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DERMOT DUNNE, TIMO HÄMÄLÄINEN AND
VELI-MATTI KOTILAINEN

MONETARY INDEPENDENCE IN SMALL OPEN ECONOMIES - THE CASE OF IRELAND AND FINLAND

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MONETARY INDEPENDENCE IN SMALL OPEN ECONOMIES - THE CASE OF IRELAND AND FINLAND

ABSTRACT:

This paper investigates the degree of the independence of monetary policy in Ireland and in Finland using the Kouri-Porter framework. After theoretical considerations on the monetary approach, the portfolio balance approach and the Kouri-Porter model the institutional policy framework in both countries is presented. The empirical part of the study summarizes existing estimation results for Finland and presents some work of our own for Ireland. It is found that there is about similar scope for independent monetary policy in Ireland after joining the European Monetary System in 1979 as in Finland.

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Monetary Independence in Small Open Economies
- The Case of Ireland and Finland

by
Dermot Dunne, Timo Hämäläinen
and Veli-Matti Kotilainen

October 1984

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Kiel Institute of World Economics
Düsternbrooker Weg 120, D-2300 Kiel

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INTRODUCTION

Monetary policy is designed to influence the liquidity and the rate of interest in a country in order to affect the real development of the economy. The Central Bank which is, in most cases, the authority in charge of such policy, has a certain degree of independence in its actions. However, especially in smaller countries, its power is circumscribed by the effects its decisions have on the inflows and outflows of capital. Under fixed exchange rates and perfect capital mobility the small country was held not to be in a position to implement a monetary policy independent of that prevailing abroad.

With the breakdown of the Bretton Woods system in the 1970's and the introduction of an era of floating currencies many small countries felt it desirable to maintain the value of their currency in terms of one or more other currencies. Nevertheless an element of uncertainty had been introduced into the foreign dealings of these countries. It is this exchange rate uncertainty, together with that caused by the regulation of capital movements, that seems to indicate that there is some scope for an independent monetary policy even among very small, open economies.

In this context the position of Ireland and Finland is quite interesting. Both are small economies in the sense that they do not have influence on economic circumstances outside their countries. Both are very open economies with Irish exports and imports as a percentage of GDP (roughly 50 % each in 1983) being almost twice the comparable figures for Finland. Both countries operate a pegged exchange rate. The Finnish Markka is pegged to a trade-weighted basket of currencies while the Irish pound (or punt) is, since 1979, a full member of the European Monetary System (EMS) and is thus pegged to most other European Community currencies. Prior to 1979 the punt was pegged at a strictly one-for-one basis to the UK pound sterling.

One major implication of the break with sterling is that the scope and extent of exchange controls in Ireland was greatly increased in 1979. In Finland, on the other hand, there has been a progressive dismantling of exchange controls since the late 1960's even though they are still fairly strict by international standards.

In order to examine monetary independence in the two countries this paper is divided into four sections. Section One reports what modern theory has to say about such independence. Section Two describes in some detail how monetary policy operates in Finland and Ireland. Section Three examines the empirical work that has been done in the two countries and presents some work of our own while Section Four concludes the paper.

Section One: THEORETICAL CONSIDERATIONS

This section looks at two theoretical approaches to monetary policy - the monetary and the portfolio balance models.

- The Monetary Approach

In this approach capital is perfectly mobile and there is perfect substitutability between domestic and foreign assets (Genberg, 1981). This means that the returns are equalised on home and foreign securities. This gives the following money demand function:

$$M = M^d (Y, r^s)$$

where Y is national income and r^s is the foreign interest rate. The money supply function is:

$$\Delta M = \Delta L + \Delta F + CA$$

where the change in the domestic money supply (ΔM) consists of the change in bank credit (ΔL), the increase in foreign net borrowing (ΔF) and the surplus in the current account (CA) [1].

The Central Bank cannot affect the amount of money since the changes in domestic assets are fully compensated for by the changes in foreign credit. This is the same result as in the small country Mundell-Fleming-model with perfect capital mobility and fixed exchange rates. Solving the two equations gives:

$$\Delta F = \Delta M^d (Y, r^s) - \Delta L - CA$$

So, even if monetary policy has no effect on the real economy the Central Bank can still influence the reserves of the country. A change of one unit in domestic credit leads to a corresponding change in the foreign reserves.

