This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Financial Deregulation and Integration in East Asia, NBER-EASE Volume 5

Volume Author/Editor: Takatoshi Ito and Anne O. Krueger, Editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-38671-6

Volume URL: http://www.nber.org/books/ito_96-1

Conference Date: June 15, 1994

Publication Date: January 1996

Chapter Title: Monetary Autonomy in the Presence of Capital Flows: And Never the Twain Shall Meet, Except in East Asia?

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Chapter URL: http://www.nber.org/chapters/c8567

Chapter pages in book: (p. 307 - 333)

11 Monetary Autonomy in the Presence of Capital Flows: And Never the Twain Shall Meet, Except in East Asia?

Wing Thye Woo and Kenjiro Hirayama

In a recent OECD report, Fischer and Reisen declared that Southeast Asia is a contradiction of standard open economy macroeconomics. Specifically:

> . . . In the debate on the European Monetary System, the co-existence of exchange stability, free movement of capital, and monetary autonomy has consequently been called the triad of incompatibilities, or the impossible trinity.
>
> However, Singapore and its neighbouring countries, Malaysia and Indonesia, have been largely (though not continuously) successful in reconciling exchange rate stability at competitive levels and a fair amount of monetary independence with an open capital account.
>
> . . . The success of East Asian countries in achieving the impossible trinity challenges . . . the Mundell-Fleming framework on which most macroeconomic analysis of the open (or opening of the) capital account is based. The answers are deeper than suggested by research which has not taken into account the role of institutions such as public pension funds, state banks or public enterprises. . . . To protect the money supply and external competitiveness from movements in their private capital account, they have to rely on positive public savings or mandatory private savings. Once "fiscal complicity" is given, the art of central banking in Southeast Asia has been shown . . . to retain some monetary autonomy, in spite of free capital flows. (1993, 67, 76–77)

Given the attention that this viewpoint has aroused (e.g., Frankel 1993), do we have yet another proof of East Asian exceptionalism?

We think not. To anticipate the analysis, our first conclusion is that substantial monetary autonomy exists in Indonesia, Malaysia, and Singapore despite their "open capital account policies." The second conclusion is that the monetary autonomy in these countries comes from the exchange risk premium created by the general lack of access to foreign funds, the strong influence that the governments have over the arbitrage activities of their domestic banks, and the readiness of the monetary authorities to change the rules of the game and to engineer perverse exchange rate movements to "cane the speculators." The exchange risk premium consists of more than the conventional portfolio risk premium, it also includes the nonzero covered interest differential generated by the preceding list of factors. The third conclusion of our analysis is that monetary authorities should eschew setting up "market-compatible" forward foreign exchange arrangements to encourage foreign investments, even those guided by theoretical arbitrage conditions, because of the operational difficulties of choosing the correct interest rates.

The paper is organized as follows: Section 11.1 defines the concept of monetary autonomy that we will use. Section 11.2 decomposes the interest rate differential into three analytical components to assess their relative contributions. Section 11.3 uses correlation methods to assess the empirical importance of the exchange risk premium by examining the accuracy of the interest rate differential in predicting exchange rate movements. Section 11.4 is a case study of Indonesia's attempt to establish a neutral-incentive forward exchange facility for "nonspeculative investments." Section 11.5 analyzes three national experiences with speculative attacks on their currencies. Section 11.6 concludes the paper.

11.1 Defining Monetary Autonomy

Monetary autonomy refers to the extent to which the monetary authorities can maintain the money supply at any arbitrary target level that they choose. Under a fixed exchange rate regime, full monetary autonomy is identical to having an independent interest rate policy. An independent interest rate is one that differs from the sum of the world interest rate and the expected rate of currency depreciation by a nonzero risk premium that is manipulable by policies such as capital controls, foreign exchange market interventions, and open market operations. A zero risk premium means that bonds denominated in different currencies have the same expected rate of return because they are perfect substitutes for each other, that is, the perfect capital mobility case.[1]

1. Under the floating exchange regime, a country automatically has full monetary autonomy, but it will not have an independent interest rate if foreign bonds are perfect substitutes for its bonds. In short, monetary autonomy does not always imply interest rate autonomy because it

The imperfect capital mobility (imperfect asset substitutability) case has an upward sloping balance of payments (BP) curve and allows the equilibrium interest rate to be any level provided that the IS and LM curves intersect at that point of the BP curve.[2] We find the assumption that r can deviate any amount from $r^* + \hat{e}$ under imperfect capital mobility to be implausible, especially under the fixed exchange rate regime without capital controls. If, as is likely, the amount of capital inflow increases disproportionately with an increase in the interest differential, then there is an interest differential beyond which capital inflows will overwhelm the ability to conduct sterilized interventions.

One simple way to amend the imperfect capital mobility case is to add the condition:

$$\text{maximum domestic interest rate,} \quad r_{max} = r^* + \hat{e} + \frac{1}{k_r},$$

$$\text{minimum domestic interest rate,} \quad r_{min} = r^* + \hat{e} - \frac{1}{k_r},$$

where k_r is the responsiveness of net private capital flows to a deviation of r from $r + \hat{e}$; that is, k_r evaluated at $r = r^* + \hat{e}$ is

$k_r = \infty$ for perfect capital mobility,
$k_r = 0$ for zero capital mobility,
$k_r = \sigma$ finite positive number, for imperfect capital mobility.

With this amendment, we have a natural way of comparing degrees of monetary autonomy under fixed exchange rate for different countries. Consider the situation of the money stock being decreased by a one-time open market operation. If the resulting interest rate is above r_{max}, then the resulting capital inflow will be so massive that it will overcome sterilized intervention to keep the money stock at the new level and increase the money stock to the level that is compatible with r_{max}.

This situation is summarized in figure 11.1. An open market operation shifts LM from LM_0 to LM_A, and the irresistible capital inflows push LM to LM_B. If LM had originally been shifted to LM_C, then sterilized intervention would be able to keep it there.

Figure 11.2 illustrates our concept of monetary autonomy. A country with high capital mobility (BP_1) has monetary autonomy within the range of money stocks that generate LM_1 and LM_2. Whereas a country with low capital mobility (BP_2) has monetary autonomy within the range given by LM_3 and LM_4. So

depends on the exchange rate regime, whereas interest rate autonomy always implies monetary autonomy regardless of the exchange rate regime.

