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FISCAL AND MONETARY POLICY FOR INTERNAL AND EXTERNAL BALANCE.

by

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This paper is circulated for discussion purposes only, and its contents should be considered preliminary.

Fiscal and Monetary Policy for Internal and External Balance

In a by now classic article*, R. A. Mundell demonstrated that an open economy could maintain internal and external balance without using the exchange rate as a policy tool. This, he showed, could be done by using fiscal policy to produce internal balance, and interest rate policy to produce an imbalance on the capital account to offset whatever imbalance there might be on the current account. There have been two criticisms of this conclusion. The first, fairly common in the literature, is that it presumes international capital movements are flows. If, as is often maintained, they are stock adjustments, a certain amount of funds will move in response to an interest rate rise, and then to produce a further reallocation of portfolios a further rise in interest rates will be required. It is thus concluded that Mundellian policy in the presence of a current account deficit would have to be not merely interest rates above those elsewhere, but interest rates rising higher and higher above those elsewhere. The second criticism was made by John Williamson.** He attacked not the feasibility of the policy, but its desirability. He argued that the policy would produce resource misallocation, in the form of distortion of the consumption/investment mix, at home.

The first of these criticisms is not completely compelling. As Branson and Hill*** for example, point out, capital movements have two components. There is an adjustment of existing portfolios, and there is also a continual addition to portfolios as wealth increases. A policy of interest rates higher than those abroad would thus produce a larger share of this portfolio growth for the high interest rate country than would a policy of maintaining equality

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* "The Appropriate Use of Monetary and Fiscal Policy Under Fixed Exchange Rates" I.M.F. Staff Papers, March 1972.

** "On the Normative Theory of Balance of Payments Adjustment" in "Monetary Theory and Monetary Policy in the 1970's", edited by G. Clayton, J.C. Gilbert, and R. Sedgwick.

*** "Capital Movements in the OECD Area", OECD, 1971.

between domestic and foreign interest rates. This could be sufficient to maintain external balance. It is therefore not clear that the Mundellian recommendation is infeasible as a long run policy.

The Williamson criticism still stands, however. The policy should not be - whether or not it can be does not matter - pursued in the long run.

But the short run situation is different. If the policy is used only to deal with short term difficulties, it is doubtful if the welfare costs would be significant. Indeed, it may be the least costly policy available. It would be the least costly policy if a country had inadequate reserves to finance a deficit it expected to be temporary. A special case of this is the deficit which inevitably follows a devaluation; should there be inadequate reserves to finance the "J curve", resort to borrowing is essential if there is not to be a deflation.

The Mundellian policy, then, appears to be a feasible one, and in some circumstances the most desirable one, in the short one. It is therefore worth considering whether the introduction of an extra complexity, the forward exchange market, might affect this conclusion. Forward markets exist in practice, so it is necessary to see if they matter for this purpose.

The Forward Market in Mundell

In Mundell's analysis, it is assumed that a rise in the domestic interest rate means a rise of an equal amount in the rate of return to foreigners from holding that country's assets. This assumption is in fact a fairly strong one, as can be seen if we consider the transactions a foreigner carries out to move into the home country's assets. He sells his own currency

for the home country's currency so that he can buy the asset. Then, unless he wishes to bear the risk of a possible change in the exchange rate, he will simultaneously sell forward the capital plus interest for the time at which he expects to liquidate his investment. For example, if he buys a three month treasury bill, with the intention of holding it to maturity, he will sell his capital plus interest, three months forward, for his own currency. If he does that, he is bearing exchange risk until his contract matures, but if he waits until then there is no exchange risk attached to his transaction.

We can now see the cases under which the Mundellian assumption is satisfied. These are, first, if exchange cover is not taken. This case we set aside for the moment, for not taking exchange cover implies taking a view about the future course of exchange rate movements - what is called speculation. People who move their funds uncovered are thus being guided by two forces, and can only be considered when the simpler case has been dealt with. If we suppose that all funds are covered, then a rise in the home interest rate implies the same rise to domestic residents and foreigners if either the forward price always equals the spot price, or, if it differs, the interest rate movement does not affect the differential. It will be useful to conclude this section by setting out symbolically the return to a foreigner from investing his funds covered.