The monetary approach can be said to be that which applied under the

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1) The money supply equation can be derived by combining the balance of payments identity with the balance sheets of the Central Bank and the private banking sector.

Gold Standard. In this system, with exchange rates fixed, interest rate parity holds. Under the Bretton Woods system, however, exchange rates could change under conditions of "fundamental disequilibria". They introduced an element of uncertainty to the interest parity equation.

The fact that, in the early years of Bretton Woods, capital flows were almost totally regulated by the monetary authorities means that this system provides an example of monetary independence based on exchange controls. The money supply and demand equations can be solved to give

$$\Delta r = \frac{1}{m_r} (\Delta \bar{L} + \Delta \bar{F} - CA - m_y \Delta Y)$$

where m_r and m_y are the interest rate and income derivatives of money demand. Thus the Central Bank can affect the domestic interest rate if there are binding controls on capital flows (hence $\bar{F}$ which can be considered an instrument of policy). This holds only when m_r is less than infinity.

In this way are both exchange controls and exchange risk introduced as the means by which a small country may gain some degree of monetary independence. The existence of exchange controls means that an extra degree of uncertainty emerges. This concerns the so-called political risk by which the authorities might suddenly change the exchange control regulations (Aliber 1978). The analysis of risk is the cornerstone of the portfolio balance approach which will now be considered.

- The Portfolio Balance and the Kouri-Porter Model

Consider an individual whose wealth is divided between two assets, domestic (H) and foreign (P = W - H). According to the mean-variance model of portfolio choice the utility of an individual is a function of the expected value ($\bar{\tilde{W}}$) and variance $s^2_{\tilde{W}}$ of his end of period wealth $\tilde{W}$:

(1) $U = U(\bar{\tilde{W}}, s^2_{\tilde{W}})$; $U_1 > 0$, $U_2 < 0$.

(For a presentation of mean-variance analysis see Copeland and Weston (1979)).

Assume that the rates of return on domestic and foreign assets, r and r^s respectively, are certain but because of exchange rate risk the rate of return on foreign assets in domestic currency is uncertain. The expected end of period wealth is

(2) $\bar{W} = W(1+r) + XW(r^s - r + E(\dot{e}))$

and its variance

(3) $s^2_{\bar{W}} = X^2 W^2 \text{ var } (\dot{e})$,

where $X = P/W$ is the share of the foreign assets in the portfolio, $E(\dot{e})$ is expected change in the exchange rate and var $(\dot{e})$ is its variance. Maximising the utility function (1) with respect to X yields the optimal portfolio share

(4) $X = \frac{P}{W} = \left[r^s - r + E(\dot{e})\right] / Q \text{ var } (\dot{e})$,

where $Q = -2U_2W/U_1$, the coefficient of relative risk aversion.

Equation (4) says that the investor (speculator) is willing to take an open position in the foreign currency if the speculative interest rate parity $r = r^s - E(\dot{e})$ does not hold. The demand for the open position depends among other things on the uncertainty of the exchange rate (var $(\dot{e})$) and the coefficient of risk aversion (Q). In the case of a risk neutral investor (Q = 0) deviations from speculative parity would lead to unlimited open positions. This would also happen if the future exchange rate changes were certain (var $(\dot{e}) = 0$). On the other hand if the exchange risk is big the deviations from speculative parity can be large without any major changes in the demand for open positions.

Equation (4) can be rewritten as

(5) $r^s - r + E(\dot{e}) = \text{var } (\dot{e}) \quad Q \frac{P}{W}$,

which can be shown to hold also at an aggregated level when W and P are defined as the total wealth and the sum of open positions, respectively, of all the speculators and Q is a measure of relative risk aversion at the aggregated level (Dornbusch 1983). Equation (5) says that the speculative parity holds if the wealth of the speculators is so large that it can be taken to be infinite. Thus deviations from the speculative parity can be greater if the total wealth of speculators is restricted for example by exchange controls.

