

A Note on “The Existence of a World Demand for Money Function: Preliminary Results”

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In the pages of this journal, *Frowen* and *Kouris* (1977) have recently argued that their empirical work suggests that the world demand for money function is “unstable under fixed exchange rates” and that “it almost breaks down under flexible exchange rates”. Further, that results indicated that the interest elasticity of the demand for money is “well defined”. These findings were interpreted to be “in contrast to those in the paper by *Gray, Ward and Zis* (1976), which found the demand-for-money function to be stable and to show a low, insignificant interest elasticity”. The authors went on to argue that their study supports the Keynesians who would maintain that “there are severe limits placed on the efficacy of monetary policy if the demand-for-money function is both unstable and interest-elastic” and, therefore, to reject the policy conclusions reached by *Parkin* (1976).

It follows, then, that the study by *Frowen* and *Kouris* raises a number of questions: firstly, is there such a sharp contrast between their findings and those of *Gray, Ward and Zis*? Secondly, does their empirical evidence, if accepted, provide support for the Keynesian position on monetary policy? Thirdly, does the desirability of controlling the money supply as a means of controlling the rate of price inflation depend on the interest elasticity of the demand for money? This note attempts to provide an answer to these questions. We begin by considering the last, leaving the first and main question to be analysed after the other two.

In a *closed* economy the existence of a stable demand for money function is a necessary and sufficient condition for control of the money supply to ensure control of the rate of price inflation. This proposition, to be found in, for example, *Friedman* (1956), (1970), is independent of whether or not the demand for money is interest elastic. If the demand for money is perfectly inelastic with respect to the rate of interest, i. e. the LM curve is vertical, then, it follows that “only money matters” and

fiscal policy "does not matter". Shifts of the IS curve have an impact only on the rate of interest. Alternatively, if the demand for money is interest elastic then fiscal policy does matter. But this does not imply that inflation cannot be controlled by controlling the rate of growth of the money supply. Finally, if the demand for money is infinitely elastic with respect to the rate of interest, i. e. the LM curve is horizontal, then "money does not matter". In this case, however, we would not be able to identify a stable demand for money function. Thus the proposition that the existence of a stable demand for money function, with the liquidity trap case being logically excluded, is a necessary and sufficient condition for control of the money supply to ensure the control of price inflation. Whether or not the demand for money is interest elastic will affect the efficacy of fiscal policy and *not* of monetary policy. *Friedman* (1956) and *Laidler* (1977), both firm advocates of monetary policy, have presented the theory and surveyed the empirical evidence respectively on the relationship between the demand for money and the rate of interest. Therefore, it may be argued that there is neither theoretical nor empirical foundation for the *Frowen* and *Kouris'* conclusion that an interest elastic demand for money function places "severe limits on the efficacy of monetary policy".

In the context of a *closed* economy the debate between "monetarists" and "Keynesians" on the role of money has revolved principally on the existence or otherwise of a stable demand for money function. However, in recent years a set of hypotheses has been advanced which can be grouped under the label of open economy monetarism. These hypotheses are to be found in the work of *Mundell* (1971), *Johnson* (1972), *Swoboda* (1973) and of other economists who have criticized closed economy models. Open economy monetarism emphasizes the importance of the prevailing exchange rate regime for the analysis of whatever question is being considered and leads to predictions that sharply differ from those which follow from the Friedmanite model of closed economy monetarism. For example, open economy monetarism would argue that for inflation to be an international monetary phenomenon under fixed exchange rates there must exist a stable world demand for money function. But, as *Duck* and *Zis* (1978) have demonstrated, in the presence of exchange rate uncertainty the existence of stable *national* demand for money functions, of the conventional form, is *not* a *necessary* condition for inflation to be an international monetary phenomenon. On the other hand, *Friedman* (1976) has expressed scepticism regarding the empirical

validity of one of the fundamental assumptions of open economy monetarism when he argued:

“Once you introduce them (central banks, restrictions and controls) it is crystal-clear that the notion of a single price in the world is no longer valid. The whole purpose of national controls is to preserve rigid exchange rates but not unified money, to break the law of a single price around the world.”