The foreigner has \$x, and with this buys sterling, at price P_S. He therefore gets £$\frac{x}{P_S}$, where P_S is the number of dollars to the pound. On this he gets an interest rate i for the period he invests. At the end of the period he will have £$(\frac{x}{P_S} + \frac{xi}{P_S})$. This amount he sells foward, at the same time as he invests in sterling assets, at the forward price P_F (number of dollars to the pound). He gets \$$P_F$ $(\frac{x}{P_S} + \frac{xi}{P_S})$. From this formula, it is plain that the rate of return is i to foreigners and domestic residents

alike if P_F equals P_S, while if P_F does not equal P_S, but the differential is for some reason constant, although the rate of return to foreigners differs from that to domestic residents, any increase in that rate of return goes equally to both.

It is necessary then to attempt to find out when either of these relationships between P_F and P_S is guaranteed, for only then does the Mundellian conclusion not need to be qualified. Consideration of this will also show when domestic rates need to move less than a basic Mundellian analysis would predict, when they would need to move more, and when the Mundellian method will be totally ineffective or even counter-productive. A first step to this is to set out a simple diagrammatic representation of the determination of the forward exchange rate.

The Determination of the Forward Exchange Rate*

The forward rate, P_F, is determined by the interaction of the two classes of operator in the forward market, speculators and arbitrageurs. Speculators take uncovered positions; that is to say, they take a view about the future course of the exchange rate, and according as the forward price differs from their expected spot price, take a position as either net holders or net owers of that currency forward. Their behaviour is represented in the diagram below by the line AP_eB. (N.B. A rise in P_F means an increase in $ per £; i.e. Sterling strengthening.)

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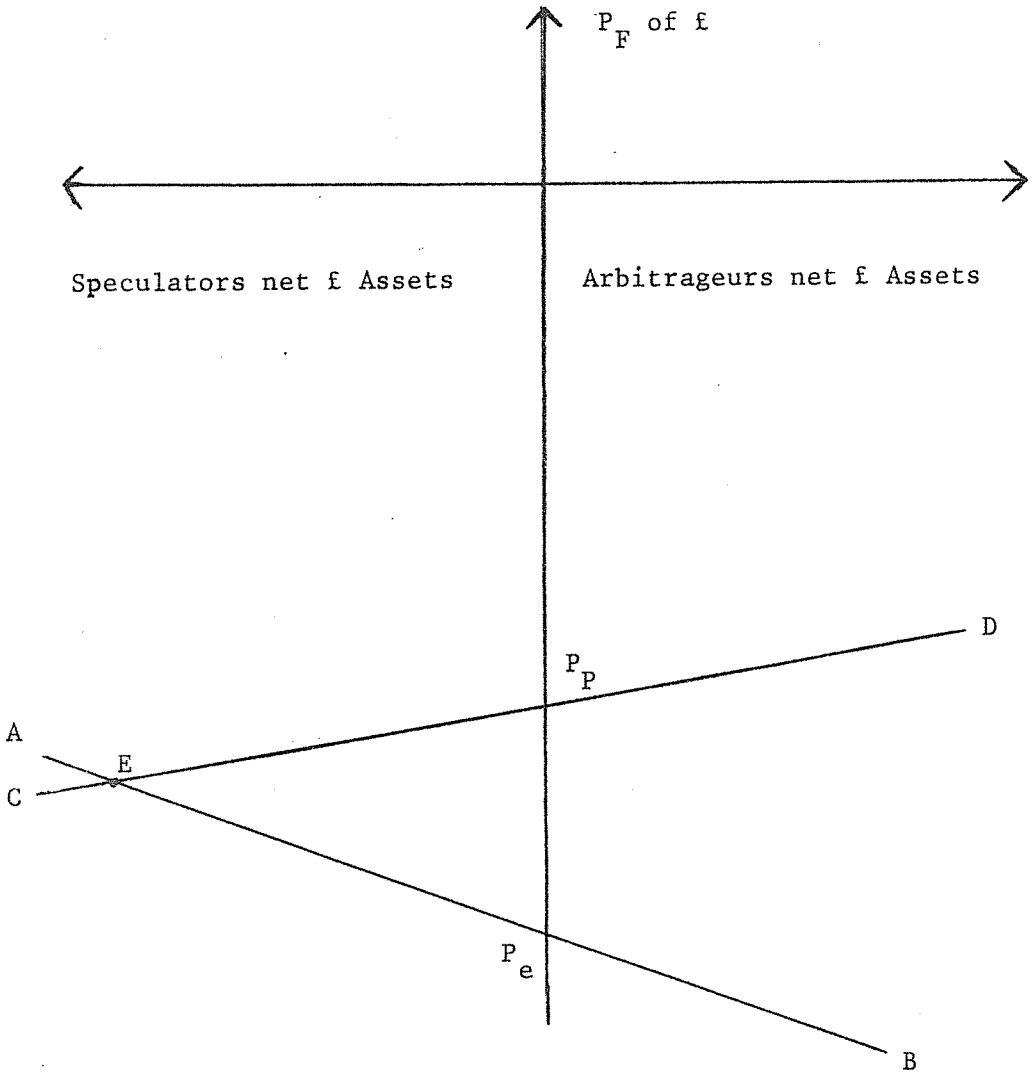
* The diagram used below is a simplified version of that in Fleming and Mundell's "Official Intervention on the Forward Exchange Market", IMFSP, March 1964.