Following Tarkka (1984) the Kouri-Porter model can be derived by combining equation (5) with the money demand and money supply identity:

(6) $\triangle m^d (y, r) = \triangle L + \triangle F + CA$,

Capital imports can be divided into private and government imports:

$\Delta F = \Delta FP + \Delta FG$, where government capital imports are considered as an instrument of monetary policy. Noting that $P = -\Delta FP$ the equations (5) and (6) can now be solved with respect to the domestic interest rate and private capital imports:

(7) $\Delta r = \alpha(\Delta r^s + \Delta E(e)) - \beta(\Delta L + \Delta FG + CA - m_y \Delta Y)$

(8) $\Delta FP = -\alpha[\Delta L + \Delta FG + CA - m_y \Delta Y - m_r(\Delta r^s + \Delta E(e))]$

where

(9) $\alpha = 1/(1 - var(\tilde{e})\, Q\, m_r/W)$

and

(10) $\beta = (\alpha - 1)/m_r$

Thus in the Kouri-Porter model the domestic interest rate and capital flows can be expressed in terms of the foreign interest rate the domestic national income and the money supply (including government capital imports and the current account surplus).

For monetary policy the relevant parameter in both the interest rate equation and the capital flow equation is α, the offset-coefficient, which expresses

a) what proportion of the growth of domestic money supply leaks abroad through capital flows

and also

b) how large is the effect of foreign interest and exchange rate expectations on the domestic interest rate given the domestic money supply.

According to equation (9) the offset coefficient varies between 0 and 1. If there is no exchange risk ($var(\tilde{e}) = 0$) or the speculators are risk neutral ($Q = 0$) the offset coefficient is unity. On the other hand if the wealth of the speculators is zero ($W = 0$) the offset coefficient is zero. In the former case the model corresponds to the monetary or gold standard model while in the latter case the model corresponds to the model of restricted capital movements of the Bretton-Woods era. The Kouri-Porter model thus decribes both the extreme cases of monetary independence and all the cases between them.

The parameter β measures the effect of domestic money supply on the domestic interest rate. If the offset coefficient is unity or the interest elasticity of money demand is infinite the domestic money

supply does not affect at all the domestic interest rate.

Note further that when the exchange risk is the only relevant risk factor, the covered interest rate parity

(11) $f = r - r^{\$}$

holds, where f is the forward premium. From equation (5) it follows that

(12) $f = E(\tilde{e}) - \text{var}(\tilde{e})\, Q \frac{P}{W}$,

i.e. the forward premium does not depend solely upon the expected exchange rate change but also upon the risk premium which in turn depends upon the open position, the degree of risk and the level of wealth.

Section Two: HOW MONETARY POLICY WORKS IN IRELAND AND FINLAND

- Ireland

Prior to 1979 the punt was pegged on a one-to-one basis to the British pound sterling in a common currency area. Effectively given the size of the respective financial markets, this meant that the value of sterling determined the value of the punt. At this time the Irish licensed (or commercial) banks could freely satisfy their demand for liquidity on the London money market. The high degree of capital mobility meant that the Irish interest rate could not significantly diverge from that of the UK. For example in a formal analysis of interest rate movements in the two countries, Browne and O'Connell (1978, p. 298) conclude that there was then virtually perfect integration with respect to the 3-month inter-bank rates. In a further study Browne (1978), using a sophisticated time-series analysis, concluded that there seemed to be little basis for the use of a counter-cyclical monetary policy at that time.

In March 1979 Ireland joined the EMS. The UK remained outside and the appreciation of sterling soon broke the traditional parity of the punt. The licensed banks' access to the London money market was reduced substantially by a perceived exchange risk on sterling transactions and also by the exchange control limitations on banks' open positions in foreign currencies. To counter this the Central Bank introduced a Short-Term Credit Facility (which provides for borrowing from the Central Bank overnight and up to seven days). The Short-Term Credit Facility is the Central Banks' principal method of supplying liquidity.

Another means of supplying liquidity is through the foreign exchange swap market which is itself a part of the interbank money market. Prior to November 1980 the Central Bank intervention in the forward market may have led to some divergences from interest rate parity. Since November 1980 the licensed banks have assumed the responsibility of

setting the swap rates (and thus forward rates).

The Central Bank also determines the cash reserve requirements of the licensed banks. Other means of influencing short-term liquidity conditions and interest-rate levels include alterations in the buying and selling prices for short-dated Government bonds and Exchequer Bills (that is the open market operations of the Central Bank) and in the rate that is paid on surplus market funds which banks hold at the close of business.