It follows, therefore, that if purchasing power parity does not hold in the policy relevant short run, inflation will be a national monetary phenomenon if a stable national demand for money function can be identified. However, as *Duck and Zis (1978)* have shown, stable national demand for money functions will not result, in these circumstances, in a stable world demand for money function being identified unless the countries' demand functions are identically the same. We would then be led to *Friedman's* policy prescription in favour of monetary policy at the *national* level for the control of a particular country's inflation rate. This is to be contrasted with the open economy monetarist assertion that a country cannot control the rate of growth of its money supply and, therefore, its rate of inflation. Consequently, the absence of a stable world demand for money function does not necessarily constitute evidence in support of Keynesian propositions. It invalidates one of the predictions of open economy monetarism but is perfectly consistent with closed economy monetarism. This argument is strengthened if one bears in mind that neither Keynes nor Keynesians have advanced any theoretical framework that either suggests or denies the existence of a stable *world* demand for money function. Their analyses of the determinants of inflation have, on the whole, abstracted from exchange rate considerations and concentrated on criticising closed economy monetarism. Thus, it may be argued that there is no foundation for the *Frowen and Kouris'* conclusion that their empirical findings support the Keynesian views on monetary policy.

The *Gray, Ward and Zis* study in treating the Group of Ten countries as interdependent parts of an integrated economic unit rested on the open economy monetarist proposition 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” (*Parkin [1977]*) that needs to be explained. Thus the attempt to investigate whether or not there exists a stable *world* demand for money function. But it follows that under flexible exchange rates there are as many inflation rates as

there are monies. Consequently, open economy monetarism would not predict a stable world demand for money function for the period after 1971. We will, therefore, have nothing to say about the empirical findings of *Frowen* and *Kouris* relating to the period since the collapse of the Bretton Woods system as they lack theoretical basis and are of no relevance to the *Gray, Ward* and *Zis* study which stopped at 1971.

The objectives of and objections to the *Gray, Ward* and *Zis* paper of the *Frowen* and *Kouris* study are not particularly clear. They state that one of their aims is "by using a different methodological approach, to allow for possible heterogeneities between countries which are totally neglected upon aggregation". As it transpires from the rest of the study this "different methodological approach" relates to the properties of the statistical techniques used for estimation purposes rather than the theoretical foundations on which the *Gray, Ward* and *Zis* study rested. *Frowen* and *Kouris* suggest that the statistical technique used by *Gray, Ward* and *Zis* suffers from "the usual econometric "snags" (of) multicollinearity and small samples" which can be overcome by their preferred technique which rests on the pooling of several time-series blocks. However, the authors fail to mention that there is no evidence that the *Gray, Ward* and *Zis* preferred set of results are biased by the usual econometric "snags". Secondly, they argue that their statistical approach "is expected to produce more plausible results". This can be interpreted to mean that they regard the *Gray, Ward* and *Zis* results as implausible. However, nowhere do they state why these results are, presumably, *theoretically* implausible and what in their view are "more plausible results". Nor is there any subsequent discussion of the plausibility of their results.

Independently, however, of the relative merits of the alternative estimation techniques used, it must be pointed out that *Frowen* and *Kouris* in opting for the pooling approach they assumed that countries have identical demand for money functions i. e. that the income elasticity and interest elasticity of the demand for money is the same in every single country. The "heterogeneity" between countries is supposed to be captured by the introduction of an intercept term in each function. But the authors make no attempt to justify the assumption that the demand for money functions are identical in all countries. This, however, is not an inconsequential omission. No theory predicts that the income elasticity of the demand for money of the Welsh is the same as that of the Irishmen.

No empirical evidence can support the assumption that, for example, Germany's demand for money function is identical with that of any other country. Indeed, the theory of the demand for money would lead us to predict and expect that the demand for money functions will differ between national regions as well as between countries. Do the authors suggest that information and transaction costs are identical in, say, Italy and the U. K.? However, the objection to the *Frowen* and *Kouris* implicit assumption goes further. In using the statistical technique that they did, they in fact tested a hypothesis different from that of *Gray, Ward and Zis*. The *Frowen* and *Kouris* findings can be interpreted as inconsistent with their assumption that countries' demand for money functions are identical. But the presence of a stable demand for money function at the world level neither presumes nor requires that national demand for money functions are identical. Indeed, the expectation would be that demand for money functions would differ among countries as, for example, *Baumol's* theory of the transactions demand for money explicitly suggests. We would, therefore, conclude that not only did *Frowen* and *Kouris* test a hypothesis different from that embodied in the *Gray, Ward and Zis* study, but also that their hypothesis has no foundation in economic theory whatever the econometric merits of their approach. Thus, there is no contrast between the *Frowen* and *Kouris* findings and those of *Gray, Ward and Zis* as the two studies related to different hypotheses.