P_e is the expected spot price. At P_e on the vertical axis - that is, when the expected spot price equals the forward price - speculators have no temptation either to hold or owe the currency, for when the forward contracts mature, and they either have to receive or supply the currency, the spot price they expect is the forward price currently prevailing.

To the left of P_e, they hold the currency forward; they have taken this position because the price at which they will supply the currency is above the spot price they expect to prevail when the time to meet their obligation comes; and conversely to the right of P_e. The slope of line depends on their degree of risk aversion; the steeper is the line, the more they have to be paid to tempt them to take an unbalanced position. Thus the <u>position</u>

of the line depends on the expected spot price, while the slope depends on the degree of risk aversion and how risky they perceive the situation to be. (These two determinants enter because, no matter how risk-averse speculators were, the less risk they see in the situation - if for example they knew that the probability of a revaluation was zero and of a devaluation non-zero - the more willing they would be to take a position and the larger would that position be).

The price is of course not yet determined. We need also the arbitrageurs' schedule. Arbitrageurs never bear exchange risk, but move to interest rate incentives and cover their exchange positions in the forward market. Considering both spot and forward markets together, they do not have an unbalanced position, but of course to attain this they are unbalanced in each market separately. Their schedule is CP_pD.

In principle, the forward rate is pegged when interest parity holds - that is, where the covered return is the same everywhere - since arbitrage is a riskless operation, so the arbitrageurs schedule passes through P_p, the forward price at which, given the spot price and relative interest rates, interest parity holds. The interest parity conditions may be written symbolically as

$$\frac{P_F - P_S}{P_S} = r_f - r_d$$

That is, the premium or discount per annum equals the interest differential, the currency of the country with the lower interest rate being the one that is at a forward premium.

If the forward rate is thus pegged, CP_pD should be horizontal through P_p; it is drawn with a slope to represent the real-world fact that arbitrage

is not quite perfect. Various reasons have been advanced for this*, but they do not concern us here. The forward price is determined at E, the intersection of CP_pD and AP_eB; there do speculator's and arbitrageurs forward positions balance.

This analysis is simplified in that it ignores the existence of traders in goods and services. These are generally assumed to cover forward automatically. Therefore if trade balances their existence does not affect P_F. A movement from balance to imbalance will of course affect P_F (and P_S, if it is not pegged). We can neglect this because we are looking not at the absolute level of P_F, but at how P_F will be changed by a change in r_d, and we are assuming that r_d does not affect the behaviour, with regard to taking forward cover, of traders in goods and services.

The Ceteris Paribus

What concerns us is under what circumstances P_F may move so as to offset, at least partially, a movement in the domestic interest rate. To do that, we need to consider what is in 'ceteris paribus' in the above description of the determination of P_F.

We have already seen that the position of the speculator's schedule depends on the expected spot price, and its slope depends on their degree of risk aversion and the certainty of expectations. The curve's slope will increase if the degree of risk aversion or perceived risk increases (or of course if both do); it will shift bodily upwards if P_e rises.

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* See for example "The Minimum Covered Differential Needed for International Arbitrage Activity" by W.H. Branson, JPE November/December 1969

The position of the arbitrageurs' schedule depends on the spot price and relative interest rates. With interest rates constant, a rise in the spot price will require a rise in the forward price to maintain interest parity, so that will shift the curve up. A rise in domestic interest rates will require a fall, and a rise in foreign rates, a rise, in the forward price to preserve parity so these will respectively lower and raise the curve. The slope of the curve is usually said to depend on factors (such as the degree of imperfection in capital markets) not variable in this analysis.