The Central Bank thus regulates the supply of credit to the private sector. It relies on interest rates to equate supply and demand. The scope for the pursuit of an independent interest-rate policy is enhanced by the emergence of a perceived exchange risk and the existence of exchange controls, but it still remains limited. In particular, it is circumscribed by the need to maintain external reserves adequacy and to underpin the exchange rate of the punt in the EMS. The Central Bank's role is that of smoothing short-term fluctuations in interest rates and, perhaps, of moderating a more fundamental trend for a short period.

When Ireland joined the EMS existing exchange controls were extended to the UK and some new controls were introduced. These controls were designed to limit pressure on the exchange rate and the foreign reserves by reducing outflows of capital and also to ensure as much stability as possible for the new currency by regulating currency dealings. The major capital outflows restricted are the investment of new Irish funds on foreign stock exchanges, the holding of foreign currency balances by Irish residents and the lending of punts to non-residents. Capital inflows were also brought into the system but mainly for monitoring purposes. (The main source of this information is the Central Bank of Ireland Quarterly Bulletin - various issues).

- Finland

The external value of the Finnish Markka is pegged to a currency basket, where the weights are derived on the basis of the corresponding proportion of Finnish foreign trade. This is in contrast to the Irish punt which is pegged to the currencies of countries which account for only 30 % of its trade.

The banks and other financial institutions occupy a central position in the Finnish financial market while the role of the securities market is relatively limited. In these circumstances the main emphasis in monetary policy has been influencing bank lending mainly by varying the cost of central bank finance to the commercial banks. The are three main monetary instruments: the base rate, the call money rate and the cash reserve requirements.

Banks' deposit and lending rates follow very closely the base rate set by the Bank of Finland. The changes in the base rate have been neither frequent nor large; in general the level of the real interest rate has been comparatively low. Low interest rates together with the tax deductibility of interest payments has led to an excess demand for credit, which the banks try to satisfy by borrowing from the Central Bank. Thus by setting the terms of borrowing the Central Bank can influence the profitability of the commercial banks and their lending behaviour.

Central Bank borrowing takes place in the call money market. Prior to spring 1983 the call rate (or the interest rate in the call money market) increased with the amount of borrowing from the Central Bank. Since spring 1983 the call rate does not any longer depend upon the amount of borrowing. In the old system the call rate changed in response to autonomous changes in credit demand, thus deliberate policy decisions were needed to keep the call rate fixed. In the new system deliberate decisions are needed to change the call rate, for example, in response to foreign capital flows. The call rate has been changed quite frequently indicating a relatively active policy of the Central Bank.

The administrative control of interest rates has been supported by the regulation of capital imports and exports. Prior permission from the Central Bank is required for long term capital movements and personal capital transfers. Customary foreign payments and short term foreign trade credits are permitted without prior consent from the Central Bank.

In recent years the openness of the Finnish economy has increased. In addition to direct trade links, industrial firms, banks and insurance companies are going through an intense process of internationalization, which is also reflected in the utilisation of new and versatile sources

of finance. The financial system has developed in a more market oriented direction. In the absence of short-term government securities an unregulated money market has developed. In these markets non-banking firms deposit their excess liquidity in other non-banking firms in need of liquidity. Recently this business has increasingly taken place via the commercial banks, which are to a certain amount allowed to charge a part of the extra cost of unregulated money deposits to their credit customers. After the establishment of the call money market, the domestic market for unregulated funds and foreign financial markets have become more closely linked, with the call money rate acting as a sort of reference for domestic short-term funds.

In line with this financial evolution the foreign exchange controls have been eased. For example, foreign banks are allowed to establish their branches in Finland and stocks of Finnish companies can be traded in foreign stock markets to a growing extent. (The main source of this information is Johansson & Taivalaho, 1984).