2. Imperfect capital mobility produces an important asymmetry. Sterilized intervention can maintain an IS-LM intersection to the left of the BP curve (i.e., when the balance of payments is surplus) for a long time, while it can keep an IS-LM intersection to the right of the BP curve only until foreign reserves run out.
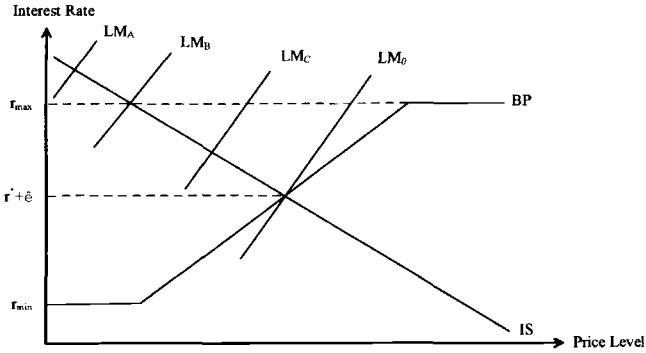
Fig. 11.1   Constraining of monetary policy by capital flows
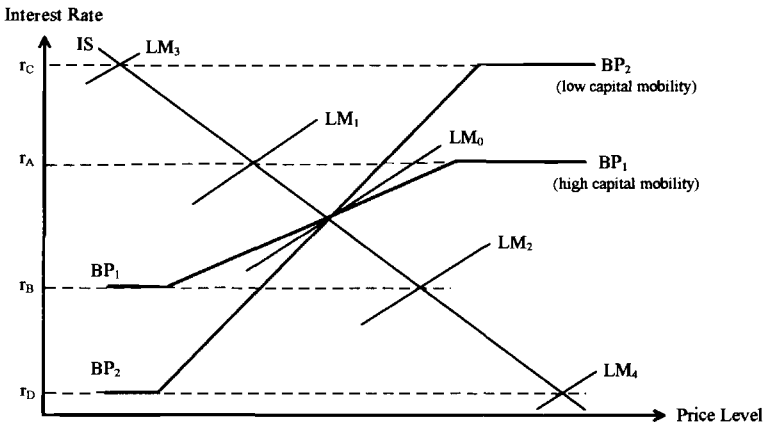
Fig. 11.2   Defining the degree of monetary autonomy

a natural measure of the degree of monetary autonomy is the range over which LM can be exogenously set.

11.2   An Accounting Framework

One way to examine the source of interest autonomy is to adopt an accounting framework for the deviation of the domestic interest rate from the world interest rate. The deviation can be decomposed into the following three factors; using the 90-day frequency, Indonesia and the United States as the example:

$$(1) \qquad \frac{1 + r}{1 + r^*} \equiv \left[\left(\frac{1 + r}{1 + r^*} \right) \left(\frac{s}{f} \right) \right] \left[\left(\frac{f}{s} \right) \left(\frac{s}{e} \right) \right] \left[\frac{e}{s} \right],$$

$r=$ 90-day Indonesian interest rate,
$r*=$ 90-day U.S. interest rate,
$s=$ spot exchange rate expressed as rupiah per dollar,
$f=$ 90-day forward rate,
$e=$ expected value of spot exchange rate 90 days thence.

Taking the natural logarithm of equation (1), we arrive at

$$\ln (1 + r) - \ln (1 + r*) \equiv \left[\ln (1 + r) - \ln (1 + r*) - \ln (1 + \frac{f - s}{s}) \right]$$

(2)
$$+ \left[\ln (1 + \frac{f - s}{s}) - \ln (1 + \frac{e - s}{s}) \right]$$

$$+ \left[\ln (1 + \frac{e - s}{s}) \right] .$$

Using the approximation of $\ln (1 + x) \cong x$ when x is small, we obtain

$$(3) \quad r - r* = \left[r - r* - \left(\frac{f - s}{s} \right) \right] + \left[\left(\frac{f - s}{s} \right) - \left(\frac{e - s}{s} \right) \right] + \left[\frac{e - s}{s} \right]$$

$$= \left[r - r* - \left(\frac{f - s}{s} \right) \right] + \left[\frac{f - e}{s} \right] + \left[\frac{e - s}{s} \right] .$$

We now define

$\left(\frac{f - s}{s} \right) \equiv d$ the forward discount on the rupiah vis-à-vis the dollar

$\left(\frac{f - e}{s} \right) \equiv \lambda$ the portfolio risk premium

$\left(\frac{e - s}{s} \right) \equiv \hat{e}$ the expected depreciation of the rupiah vis-à-vis the dollar

$(r - r* - d) \equiv \alpha$ the covered interest differential (country risk premium)

The final result is

$$r - r* = \text{[the covered interest differential, } \alpha\text{]}$$

(4)
$$+ \text{[the portfolio risk premium, } \lambda\text{]}$$

$$+ \text{[the expected currency depreciation, } \hat{e}\text{] ,}$$

and we define

(5)
$$\alpha + \lambda = \text{exchange risk premium.}$$

The covered interest differential, α. Since α is the result of riskless arbitrage, the expectation is that $\alpha = 0$ in the absence of capital controls, political risks, and transaction costs. With negligible capital controls on the major European

currencies and the U.S. dollar since the late 1970s, the nonzero value of α is commonly deemed to reflect the costs of currency transactions and borrowing and lending interest rate spreads. Furthermore, with increasing financial innovations, α is expected to decrease over time. However, if risk-averse speculators fear a possible reimposition of capital controls in the future, then there will be a nonzero α that reflects a country risk premium; and a fluctuating α may reflect the changing probabilities of capital controls being reimposed.

The portfolio risk premium, λ. In a simple two-country case and assuming that a covered interest differential holds ($\alpha = 0$) (e.g., Dornbusch 1983), we have the portfolio-balance equation:

$$(6) \qquad\qquad \lambda = \phi\left(\frac{B}{eB^*}\right),$$

where

B = stock of outside bonds denominated in rupiah,
B^* = stock of outside bonds demoninated in dollars,
ϕ = a coefficient whose magnitude depends on the degree of risk aversion and the variance and covariance matrix of r and $r^* + \hat{e}$.

The existence of λ is controversial. Frankel (1982) and Rogoff (1983) did not find it, while Dominguez and Frankel (1992) and Woo (1987) did.

Table 11.1 decomposes the interest rate differential (of Australia, Canada, Japan, and Singapore vis-à-vis the United States) into three components. The values of α, λ, and $\hat{e}$ do not add up because all terms were calculated by log approximations. Component $\hat{e}$ is calculated from the expected values of the currencies in three months' time as reported in the *Currency Forecaster's Digest.* The dates are arbitrarily chosen to be the beginning and middle of the year, and end-of-month data were used (except for the *Currency Forecaster's Digest* data, a point that will be discussed later).

As $\alpha = 0$ is the zero-profit condition for taking risk-free positions in the foreign exchange markets, it is reassuring that, in absolute terms, the covered interest differential was always very much smaller than the portfolio risk premium and the expected depreciation rate. The largest absolute value of covered interest differential was 1.1 percent (Canada in February 1990) compared to 14.1 percent for portfolio risk premium and 17.4 percent for currency appreciation (both for Japan in August 1989).