Further, the empirical findings of *Frowen* and *Kouris* cannot be accepted at face value because of the data that they employed. National money supplies were converted to dollars at current exchange rates while the national income series were converted at 1963 exchange rates during the process of deriving aggregate series. Consequently, given this difference, the *Frowen* and *Kouris* empirical results, which are not based on aggregate data, incorporate an element of unreliability which makes their evaluation difficult independently of theoretical considerations. For this problem I wish to record my sincere apologies to the authors for not drawing their attention to the implications of the data I supplied them for their study when I commented on a first draft.

Frowen and *Kouris* make repeated references to "heterogeneities" among countries. However, nowhere do they define the precise nature of these "heterogeneities". Consequently, it is impossible to ascertain whether in fact they object to the world approach to the study of in-

flation under fixed exchange rates. In this context, if countries' inflation rates do not differ, whatever other differences may exist among countries, then inflation can be analysed only at the world level. If *Frowen* and *Kouris* interpret "heterogeneities" to imply divergent national inflation rates, a point suggested by *Miller* (1976), then the world approach is invalidated by demonstrating this divergence by reference to the inflation rates experienced by the various countries on fixed exchange rates. However, nowhere in their study do *Frowen* and *Kouris* challenge the fundamental assumption of *Gray*, *Ward* and *Zis* that purchasing power parity holds in the policy relevant short-run.

We may, therefore, conclude that the *Frowen* and *Kouris* results are not "in contrast to those in the paper by *Gray*, *Ward* and *Zis*" as they have tested a different hypothesis. Secondly, that their findings, abstracting from theoretical and data considerations, cannot be interpreted as evidence in support of Keynesian propositions regarding monetary policy. Finally, that there is no foundation to their assertion that an interest elastic stable demand for money function places "severe limits" on the efficacy of monetary policy as an instrument of controlling inflation.

References

1. Duck, N. and Zis, George (1978): "World Inflation, the Demand for Money and Fixed Exchange Rates", *Scottish Journal of Political Economy*.
2. Friedman, M. (1956): "The Quantity Theory of Money: A Restatement" in M. Friedman (ed.) *Studies in the Quantity Theory of Money*, Chicago, University of Chicago Press.
3. Friedman, M. (1970): *The Counter-Revolution in Monetary Theory*, London, Occasional Paper 33, Institute of Economic Affairs.
4. Friedman, M. (1976): "Discussion on Frenkel", in E. Claassen and P. Salin (eds.) *Recent Issues in International Monetary Economics*, Amsterdam, North-Holland Publishing Company.
5. Frowen, S. and Kouris, G. (1977): "The Existence of a World Demand for Money Function: Preliminary Results", *Kredit und Kapital*.
6. Gray, M., Ward, R. and Zis, George (1976): "The World Demand for Money Function: Some Preliminary Results" in M. Parkin and George Zis (eds.) *Inflation in the World Economy*, Manchester, Manchester University Press.
7. Johnson, H. G. (1972): *Inflation and the Monetarist Controversy*, Amsterdam, North-Holland Publishing Company.
8. Laidler, David E. W. (1977): *The Demand for Money: Theories and Evidence*, 2nd Edition, New York, Dun-Donnelly Publishing Corporation.
9. Miller, M. (1976): "A Comment" in M. Parkin and George Zis (eds.) *Inflation in the World Economy*, Manchester, Manchester University Press.
10. Mundell, R. (1971): *Monetary Theory: Inflation, Interest and Growth in the World Economy*, California, Goodyear Publishing.
11. Parkin, M. (1976): *Inflation in the World*

Economy: 1958 - 1975, Surrey Papers in Economics, No. 11, Guildford, University of Surrey. — 12. Parkin, M. (1977): "A 'Monetarist' Analysis of the Generation and Transmission of World Inflation: 1958 - 1971", *American Economic Review Papers and Proceedings*. — 13. Swoboda, A. K. (1973): "Monetary Policy under Fixed Exchange Rates: Effectiveness, the Speed of Adjustment and Proper Use", *Economica*.