Section Three: EMPIRICAL WORK

- Estimates of the Offset Coefficient in Finland

Some empirical work has been done on the offset coefficient in Finland. The estimates of this coefficient differ from each other in the various studies mainly because they employ the Kouri-Porter model in slightly different ways. Tarkka (1984) lists some of these offset coefficients derived in these studies

Hämäläinen (1984)	o.53
Halttunen and Korkman (1983)	o.8o
Tarkka (1983)	o.58
Tarkka (1984)	o.69

All the studies have drawbacks. There are simultaneity problems which are likely to lead to biases in the estimates. Hämäläinen (1984) tries to avoid this problem by using a two-stage least squares estimation procedure. Using disaggregated data he also shows, that the main channel of the capital flow leakage is the net foreign debt of the commercial banks. In addition all but the last study assume that the offset coefficient is constant over time. Since major institutional changes have occured over

the periods of the studies this is most likely not the case. Tarkka (1984) points out that the gradual liberalisation of exchange controls since the late 1960's has probably increased the offset coefficient and reduced the monetary independence in Finland. On the other hand the floating of the major currencies since 1973 has increased the exchange risk and thus probably decreased the offset coefficient. The following table gives the offset coefficient for different periods reported in Tarkka (1984):

Period	offset coefficient
1961.I - 67.IV	0.39
1968.I - 73.I	0.84
1973.II - 77.IV	0.70
1978.I - 82.IV	0.64

Thus the offset coefficient did change in the expected manner - Tarkka points out that this can probably be taken as an empirical justification for the Kouri-Porter approach.

- Empirical Work Relating to Ireland

Some work has been done in Ireland relating to the interest rate parity equation. Browne (1983) studied this equation using daily data for the post-EMS period when the Central Bank did not intenvene in the forward foreign exchange market. Given such a short time-scale he finds that interest parity does not hold between Ireland and the UK in the short-run, given the slowness of the response. It does, however, hold in the long-run which, here, means periodicities of eight to ten days and longer.

When it comes to the offset coefficient the Kouri-Porter model does not use such a short time-scale. The model assumes that nominal income and the current account are given. With this in mind it is felt that quarterly data are the most useful because the interest rate is assumed not to affect the real economy in this space of time. Correspondigly we decided to estimate the offset coefficient for Ireland using quarterly data.

In the original Kouri-Porter article (1974) and in the reported Finnish studies (with the exception of Haltunen and Korkman (1983)) the offset coefficient is estimated on the basis of the capital flow equation (8) using quarterly data. Balance of payments figures are not available on a quarterly basis for Ireland prior to 1981. We compiled these on the basis of trade account, government foreign debt and exchange reserves data. Further details on the data are given in the Appendix.

While data are not available on the domestic market interest rate in Finland, such data are readily abtainable in Ireland, given the existence of well-functioning money markets. Thus, for Ireland, it was felt to be interesting to estimate both the interest rate equation (7) and the capital flow equation (8).

In the equations the derivative of money demand with respect to income (m_y) was assumed to equal unity. The exchange expectations were taken to be static (i.e. $\Delta E(e) = 0$) given the known difficulty of measuring them. To capture the possible increase in monetary independence after 1979 dummy variables were applied to the money supply and the foreign interest rate. Another dummy variable was introduced to deal with the period of Central Bank intervention in the forward market (1979.I - 1980.IV). The equations were estimated for the period 1973.I - 1984.I and provided the following results:

(7') The interest rate equation:

$$\Delta r = \underset{}{0.28} + \underset{(0.11)}{0.76}\,\Delta r^{S} + \underset{(0.13)}{0.10}\,\Delta r^{S}_{-1} - \underset{(0.24)}{0.23}D1\,\Delta r^{S}_{-1} + \underset{(0.0026)}{0.0026}\,\Delta MS - \underset{(0.0032)}{0.0043}D1\,\Delta MS - \underset{(0.69)}{0.66}D2$$

$\bar{R}^2 = 0.56$ SE = 1.42 DW = 1.98

(8') The capital flow equation:

$$\Delta FP^{*} = \underset{}{0.28} - \underset{(0.13)}{0.86}\,\Delta MS^{*} + \underset{(0.27)}{0.35}D1\,\Delta MS^{*} + \underset{(0.0027)}{0.0040}\,\Delta r^{S} - \underset{(0.0045)}{0.0039}D1\,\Delta r^{S} + \underset{(0.014)}{0.020}D2$$

$\bar{R}^2 = 0.56$ SE = 0.026 DW = 1.40

(Standard errors are given in brackets).

The notation used is as follows:

r = 3-month Irish interbank interest rate

$r^{\$}$ = 3-month Eurosterling interest rate

MS = Irish money supply $[\Delta L + \Delta FG - CA - \Delta Y]$

FP = Private capital inflow $[-CA - \Delta FG + \Delta FCB]$

Δ = Quarterly change in sth.