There are several (not mutually exclusive) explanations for why α does not equal zero in table 11.1. The first explanation is the match-up error in timing. Our data match only by day and not by time within the same day. This can be a serious problem because financial markets respond to news very quickly. The second explanation is the match-up error in exchange rates. We used the exchange rate that is the average of the ask and bid rates, whereas the arbitrage relationship requires that the ask and bid rates be used according to the direc-

Table 11.1   **Decomposition of the Interest Rate Differential**

Country and Date	Local Interest Minus Eurodollar Interest Rate $r - r^*$	Covered Interest Differential[a] α	Portfolio Risk Premium[b] λ	Expected Depreciation of Local Currency[c] $\hat{e}$	Error from Approximation
Australia					
1988:Feb	3.8410	−0.1024	−5.4407	10.1414	−0.7573
1988:Aug	4.5357	−0.1743	−2.6628	6.4398	0.9330
1989:Feb	5.7884	0.0220	2.4956	2.4316	0.8392
1989:Aug	7.9062	−0.4706	−2.0192	12.2269	−1.8308
1990:Feb	7.0550	−0.4159	0.6527	7.6345	−0.8163
1990:Aug	5.2487	−0.1586	−3.0633	9.2406	−0.7699
1991:Feb	4.5189	0.0897	−2.1782	6.2550	0.3524
Average	5.5563	−0.1729	−1.7451	7.7671	−0.2928
Canada					
1988:Feb	1.6721	−0.2407	0.4247	0.9460	0.5422
1988:Aug	1.4517	−0.1901	1.8302	0.3248	−0.5132
1989:Feb	1.7532	−0.0261	4.5698	−2.6846	−0.1058
1989:Aug	3.0400	−0.1898	5.6859	−2.3861	−0.0701
1990:Feb	4.0507	−1.1193	5.6644	−1.0844	0.5900
1990:Aug	3.8330	−0.7125	2.4005	1.4085	0.7365
1991:Feb	2.6538	−0.2916	1.0321	2.4190	−0.5057
Average	2.6364	−0.3957	3.0868	−0.1510	0.0963
Japan					
1988:Feb	−2.8024	−0.0222	5.6238	−8.4742	0.0702
1988:Aug	−4.2358	−0.6608	−8.3151	3.5715	1.1685
1989:Feb	−5.6342	−0.0251	9.6304	−15.1814	−0.0582
1989:Aug	−3.7671	−0.3581	14.0820	−17.4005	−0.0905
1990:Feb	−1.8311	−0.8417	7.6950	−7.3994	−1.2850
1990:Aug	−0.6479	−0.7916	11.6379	−9.7328	−1.7614
1991:Feb	0.7871	−0.4380	9.5207	−8.0004	−0.2953
Average	−2.5902	−0.4482	7.1250	−8.9453	−0.3217
Singapore					
1988:Jul	−3.2781	−0.3783	2.3315	−3.9604	−1.2709
1989:Jan	−3.4931	−0.3232	−0.6259	−2.0779	−0.4660
1989:Jul	−2.8608	−0.1331	−3.7937	0.0000	1.0660
1990:Jan	−1.8003	−0.9624	−5.8753	6.3662	−1.3288
1990:Jul	−0.1739	−0.5052	−1.9733	4.3957	−2.0911
1991:Jan	−2.2399	−0.7334	−2.7810	0.6935	0.5811
Average	−2.3077	−0.5059	−2.1196	0.9028	−0.5849

Source: Calculations provided by Menzie Chinn from raw data in various issues of the *Currency Forecaster's Digest.*

[a]Calculated from $\ln(1 + d) = \ln(1 + r) - \ln(1 + r^*) - \ln(f/s)$.

[b]Calculated as $(f - e)/s$.

[c]Calculated from the expected value of the spot exchange rate three months thence.

tion of the capital flow (Ito 1986). The third explanation is the existence of transaction costs that make a nonzero α consistent with zero profits in arbitrage (Keynes 1924). The fourth explanation is that the interest rates used may not have the same risk characteristics. The fifth explanation is the differences in tax treatment of foreign funds and in tax rates across countries. The sixth explanation could be the existence, or expected future existence, of capital controls.

Most studies on covered interest arbitrage have focused on the existence of transaction costs to explain the nonzero α. The reason for this appears to be that these authors limited themselves to the currencies of the industrialized countries and they regarded existing (if any), and the probability of future, capital controls in the industrialized countries to be insignificant. Branson (1969) estimated the transaction cost to be 0.18 percent per annum, while Keynes (1924) "guesstimated" it to be 0.5 percent per annum.[3] As some transaction costs (e.g., telephone charges) have fallen since Keynes's time, it may be reasonable to regard any absolute value of α at or above 0.5 percent per annum to indicate the existence of a country risk premium.

Table 11.1 shows that the α values for Australia, Canada, and Japan are consistent with the existence of transaction costs that eliminated the possibility of unexploited arbitrage profits.[4] Only the α value for Singapore, 0.51 percent per annum, is larger than could be justified by normal transaction costs. We will argue in section 11.5 that the high value of α in Singapore could be the result of Singapore's tight control of arbitrage activities by domestic banks and by its unusual policy reactions to past speculations against its currency.

The estimates of the portfolio risk premium and the expected currency depreciation rate in table 11.1 should be interpreted cautiously because of possible large misalignment errors. The survey by the *Currency Forecaster's Digest* on the expected value of the spot rate in 30 days' time is done on the third Thursday of the month, while our forward and spot exchange data are from the last trading day in the month. Since the portfolio risk premium for any one country in table 11.1 is mostly or overwhelmingly in one direction, it appears that the misalignment error, if it exists, may be consistently biased in one direction. In section 11.3, we will point to partial evidence that indicates that the nonzero portfolio premium is not an artifact created by the timing misalignment.

The portfolio risk premium indicates that similar maturity bonds denomi-

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3. Frenkel and Levich (1975) estimated the transaction costs in a 90-day covered interest arbitrage transaction to be about 0.15 percent (see their table 2), but it seems that they neglected to take into account the transaction cost of acquiring the foreign security (their r^*), which would raise the total transaction cost to 0.17. Because Frenkel and Levich's estimate cannot be easily made comparable to the annualized α estimates in our table 11.1, in Branson (1969), and in Keynes (1924), we have not used their estimate in our discussion.

4. The value of 0.45 percent per annum for Japan places it at the upper end of transaction costs. This may explain why Bonser-Neal and Roley (1994), unlike Ito (1986), rejected covered interest parity for Japan.

nated in the Canadian dollar and Japanese yen have to pay higher interest rates than U.S. dollar–denominated bonds while those denominated in the Australian dollar and Singapore dollar pay lower interest rates. For Canada and Singapore, the portfolio risk premium was the biggest contributor to the interest rate differential. For Canada, the average absolute size of the portfolio risk premium was 3.1 percentage points, while the average absolute expected depreciation was 0.2 percentage point. For Singapore, they were 2.1 and 0.9 percentage points respectively.

11.3   Looking for the Risk Premium

The existence of monetary autonomy depends on the existence of a risk premium that could be due to a country risk premium (a nonzero covered interest differential) *and/or* a portfolio risk premium. We will look for the risk premium using standard correlation analysis under the maintained hypothesis that agents are rational. In the absence of a risk premium, the interest rate differential is a good predictor of the subsequent exchange rate change; to see this, set $\alpha = \lambda = 0$ in equation (4). The converse is that poor predictive capability is consistent with the existence of the risk premium.