Zusammenfassung

Ein Beitrag zu „Das Vorhandensein einer Geldnachfragefunktion auf weltweiter Ebene unter festen und flexiblen Wechselkursen: Vorläufige Ergebnisse“*

Dieser Beitrag legt klar, daß die von *Frowen* und *Kouris* vorgelegten empirischen Untersuchungen entgegen ihrer Behauptung nicht jene Ergebnisse von *Gray*, *Ward* und *Zis*, die die Geldnachfragefunktion für stabil hielten und eine geringe, unerhebliche Zinselastizität aufzeigen wollten, widerlegen. Die mangelnde Vergleichbarkeit dieser beiden empirischen Ansätze resultiert aus der Tatsache, daß diese beiden Studien zwei verschiedene Hypothesen untersuchten. Indem *Frowen* und *Kouris* das von ihnen gewählte Berechnungsverfahren anwandten, folgte daraus zwingend eine Übereinstimmung des Volkseinkommens, der Zinselastizität und der Geldnachfrage. Somit sind die empirischen Ergebnisse weder mit jenen von *Gray*, *Ward* und *Zis* vergleichbar, noch mit der Theorie von der Geldnachfrage vereinbar.

Weiter zeigt diese Studie, daß eine instabile internationale Geldnachfragefunktion bei festen Wechselkursen nicht zwingend auch instabile nationale Geldnachfragefunktionen voraussetzt. Schließlich wird hervorgehoben, daß eine bestehende stabile Nachfragefunktion, ganz gleich ob sie zinselastisch ist oder nicht, eine notwendige und hinreichende Bedingung für eine Steuerung des Wachstums des Geldangebots ist, um die Kontrolle der Inflation zu gewährleisten.

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Summary

A Note on "The Existence of a World Demand for Money Function: Preliminary Results"*

This note argues that the empirical results presented by *Frowen* and *Kouris*, contrary to what they allege, are not "in contrast to those in the paper by *Gray*, *Ward* and *Zis*, which found the demand-for-money function to be stable and to show a low, insignificant interest elasticity". The absence of comparability between the two sets of empirical results stems from the fact that these two studies tested two different hypotheses. In employing the estimating technique which they did, *Frowen* and *Kouris* constrained the national income

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and interest elasticities of the demand for money to be identical. Thus their empirical results are neither comparable to those of *Gray*, *Ward* and *Zis* nor consistent with the theory of the demand for money.

Further, this note argues that the absence of a stable world demand for money function, when exchange rates are fixed, does not necessarily imply that national demand for money functions are not stable. Finally, it is pointed out that the existence of a stable demand for money function, whether or not it is interest elastic, is a necessary and sufficient condition for control of the money supply growth to ensure the control of price inflation.

Résumé

Une contribution à "L'existence d'une fonction de demande monétaire à l'échelon mondial sous l'empire de taux de change fixes et flexibles: Résultats provisoires"*

La présente contribution démontre que, contrairement à leurs assertions, les recherches empiriques de *Frowen* et *Kouris* ne réfutent pas les conclusions de *Gray*, *Ward* et *Zis* qui tenaient la fonction de demande monétaire pour stable et entendaient prouver la faiblesse de l'élasticité des taux d'intérêt. La comparabilité lacunaire de ces deux estimations empiriques résulte du fait que les deux études ont fouillé deux hypothèses différentes. La procédure de calcul choisie par *Frowen* et *Kouris* devait nécessairement aboutir à une correspondance du revenu national, de l'élasticité des taux et de la demande monétaire. De ce fait, les résultats empiriques ne sont ni comparables à ceux de *Gray*, *Ward* et *Zis*, ni compatibles avec la théorie de la demande monétaire.

L'étude établit par ailleurs qu'avec des taux change fixes une fonction internationale instable de la demande monétaire ne postule pas nécessairement aussi une fonction nationale instable de cette demande. L'on souligne enfin que, sensible ou non aux taux d'intérêt, une fonction stable existante de la demande monétaire est une condition suffisante et nécessaire pour maîtriser la croissance de l'offre monétaire, et donc pour assurer le contrôle de l'inflation.

* Paru dans le cahier N° 1/1977.