-1 (subscript) = Value lagged one quarter

* = Value divided by M3 money supply in previous quarters

D1 = Dummy variable with value 1 for EMS period (since 1979.I) and 0 beforehand

D2 = Dummy variable with value 1 for the period of Central Bank intervention in the forward market (1979.II - 1980.IV)

where

L = M3 - FCB (Broad money supply minus foreign reserves of the Central Bank)

ΔFG = Quarterly government capital imports

CA = Quarterly current account surplus

ΔY = Quarterly gross domestic product

The estimated equations show that the offset coefficient (α) is 0.86 in both the capital flow and the interest rate equations when the lagged effect of the sterling interest rate is taken into account. In the EMS period the offset coefficient is reduced in the capital flow equation (see $D1\Delta MS^*$) but this estimate is not very significant. In the interest rate equation, while the coefficient of the post-1979 lagged sterling interest rate ($D1\Delta r^{\$}_{-1}$) shows the desired negative sign, this too is insignificant.

The coefficient of the sterling interest rate in the capital flow equation is positive in the sterling link period and is reduced almost to zero in the EMS period. While the latter is acceptable the former might be explained by the extremely close correlation between the Irish and UK interest rate prior to 1979.

We also tried to estimate these equations using the Eurodollar and Euromark interest rates but the results proved to be clearly insignificant in both cases. The dominant influence of the UK economy on the Irish one in the whole period under consideration would justify the use of the sterling interest rate as the required foreign rate post-1979.

The β coefficient in the interest rate equation (7) gives another measure of monetary independence, measuring to what extent the domestic money supply can affect the domestic rate. One would expect that during the sterling link period the value of β would be zero and negative in the EMS period. The empirical results seem to confirm this hypothesis. The coefficient of ΔMS is positive but statistically insignificant while the sum of the coefficients of ΔMS and D1ΔMS is negative.

Finally, in the interest rate equation, the coefficient of the D2-dummy variable, which was to measure the effect of forward intervention by the Central Bank shows that the domestic interest rate has been reduced by 0.66 percentage points. In the capital flow equation it is positive, indicating a capital inflow during each quarter of the intervention period. Using the M3 broad money supply figures over this period (see Appendix) this indicates that the inflow per quarter was roughly 100 million punts.

The estimated interest rate equation indicates that an increase of 100 million punts in the money supply will reduce the interest rate by 0.17 percentage points (this is got by adding the coefficients of ΔMS and D1ΔMS). Thus the empirical results confirm the general observation that the Irish monetary authorities can affect the domestic money supply and interest rate, at least in the short run (a quarter). However, in order to get a more refined analysis of the monetary independence of Ireland further econometric work is needed. In particular, there are simultaneity problems caused by the fact that the interest rate influences private capital flows and thus the foreign reserves and money supply. To overcome this difficulty simultaneous estimation techniques should be used.

Section Four: CONCLUSION

This paper shows that there is some scope for monetary independence in small open economies. This is consistent with the Kouri-Porter model. According to this model monetary independence depends on the exchange risk and the wealth of agents willing to take open positions against the domestic currency. Exchange controls also play a role in insulating the domestic economy from outside shocks by affecting this level of wealth.

In this paper we examined to what degree economies such as Finland and Ireland are in a position to conduct an independent monetary policy. The question of whether it is at all desirable for a small open economy to have any degree of monetary independence is outside the scope of this paper.

APPENDIX

All data, except the foreign interest rates, are taken from the Central Bank of Ireland Quarterly Bulletin. The foreign interest rates are taken from World Financial Statistics published by Morgan Guaranty Trust. Despite this there were still some problems with the data. To make up for the lack of quarterly balance of payments data prior to early 1981 these figures were compiled on the basis of the quarterly trade balance, the government net foreign debt and the foreign exchange reserves of the Central Bank. The quarterly current account and government capital import figures were adjusted to correspond to published yearly data. No valuation adjustments were made, however, to changes in the foreign exchange reserves. Thus the compiled quarterly private capital inflows include all the possible errors in the other items in the balance of payments data. The quarterly GDP figures were derived by linear interpolation. The following table gives the data used in the estimation of the regression equations:

