Income and Inflation: A Simple Model with Some Empirical Tests for the United States, 1953-1972," Manchester School, Vol. 41(4), December 1973, 367-395.

Laidler, David, Essays on Money and Inflation, Manchester University Press Manchester 1975. Chapter 9, "Price and Output Fluctuations in an Open Economy, 183-194.

Laidler, David, "Alternative Explanations and Policies Towards Inflation: Tests on Data Drawn from Six Countries," forthcoming in K. Brunner and A. H. Meltzer (eds.), Carnegie-Rochester Conference Series on Public Policy, 1976.

Laidler, David and Michael Parkin, "Inflation: A Survey," Economic Journal Vol. 85 (340), December 1975, 741-809.

Laidler, David and A. R. Nobay, "Some Current Issues Concerning the International Aspects of Inflation" in Claassen and Salin (1976).

Mundell, R., Monetary Theory: Inflation, Interest and Growth in the World Economy, (California: Goodyear Publishing, 1971).

Parkin, Michael, "Inflation, The Balance of Payments, Domestic Credit Expansion and Exchange Rate Adjustments," in Robert Z. Aliber (ed.), Proceedings of the Conference on National Monetary Policies and the International Financial System, Racine, Wisconsin, 1972.

Parkin, Michael, "World Inflation, International Relative Prices and Monetary Equilibrium Under Fixed Exchange Rates," paper presented at the Conference on the Political Economy of Monetary Reform, Racine, Wisconsin, 1974, and forthcoming in the edited Proceedings of that Conference.

Parkin, Michael, "International Liquidity and World Inflation in the 1960s," in Parkin and Zis (1976b), 48-63.

Parkin, Michael, Ian Richards and George Zis, "The Determination and Control of the World Money Supply Under Fixed Exchange Rates, 1961-1971," The Manchester School, Vol. XLIII, No. 3, Sept. 1975, 293-316, and reprinted in Parkin and Zis (1976b), 24-47.

Parkin, Michael and Graham W. Smith, "Inflationary Expectations and the Long-run Trade-off Between Inflation and Unemployment in Open Economies," in Parkin and Zis (1976b), 280-290.

Parkin, Michael, M. T. Sumner and R. Ward, "The Effects of Excess Demand, Generalized Expectations and Wage-Price Controls on Wage Inflation in the U.K.," in Brunner, K. and Meltzer, A. H., Proceedings of the Conference on Wage-Price Controls, Rochester, New York, November 1973, North Holland, Amsterdam 1966.

Parkin, Michael and George Zis (eds.), Inflation in the World Economy, Manchester University Press and University of Toronto Press (1976a).

Parkin, Michael and George Zis (eds.), Inflation in Open Economies, Manchester University Press and University of Toronto Press (1976b).

Shaw, Edward S., "International Money and International Inflation; 1958-1973," Business Review, Spring 1975, Federal Reserve Bank of San Francisco, 5-17.

Sims, Christopher, A., "Money Finance and Causality," American Economic Review, Vol. 62(4), 1972, 540-552.

Spinelli, Franco, "The Determinants of Price and Wage Inflation: The Case of Italy," in Parkin and Zis (1976b), 201-236.

Stein, Jerome L. (ed.), Monetarism (Amsterdam: North Holland, 1976).

Swoboda, Alexander, K., "Gold, Dollars, Euro-dollars and the World Money Stock," Discussion Paper, G.I.I.S.-Ford Foundation International Monetary Research Project, Graduate Institute of International Studies, Geneva, November (1975a).

Swoboda, Alexander, K., "Monetary Approaches to the Transmission and Generation of Worldwide Inflation," Discussion Paper, G.I.I.S.-Ford Foundation International Monetary Research Project, Graduate Institute of International Studies, Geneva, March (1975b).

Teigen, R. L., "Interpreting Recent World Inflation," American Economic Review, Papers and Proceedings, Vol. 65, May 1975, 129-32.

Vanderkamp, John, "Inflation: A Simple Freidman Theory with a Phillips Twist," Journal of Monetary Economics, Vol. 1(1), March 1975, 117-122.

Witteveen, H. Johannes, "Inflation and the International Monetary Situation," American Economic Review, Papers and Proceedings, Vol. 65, May 1975, 108-14.

Zis, George, "Inflation: An International Monetary Problem or a National Social Phenomenon," in Parkin and Zis (1976b), 1-23.