In the following three tests, there is decreasing stringency in the criteria of what constitutes adequate predictive power. For a zero risk premium, we expect a systematic relationship between the magnitudes of the two variables in the regression analysis, a systematic relationship between the ranking of the magnitudes in the Spearman correlation coefficient test, and a systematic agreement in signs in the sign test. The interest rate differentials and actual subsequent exchange rate movements for Indonesia, Japan, and Malaysia are shown in figures 11.3, 11.4, and 11.5, respectively.

Panel A of table 11.2 reports the regression results. Regressions are run with and without the constant term, corresponding to the assumption of no risk premium or a constant risk premium. If the predictive power is perfect, we would expect the coefficient on the interest rate differential to be equal to unity. The negative coefficients for Japan and Malaysia clearly reject the interest rate differential as an acceptable predictor of future exchange rate changes. The results for Indonesia are somewhat encouraging but the positive relationship may merely reflect the well-known government policy since 1986 of depreciating the exchange rate by 3–5 percent each year (unless an unexpected large external shock happens).

We now relax the stringency of the link between the change in the value of the currency and the interest rate differential. Spearman rank coefficients were computed for this pair of variables to look into a possible loose correlation (panel B of table 11.2). Only Indonesia exhibits a fair degree of theoretically expected correlation. The *t*-statistics indicate Malaysia's rank correlation coefficient to be zero and Japan's rank correlation coefficient to be significantly negative!
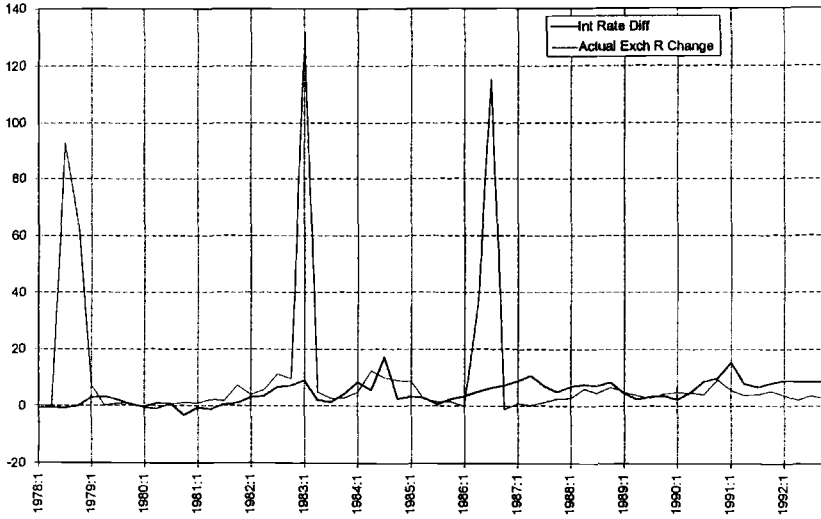
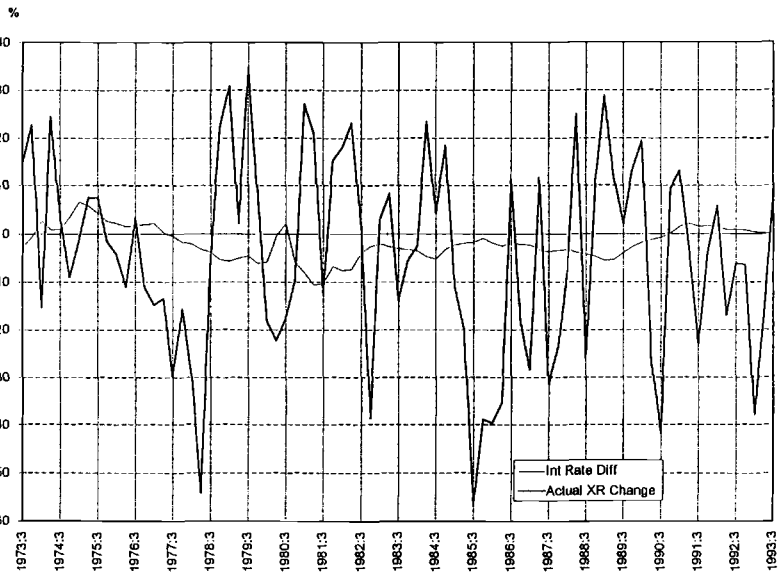**Fig. 11.3 Indonesia: interest rate differential and actual exchange rate change**

Fig. 11.4 Japan: interest rate differential and ex post exchange rate change
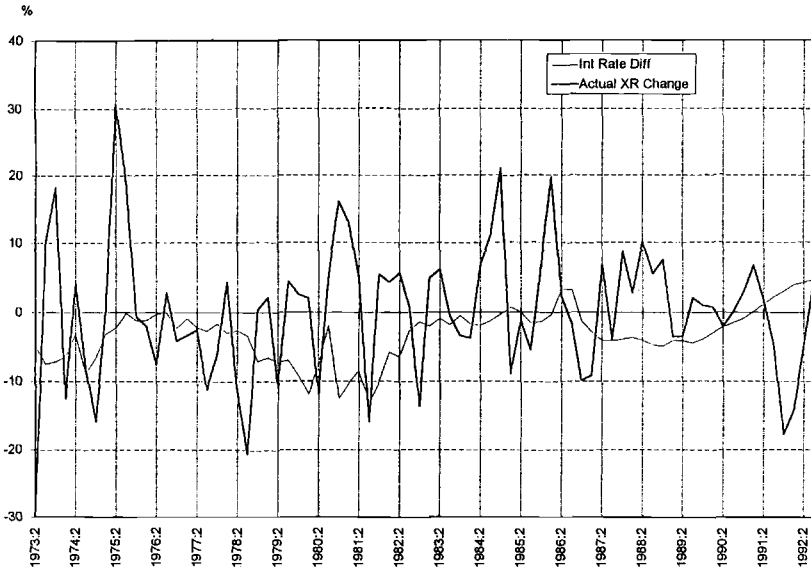
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Fig. 11.5   Malaysia: interest rate differential and ex post exchange rate change

Panel C of table 11.2 reports the sign test of the two variables. A successful prediction occurs when both variables have the same sign. Under the null hypothesis of the two series being random, these predictions would be correct half the time. Indonesia has an unusually high rate of success (50 out of 58), and the null hypothesis is rejected. The results for Japan and Malaysia are dismal. Sample success rates are only 0.44, and the p-values are quite small.

The results in table 11.2 suggest the presence of a risk premium for Japan and Malaysia, and possibly the absence of one for Indonesia.[5] More important, since table 11.1 suggests that covered interest parity holds for Japan, this means that the Japanese risk premium found here reflects a nonzero portfolio risk premium, indicating that the nonzero portfolio risk premium in table 11.1 is not an artifact of the timing misalignment between the survey data and the forward rates.