All these results can be briefly set out in two tables.

The Speculators' Curve

1.	Rises in P_e	Curve Shifts up
2.	Fall in P_e	Curve Shifts down
3.	Increase in Risk Aversion	Curve Steepens
4.	Decrease in Risk Aversion	Curve Flattens
5.	Increase in perceived risk	Curve Steepens
6.	Decrease in perceived risk	Curve Flattens

The Arbitrageurs' Curve

1.	Rise in P_s	Curve Rises
2.	Fall in P_s	Curve Falls
3.	Rise in r_d	Curve Falls
4.	Fall in r_d	Curve Rises
5.	Rise in r_f	Curve Rises
6.	Fall in r_f	Curve Falls

We can now readily see which variables, when varied, will ceteris paribus , raise P_F, and which will lower it. This, too, can be summarised in a table.

Table 3

Raise P_F	Lower P_F
Rise in P_s	Fall in P_s
Rise in P_e	Fall in P_e
Increase in Risk Aversion	Decrease in Risk Aversion
Increase in perceived Risk	Decrease in perceived Risk
Fall in r_d	Rise in r_d
Rise in r_f	Fall in r_f

A country in deficit and about to use the Mundellian technique would be interested in the right-hand column in Table 3, while one in surplus would be interested in the left-hand column. Of course, as by assumption P_s is given, the first item in each column is not of interest.

The next stage in the analysis is to consider which of these determinants of the forward rate is likely to be triggered by an interest rate movement made on Mundellian grounds. We shall consider first the case of a deficit country, and then that of a surplus country.

A Deficit Country

A deficit country following the Mundellian prescription would raise

its interest rate, r_d. If P_F falls, this will offset, at any rate to some extent, the effect on the capital account. As can be seen from the table, a rise in r_d will itself, ceteris paribus, lower P_F. We might expect this, for the rise will attract capital into the country, and that capital, when being covered forward, will depress P_F. This does not prevent an inflow, but simply cuts it off earlier than if P_F did not move. The first qualification then is that to offset any given current account deficit, we will require a larger rise in r_d than would appear if we neglected the forward market.

This is not a serious qualification, for the Mundellian recommendation still stands as qualitative guidance, and it is always open to the monetary authorities to provide forward cover. It is possible that the interest rate will have to rise by less than the Mundellian analysis would predict. This would happen should a rise in r_d raise P_e, as it might if there was a clear expectation of a parity fall until the interest rate rise occurred; this is surely a very special case. Perhaps more likely is that a clear-cut act of policy reduces market uncertainty. But on balance one would expect that the rate would have to rise by more than inspecting the hypothetical (without a forward market) model would indicate, for the forces which produce that fall in P_F are simple, the automatic response of the market, and do not depend on influencing expectations in a very special way.

It is unlikely that r_f will move; this is presumably determined by the foreign monetary authorities, and they have no apparent reason for lowering r_f. We henceforth assume r_f constant. The degree of risk aversion is psychologically determined, and unlikely to be affected by interest rate movements; this, too, is henceforth assumed constant.

The remaining two variables, however, must be carefully considered. A fall in P_e will lower the forward price and cut off the inflow*. Also,

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* In the diagram, increase the outflow.

while a decrease in perceived risk will 'ceteris paribus' lower the forward price (number of £ to the £), and bring an inflow, an increase will steepen the speculator's curve and bring an equilibrium at a reduced arbitrageurs switched in position, for speculators will provide less forward cover at each price.*

Whether or not the two events occur depend on the circumstances of the interest rate rise. If it is undertaken to finance a temporary dip in what is basically, looking at export volumes and the behaviour of price levels, a sound position they are unlikely to occur. If, however, the situation looks unsound, and the policy action looks like the start of a rate defence which may not be sustained, then it may actually trigger a fall in P_e and a rise in perceived risk, both or either of which if sufficiently large could end by making the capital account worse than before the interest rate increase.