Quarter	Y	M3	ΔFG	ΔFCB	CA	r	r^f_{US}	r^f_{UK}	r^f_{GER}
1973.1	647	1460	-20	-28	-126	10.6	8.6	10.0	-
73.2	667	1483	14	- 5	-121	9.9	9.0	8.0	-
73.3	687	1610	20	42	-100	13.6	10.4	13.3	-
73.4	702	1610	15	- 7	-104	16.5	10.1	15.9	-
74.1	705	1785	-8	- 5	-107	15.8	9.9	15.6	-
74.2	725	1810	73	-34	-231	15.4	13.4	13.3	-
74.3	755	1905	35	72	-180	13.4	12.2	11.6	-
74.4	805	2029	39	27	-116	13.9	10.2	12.8	-
75.1	862	2097	11	-22	-164	10.6	6.9	9.9	-
75.2	907	2154	20	53	-147	9.9	6.6	9.6	-
75.3	956	2292	65	48	- 83	10.8	7.9	10.6	-
75.4	1006	2450	64	104	-100	11.1	5.8	10.7	-
76.1	1062	2475	48	94	-260	9.1	5.5	8.4	-
76.2	1117	2519	124	-78	-200	11.3	6.0	11.1	-
76.3	1172	2689	108	96	-168	12.8	5.8	12.8	-
76.4	1231	2800	17	67	-176	14.7	5.0	14.4	4.7
77.1	1285	2853	80	37	-345	10.3	5.2	9.0	4.6
77.2	1345	2939	50	-63	-277	8.1	5.8	7.8	4.2
77.3	1406	3057	100	151	-173	6.9	6.9	6.1	4.2
77.4	1466	3223	-30	79	-185	7.1	7.2	6.6	2.5
78.1	1525	3413	150	-45	-309	7.2	7.5	8.1	3.3
78.2	1575	3529	80	-194	-373	11.1	8.7	11.4	3.4
78.3	1625	3807	50	141	-286	10.4	9.4	12.8	3.6
78.4	1696	4305	59	159	-274	12.9	11.7	12.6	3.3
79.1	1760	4473	-9	-114	-482	12.6	10.5	12.1	4.9
79.2	1820	4767	0	-144	-550	17.6	10.5	14.0	6.2
79.3	1910	4792	50	-60	-410	17.4	12.8	14.1	7.4
79.4	1990	5105	174	41	-355	18.5	14.4	16.8	8.6
80.1	2074	5168	150	-14	-575	19.0	19.7	18.3	9.7
80.2	2164	5272	63	19	-417	17.6	8.0	17.0	10.0
80.3	2264	5674	146	184	-325	13.6	12.2	15.9	9.1
80.4	2373	6123	325	182	-388	13.6	17.6	14.8	8.9
81.1	2476	6397	132	-144	-467	14.6	14.3	12.5	13.3
81.2	2590	6676	421	-130	-403	15.6	17.8	12.5	12.4
81.3	2700	6882	303	-117	-485	18.9	17.8	17.0	12.1
81.4	2800	7324	407	400	-240	18.8	13.8	15.7	10.5
82.1	2926	7360	285	-60	-665	20.3	15.4	13.5	9.1
82.2	3050	7508	450	50	-238	19.9	15.8	13.1	9.0
82.3	3170	7926	290	58	-265	15.4	11.4	10.5	7.8
82.4	3290	8387	89	43	-148	15.5	9.2	10.4	5.9
83.1	3435	8381	373	-380	-485	17.3	9.6	10.7	4.9
83.2	3565	8586	95	99	-63	13.9	9.7	9.6	5.2
83.3	3685	8709	321	517	-124	12.6	9.5	9.6	5.8
83.4	3785	9010	-48	-8	-123	12.3	9.8	9.3	5.9
84.1	3870	9010	684	105	-400	13.0	10.7	8.9	5.6

Note: The variables Y (Gross Domestic Product at current prices), M3 (broad money supply), ΔFG (government capital imports), ΔFCB (change in foreign reserves of the Central Bank) and CA (current account balance) are all measured in millions of punts. The interest rates given are the 3-month rates on the Irish interbank market and the Eurodollar, Eurosterling and Euromark markets, respectively.

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