11.4   Indonesia's Experience with Using the Covered Interest Parity Condition

Indonesia removed all controls on capital account transactions in 1971 in recognition of the fact that there was no effective way to administer capital controls in an economy of 13,000 islands, most of which are within a short

5. Our results are consistent with the finding of Hansen and Hodrick (1980, 1983) that risk premia exist in the U.S. dollar exchange rate with the currencies of Canada, West Germany, France, Britain, Switzerland, Japan, and Italy.

Table 11.2   Predictive Power of Interest Rate Differential

Test	Indonesia 1978:3–1992:4	Japan 1973:3–1993:3	Malaysia 1973:2–1992:3
A. *Regression of Rate of Actual Currency Depreciation on Interest Rate Differential*			
Equation	(1)	(2)	(3)
Coefficient on $r - r^*$	1.43	−0.6	−0.11
(*t*-statistic)	(2.52)	(0.99)	(0.48)
Durbin-Watson	1.34	1.27	1.53
Adjusted R^2	−0.07	−0.03	0
Equation	(1′)	(2′)	(3′)
Constant term	10.37	−7.17	−0.38
(*t*-statistic)	(1.92)	(2.80)	(0.26)
Coefficient on $r - r^*$	0.15	−1.49	−0.16
(*t*-statistic)	(0.17)	(2.25)	(0.53)
Durbin-Watson	1.53	1.4	1.53
Adjusted R^2	0.00	0.05	−0.01
B. *Spearman Rank Coefficient between Rate of Actual Currency Depreciation and Interest Rate Differential*			
Spearman rank coefficient	0.25	−0.29	−0.08
(*t*-statistic)	(1.92)	(2.73)	(0.72)
C. *Sign Test for Correct Prediction of the Direction of Change*			
N	58	81	78
Number of matching signs	50	36	34
Proportion of matching signs	0.86	0.44	0.44
(*p*-value)	(1.00)	(0.19)	(0.15)

Notes: The data are quarterly and the interest rate is money market rate for Indonesia, call rate for Japan, money market rate for Malaysia, U.S. federal funds rate for the common foreign interest rate (these are all line 60B of *International Financial Statistics* [Washington, D.C.: International Monetary Fund, various issues]).

The exchange rate is number of local currency units per U.S. dollar.

boat ride of Singapore, a major international commercial and financial center. With capital controls, the ease of smuggling would quickly create a huge black market for illegal export proceeds already banked in Singapore. Not only would the controls be futile, their very existence would increase the uncertainty perceived by investors and hence increase capital flight.

In order to encourage foreign investment, Indonesia sought to reduce the exchange rate risk by introducing a swap mechanism in January 1979 to supplement its slowly developing private forward exchange market. The swap arrangement had the central bank, Bank Indonesia, simultaneously buying foreign currencies at the current spot exchange rate and entering into a contract to sell the same amount of foreign currencies at a specified future point in time at the current spot exchange rate. Bank Indonesia would charge a swap margin for entering into such an arrangement.

Bank Indonesia initially set the swap margin at 2.5 percent per annum, with the maturity of the swaps ranging from 30 to 180 days. But this meant that whenever the domestic interest rate was more than 2.5 percentage points above

the Eurodollar interest rate, there was an opportunity for unlimited profits with no risk for the private agents who contracted swap arrangements with Bank Indonesia. The resulting enormous periodic demands for swaps forced Bank Indonesia to control its exposure to foreign exchange risk by introducing ceilings on the size of individual transactions, adopting an aggregate swap ceiling, and raising the swap margin.

The swap margin was increased to 4.5 percent in March 1983 and to 8 percent in October 1986. Expecting the swap margin of 8 percent to be high enough to inhibit short-term speculative movements, the authorities removed the individual and aggregate swap ceilings to give long-term investors the full benefit of the swap mechanism. But the high demand for swap transactions reappeared after several months when Indonesian interest rates rose relative to international interest rates. The swap margin was raised to 9 percent in the second quarter of 1987.

The government, very sensitive to its laggardness in adjusting the swap margin in response to capital inflows, wanted to avoid any delay in lowering the swap margin if the interest differential were to drop. An excessive swap margin would militate against the objective of the swap mechanism to induce (nonspeculative) investments. With these concerns in mind, the government decided in October 1988 to adopt the covered interest parity condition as the basis for pricing swap transactions.

The swap margin was "market determined" in that Bank Indonesia set it equal to the difference between the average deposit rate for rupiah deposits in the Indonesian banking system and the deposit rate for dollar deposits in international banks in Singapore. This pricing formula for the swap margin was thought to render foreign speculators indifferent between putting their money in foreign banks or putting them in the Indonesian banks, and thus to be neutral in its effects on speculative capital flows. In October 1988, the government also extended the maturity of the swap to three years as an added incentive to foreign companies to undertake long-term physical capital investments in Indonesia.

One of the present authors pointed out in late 1990 that this covered interest parity pricing formula in Indonesia was not neutral in its effect on capital flow. It, in fact, subsidized capital inflows.[6] Neutrality was possible only if the interest rates used in the pricing were lending rates rather than deposit rates. The swap subsidy was the result of the spread between the lending rate and the deposit rate being larger in Indonesia than in Singapore.

To see the subsidy element in the "market-determined" pricing formula, let

(7)
$$S = r_d - r_d^*,$$

(8)
$$W = r_1 - r_1^*,$$

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6. This point was also made independently by Nasution (1991). The basis of his analysis and his definition of subsidy are different from ours.

where

r_d rupiah deposit interest rate in Indonesia,
r_d^* dollar deposit interest rate offshore,
r_l rupiah lending rate in Indonesia,
r_l^* dollar rate offshore.

If S is the swap margin, a depositor will be indifferent about whether her funds were dollar deposits in a Singapore bank or rupiah deposits in an Indonesian bank. If the swap margin is smaller than S, there will be an inflow of deposits from Singapore. On the other hand, if the swap margin is larger than S, it will not induce a capital outflow because the swap mechanism is a one-way mechanism: it guarantees a future exit rupiah-dollar rate for dollars entering Indonesia now, but not a future reentry rupiah-dollar rate for rupiahs leaving Indonesia now.

If the swap premium were set less than W, then an Indonesian who had to borrow for a transaction inside Indonesia would be better off borrowing offshore and using the swap mechanism to cover her position. Again because the swap mechanism is one way, a swap premium greater than W will not cause a capital outflow.

Now, defining

(9)
$$r_l = r_d + m \,,$$

(10)
$$r_l^* = r_d^* + m^* \,,$$

where

m = intermediation cost in Indonesia (including the profit margin),
m^* = intermediation cost offshore (including the profit margin),

and subtracting equation (1) from equation (9), we get

(11)
$$r_l - r_l^* = (r_d^* - r_d) + (m - m^*) \,,$$

(12)
$$W = S + (m - m^*) \,.$$

As we know that $m > m^*$, we have

(13)
$$W > S \,.$$

Since the swap premium was set to be S, there was neutrality only for depositors but a positive incentive for spenders to borrow from abroad. Specifically, the swap rate set by equation (7) gave a subsidy (x) to spenders who borrowed from abroad:

(14)
$$x = r_l - (r_l^* + S) \,;$$

swap subsidy to borrowers,

(15)
$$x = m - m^* \,.$$

There are two reasons why m is greater than m^*. The first is that the greater inefficiency of the Indonesian banking system translates into higher operating costs. The second is that the state banks that dominate the banking system do not compete aggressively enough among themselves, and the result is that banks could have a higher markup over the cost of their deposits.