To summarise this section, the effectiveness of the policy is inevitably somewhat dampened by a forward market. It is also possible that

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* More generally, at a reduced position, in or out according to interest rates. This is because the schedule becomes increasingly inelastic, and a smaller flow of funds shifts P_P. It may seem odd that an increase in perceived risk reduce a flow in either direction, but it is in fact intuitively very plausible. Arbitrageurs do not bear exchange risk, so they are of course quite unaffected, but speculators become less willing, at any price, to offer cover. Thus an inflow is rapidly choked off by a fall in P_F. and an outflow by a rise in P_F. It is possible that if a fall in P_e is associated with an increase in uncertainty the outflow may actually fall or the inflow rise; this is not however very likely for in a climate of increased uncertainty there is unlikely to be simultaneously a clear-cut change in market expectations. The paradox is thus possible but not likely.

the policy may so act on expectations of speculators as to be perverse.*

A Surplus Country

This country would wish to either promote outflow, or at any rate discourage inflow. It would lower r_d. This will, exactly analogously to above, raise P_F, and thus somewhat dampen the effectiveness of the policy. Also as above, this qualification is not of great importance at the analytical level. Again as above, we assume that the policy does not affect r_f or the degree of risk aversion, and look especially at P_e and perceived risk. Exactly the same conclusions as above follow. If the policy looks like a temporary flutter in a basically neutral position, there is no clear reason why either should shift, but if the move looks like the first step in the defence of an undervalued parity, responses could be initiated which would more than offset the move.

Conclusions

In this short paper the forward exchange market has been incorporated

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* Introduction of the forward market introduces a surprising option for policy makers if the spot rate is floating. Suppose that the spot rate has been pegged, but is then freed to find its own (by assumption lower) level. Because of the existence of the earlier mentioned J curve, the spot rate will for a time fall below its long-run equilibrium. The authorities could perhaps prevent this by raising interest rates domestically but if the forward rate stays up there will be no need to, for there will be an opportunity for profitable arbitrage and funds will flow in. It may be questioned whether P_e might not fall if the spot price fell continuously for some time, and even apart from this, as R.F. Kahn** has pointed out, speculators' time horizons are such that they will not take a view long enough to wait out the length of the J curve, but will act on the basis of what they expect P_e to be in a few months time. (The densest forward market is three months forward, and even for sterling and the dollar there is no market beyond one year forward). This policy option is unlikely, for both these reasons, to materialise in practice.

** American Economic Review, Papers and Proceedings, 1973

into the Mundellian analysis of fiscal and monetary policy used to maintain internal and external balance respectively, that analysis being viewed not as a long run recommendation, but as setting out what is often the best available method for handling short run balance of payments fluctuations. The conclusions of doing this have been, first, that the domestic interest rate will have to move further than would have been necessary had there been no forward market; this is not very important, because that hypothetical state does not in general exist. The conclusion of importance that has emerged is that the policy can only be used with reasonable hope of success when the underlying situation is one where balance at the existing spot exchange rate seems likely, taking one period with another, for some time to come. Otherwise, the interest rate movement could well trigger behaviour in the forward market which would readily offset the interest rate effect. That is the policy conclusion.

As was mentioned earlier, some funds move uncovered. This involves taking a view about the future course of the exchange rate. The existence of these funds reinforces the policy conclusion we have reached; for if the interest rate policy leads people to revise their expected spot rate, uncovered funds will move in response to this expectation. If a rise in interest rates leads to a fall in P_e, these funds will flow out, and if a fall in interest rates leads to a rise in P_e, these funds will flow in. The existence of these funds thus reinforces the effect on the capital account caused by a shift in P_e affecting the movement of covered funds. Of course, the converse also applies; if P_e does not change, then any movement in P_F will not cut off the flow of uncovered funds, so any movement in r_d will produce a larger flow in the desired direction than if all funds were covered (and of course, a smaller flow than if all funds were uncovered).

One question raised earlier can also now be readily answered. When

are the (implicit) Mundellian assumptions of <u>either</u> $P_F = P_s$, or the differential being constant with respect to interest rate changes likely to be fulfilled? $P_F = P_s$ only when the domestic interest rate equals the foreign interest rate, so this condition will always be violated by Mundellian policy. The alternative condition will occur only when there is an infinitely elastic supply of forward cover at the going forward rate. This is an extreme case of the circumstances, outlined above, under which the policy is useful - circumstances of confidence in the long-term situation - for if the forward price is not to move we require complete confidence that the future spot price equals the expected spot price, and almost no risk aversion.

The conclusion of this paper - that the effect of the Mundellian policy on expectations is crucial - is not really surprising. We have however set out systematically the way in which expectations affect the result of the policy, making judgement of its likely effectiveness at any time more easy, and suggesting some of the parameters it would be useful to estimate econometrically with a view to guiding the use of Mundellian policy.