In terms of the theoretical discussion of section 11.1, the existence of the swap subsidy (x) means that the actual cost of external funds is lower than r^* + $\hat{e}$. So with the swap mechanism in place, we have

$$r_{max} = (r^* + \hat{e} - x) + \frac{1}{k_r} .$$

The value of the floor on the domestic interest rate remains unchanged at

$$r_{min} = r^* + \hat{e} - \frac{1}{k_r}$$

because the swap mechanism is a one-way mechanism.

This narrowing of the permissible interest rate band by the decline in r_{max}, as shown in figure 11.6, is a reduction in monetary autonomy, as defined earlier in figure 11.2.

The loss in monetary autonomy caused by the swap subsidy was brought home forcefully from the second quarter of 1991 onward. The government decided to reduce money growth to cool the economy. However, they found their credit-tightening efforts significantly attenuated by capital inflows.

This reduction of monetary autonomy was not the only consequence of the swap mechanism. We also attribute to it the nondevelopment of the private market for forward foreign exchange in the 1980s despite the drastic deregulation of the financial system since 1983. The nondevelopment of private forward
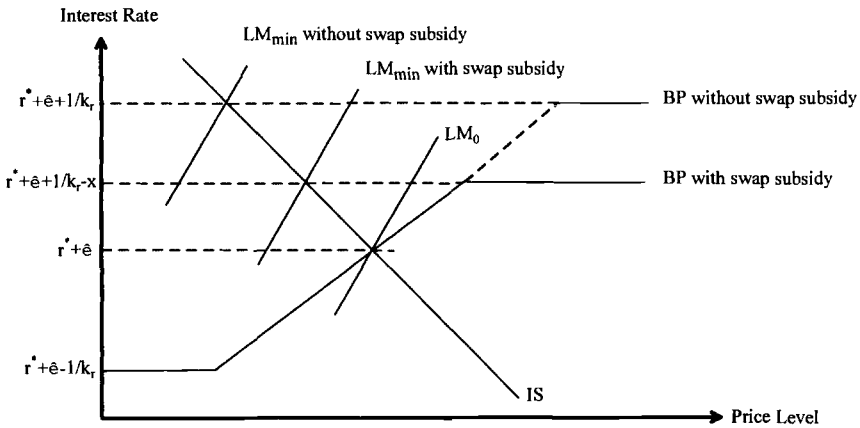
Fig. 11.6   Effect of the swap subsidy (x) on monetary autonomy

foreign exchange activities had less to do with the incapacity of the private sector to create a sophisticated forward exchange market than with the existence of a subsidized swap mechanism paid for by public funds. The veracity of the proposition that the swap mechanism had suppressed the growth of a private forward market can be seen in the quick growth of the private forward market after the swap mechanism was suddenly eliminated in November 1991.

The swap mechanism was terminated after its abetment of capital inflows was pointed out and confirmed by the huge capital inflows that occurred in 1991, when the swap subsidy (x) ranged from 2 to 6 percentage points. There were two reasons why the government decided to abandon the swap mechanism completely rather than to reset the formula using lending rates instead:

1. Just as the pedagogical device of a single interest rate glosses over the distinction between the deposit rate and the lending rate, there is no single lending rate. Getting the appropriate loan rate to use is a particularly serious problem because it is much harder to identify loans to projects with comparable risks across countries than to identify deposits in banks with comparable risks across countries. Using the prime rates of different countries is one possibility, but prime rates tend to be rather rigid and hence not good indicators of current credit conditions.

2. Indonesia has a history of occasional large discrete devaluations (the last one was 35 percent at the end of 1986), and the swap contracts caused major financial losses to Bank Indonesia. Such losses are inevitable with any state-sponsored swap mechanism, and the use of a different interest rate does not solve this basic problem.

11.5   Can Caning the Speculators Avoid the Impossible Trinity?

As will be seen, we agree with the primary conclusion in Fischer and Reisen (1993) that Malaysia and Singapore have been able to undertake sterilized intervention to a greater extent than the countries in the European Monetary System, but we differ with them on the applicability of standard macroeconomic theory to these countries. In particular, we view the Southeast Asian experiences as confirming, rather than refuting, the impossible trinity proposition that in the absence of effective capital controls, money growth cannot be set at any arbitrary rate without undermining the exogenously preset level (or depreciation rate) of the exchange rate. The case for our view can be seen in the following three episodes of policy responses to speculative attack on the local currency.

The first episode is Singapore in the last quarter of 1985, when GDP fell 5.5 percent on an annualized basis. A major contribution to the sharp slowdown was the excessive real wage growth in the previous years. At the beginning of the decade, the government had decided to restructure the industrial sector toward high value-added industries by ordering high annual real wage increases to eliminate the low-wage labor-intensive industries. The big push

toward more capital-intensive and technology-intensive modes of production caused Singapore's wages to increase by more than 60 percent in U.S. dollars over the 1980–84 period while Hong Kong's wages hardly changed. The outcome was a major loss in competitiveness which together with the economic stagnation in the industrialized countries resulted in a steady decline in growth rates during 1984. In 1985, Singapore had its first negative growth experience since it became independent in 1965.

The Singapore dollar had depreciated quite steadily during 1984 with the slowdown in export earnings and economic growth (see fig. 11.7). When the negative growth in 1985 became obvious in mid-1985, foreign exchange market participants, sensing a possible big devaluation of the Singapore dollar to restore Singapore's competitiveness, began a run on the currency. The end-of-period exchange rate went from S$2.19 per U.S. dollar in July 1985 to S$2.27 per U.S. dollar in August 1985.

The government reacted to Singapore's loss of international competitiveness by cutting labor cost through reductions in the hefty payroll tax and social security contributions instead of through currency depreciation as anticipated by the speculators because it viewed the latter as importing inflation. More interesting, simultaneous with the shift in fiscal policy to correct the balance-of-payments problem, Singapore used its ample foreign reserves to appreciate the Singapore dollar. The exchange rate was S$2.13 per U.S. dollar in September and October, S$2.09 per U.S. dollar in November, and S$2.11 per U.S. dollar in December. The exchange rate averaged S$2.18 per U.S. dollar in 1986. In the bottom-line language of the business community, as headlined in
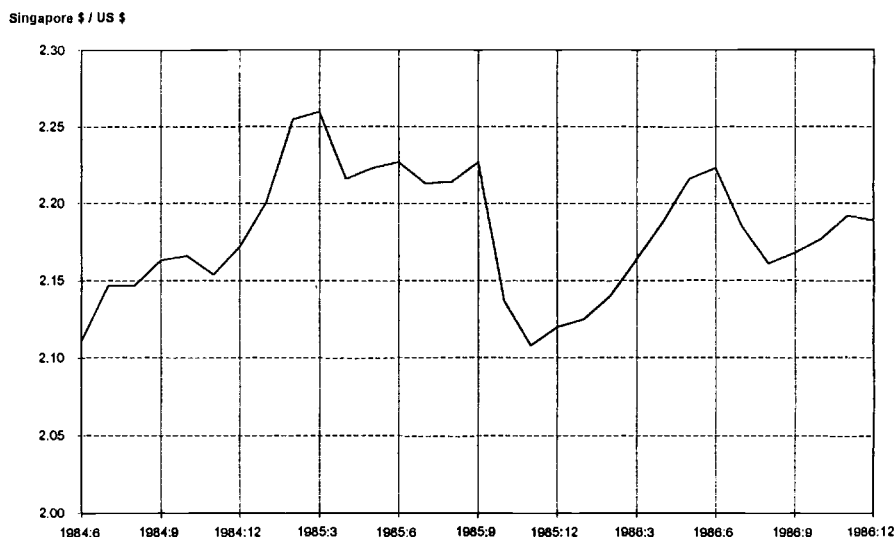
Singapore $ / US $

Fig. 11.7   Singapore dollar/U.S. dollar exchange rate

the financial press, the chairman of the Monetary Authority of Singapore had "caned the speculators."

This "caning" episode confirms the impossible trinity. Exchange rate stability was maintained without resort to capital controls, but it involved a fiscal policy adjustment and a massive buying of the Singapore dollar by the monetary authorities, which meant shrinking the money supply to accommodate the speculative drop in money demand. At least U.S.$400 million of reserves were sold between September 13 and 18, and this massive shrinkage of liquidity caused the interbank overnight rate to reach 120 percent (on an annualized basis) on September 17. Monetary autonomy was certainly compromised in order to peg the exchange rate (see fig. 11.8).

The second episode is Malaysia in January 1994. For Malaysia, 1993 was another boom year; economic growth was 8 percent as in the year before. This sustained high-growth performance attracted capital flows that appreciated the ringgit from 2.61 per U.S. dollar in January 1992 to 2.55 per U.S. dollar in December 1993. The final months of 1993 saw large capital inflows and forward buying of the ringgit in anticipation of further ringgit appreciation.

On January 11, 1994, the government responded with two measures to quell the speculation. The first was to raise the reserve requirement on time deposits held by foreigners. The banks, to protect their profit margins, immediately lowered the deposit rate on foreign funds. The second measure was to limit the amount of foreign funds that could be placed in interest-earning accounts. The result of this discrimination against foreign funds was a capital outflow that plunged the ringgit to 2.73 per U.S. dollar on January 17.
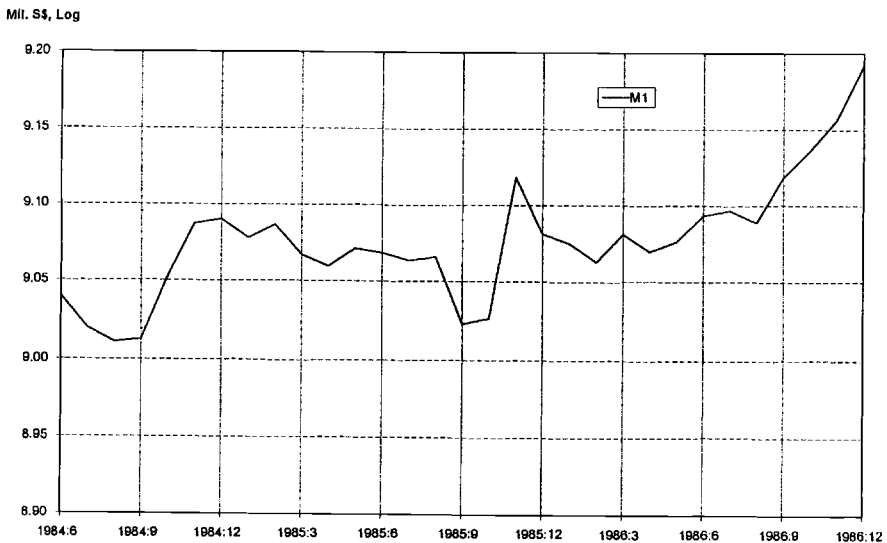
Mil. S$, Log

Fig. 11.8   Singapore: M1

When the government followed up with a ban on the sale of money market instruments to foreigners on January 24, the ringgit fell to 2.76 per U.S. dollar. We thus have another example of a government engineering an opposite movement of the currency in order to inflict losses on the currency speculators.

If we regard the prohibition of capital movements as an extreme form of discrimination against foreign capital, then the legal requirement in Malaysia of paying a lower (or no) interest rate on foreign deposits is a moderate form of capital control. The no-interest-payment policy is a form of capital control that uses price to discourage capital inflow as compared with the traditional practice of using a quantity quota to contain the volume of inflow. So while Malaysia had caned the speculators without compromising monetary autonomy, it had to interfere with the free flow of capital in order to do so.

The third episode is Indonesia in June 1987 and February 1991. In both instances, the government halted the run on the rupiah by ordering state enterprises to withdraw the bulk of their funds from the banking system and purchase central bank certificates.[7] In both cases, the high interest rates created by the liquidity squeeze convinced speculators of the government's resolve to support the exchange rate, and capital held abroad returned to Indonesia. With this, the overnight interbank rate that had jumped from 17.6 percent in January 1991 to 26.9 percent in March 1991 fell to 11.3 percent in May 1991. These two Indonesian monetary shock therapies are clearly cases of compromising monetary autonomy to maintain the value of the exchange rate and confirm the impossible trinity.

The actions by Malaysia and Singapore to move the exchange rate in the counterintuitive direction are rare events in international experience. Italy widened its exchange rate band to accommodate the greater and more frequent speculative bouts on the lira, and Britain devalued by leaving the Exchange Rate Mechanism when the pound was under attack. The different national reactions suggest many interesting possibilities.

One is that counterpunches used to punish speculators may hurt the economy in the process, but the economic cost of these counterpunches may be lower in East Asia. While such a possibility is hard to assess definitively because different governments may have different thresholds for economic distress, we think that an important reason for the different national responses to speculative attacks is that it is technically easier for Indonesia, Malaysia, and Singapore than for European countries to influence their foreign exchange markets.

We see three factors that make it technically easier for these Southeast Asian countries to face down the speculators. The first is that private capital flows into and out of these Asian countries (not counting the pure offshore transactions in Singapore) are much smaller than those of Western Europe. Most busi-

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7. For details of the two episodes, see Woo, Glassburner, and Nasution (1994).

nesses (especially in Indonesia) do not meet the creditworthiness criteria of
international banks and hence do not have access to foreign credit. Further-
more, Malaysia and Indonesia have carefully limited the entry and activities of
foreign banks.

The second factor is the great influence that the governments have on banks
either through regulation or through ownership. Singapore requires banks to
submit daily reports on their foreign exchange transactions and to get approval
for large transfers of foreign currencies. Quasi state banks and state banks
dominate the Malaysian and Indonesian financial sectors and foreign exchange
dealing, and their managers understand that respecting the wishes of the cen-
tral bank may be more important than profit maximization.

It is well known that the two largest Malaysian banks (Malayan Banking
and Bank Bumiputra; the government is the major shareholder in both), which
dominate the money market, coordinate their transactions with the central
bank. The close relationship between the central bank and these banks is well
illustrated by the recent appointment of the president of Malayan Banking to
the governorship of the central bank. So if the central bank is intervening to
push the exchange rate against the tide, it would be career termination for bank
managers to take a speculative position opposite to that of the government even
though it would be likely to enhance bank profits. The usual outcome under
this career constraint is that the large banks would start assuming positions
that support the government's actions and slow down the processing of foreign
exchange transactions.

In short, given that profitability is not the sole objective of the large South-
east Asian banks, their response to changes in interest rate differentials is pred-
icated on the government's view of how their funds should be invested. In the
absence of profit-maximizing actions by the biggest players in the foreign ex-
change markets, it is not necessary for the government to introduce explicit
capital controls to slow down capital flows.

Finally, the third factor that makes sterilization easier in Southeast Asia than
in Europe comes from the willingness of the Southeast Asian governments to
take extreme measures, such as massive monetary contractions and alterations
of the rules on interest payments, in order to bring the fundamentals in line
with the existing value of the exchange rate. These actions, backed by large
foreign reserves, have created large risk premia that international speculators
need to be compensated for if they are to speculate against the Southeast
Asian currencies.

All of these three factors make it easier for the Indonesian, Malaysian, and
Singapore governments to influence the exchange rate because they lower capi-
tal mobility. It is our conjecture that the risk premium generated by these fac-
tors consists of a country risk premium as well as the conventional portfolio
premium. This may be why covered interest parity did not hold for Singapore
in table 11.1. In brief, these factors create a risk premium that widens the span
between r_{max} and r_{min} and gives greater monetary autonomy to the government.

11.6   Conclusion

Our simple empirical investigations suggest that interest rate linkages may be loose enough that it is possible to conduct independent monetary policy, at least within a limited range. A necessary condition for independent monetary policy is the existence of risk premia, and we found evidence of them (1) in the decomposition of the interest rate differential and (2) in the failure of the interest rate differential to predict even the sign of the subsequent exchange rate change correctly, under the maintained hypothesis of rational expectations.

Our examination of Indonesia's use of the covered interest parity condition to formulate an incentive-neutral swap mechanism to cope with capital flows shows that it actually subsidized capital inflows. The result was a reduction in Indonesia's monetary autonomy. The subsidy element could be removed by using lending rates instead of deposit rates in the pricing of swaps. But the difficulty of deciding which lending rate to use renders the fix nonoperational.

The analysis of three episodes of speculative attacks suggests that the ability of the Indonesian, Malaysian, and Singapore monetary authorities to turn the tables on the speculators comes from the thinness of their foreign exchange markets and the domination of these markets by domestic banks whose arbitrage activities are closely supervised by their governments. We think that the combination of the governments' influence on the foreign market transactions of the domestic banks, the governments' readiness to change the rules of the game, and the governments' willingness to shock their own economies in order to punish currency speculators is the reason for the large and persistent deviations from covered interest arbitrage for Malaysia and Singapore noted in Chinn and Frankel (1994).

To see this, consider a foreign investor who invested her funds in a time-deposit account in Malaysia and had covered her position with a forward sale of ringgit. Assuming that the covered interest differential was zero at the time of the contract, the investor was in a zero-loss situation. But if the Malaysian government (as it did in January 1994) were then to ban the payment of interest to foreigners, the investor would suffer a loss.

If the investor had assumed nonzero probability of such an action by the Malaysian government from the very beginning, then the covered interest differential that would emerge would be nonzero even in the absence of transaction costs. Furthermore, if the investor were risk averse, the fact that a time deposit is no longer a riskless asset means that a portfolio risk premium would also be present.

We end this paper with some words of caution. We have taken it for granted that monetary autonomy is desirable because it confers flexibility on the government's macroeconomic management. But we have seen that this monetary autonomy is sometimes the result of possible microeconomic inefficiency, for

example, the state bank's compromising its maximization of profits to allow the government to cane the speculators and the government's willingness to impart interest rate shocks to the domestic economy in order to execute the punishment. Clearly, we must not be so obsessed with monetary autonomy that we do not consider the microeconomic costs of obtaining it.

Even more important, we want to avoid giving the impression that the Southeast Asian governments can always succeed in caning the speculators. They succeeded in the past only because they interfered with capital flows and/or changed their macroeconomic policies to bring the fundamentals back in line with the value of the exchange rate. The successful caning of speculators came from the heavy influence that the governments had on the fundamentals that affected the values of their exchange rates and *not* from the governments' ability to anticipate the future better than private speculators. This point is demonstrated by the large losses suffered by the Malaysian central bank in 1992 when it speculated on Britain's staying in the European Exchange Rate Mechanism. The Malaysian central bank was caned by private speculators because it did not possess better information on the fundamentals that determined the value of the pound vis-à-vis the currencies of the other industrialized countries. Or to put it differently, the Malaysian central bank lost in this speculation because it did not possess the same means to influence the pound-dollar exchange rate as it does the ringgit-dollar exchange rate.

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Comment   Ronald I. McKinnon

Do international capital flows limit national monetary autonomy? In answering this most interesting question, the authors divide their paper into two parts which are only loosely related.

The first, and least successful, part applies high-powered econometrics to a large database in search of "the" elusive risk premium in interest differentials. A bit dubiously, they want to use estimates of the risk premium as a measure of monetary autonomy in the country in question.

The second part (sections 11.4 and 11.5) is a fascinating discussion of how the monetary authorities in Indonesia, Malaysia, and Singapore lean on domestic banks and other institutions associated with international capital flows to give their central banks a measure of independence in formulating monetary policy—of which the exchange rate itself is an important part. As long as the fundamentals for the exchange rate were right, the government could even use its massive weight in the market to "cane" speculators for trying to move the rate in the wrong direction.

In the Indonesian case, a further dilemma arises in setting forward rates of

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exchange when the capital account is open on the one hand but the domestic financial system remains somewhat repressed with a substantial wedge between deposit and loan rates of interest on the other. Although the authors show that the Indonesian authorities may have stumbled a bit in handling the problem, students of development finance will recognize it as a fundamental dilemma when a country inverts the optimum order of economic liberalization (McKinnon 1993). If a country decides (perhaps because it has no choice) to open the capital account of the balance of payments before fully liberalizing its domestic banking system, problems of foreign exchange management can be acute.

The Elusive Risk Premium

In the first part of the paper, the authors borrow a large, impersonal database with survey data on expected exchange rate changes "matched" with forward rate and short-term interest rate quotations against the U.S. dollar for Australia, Canada, Japan, and Singapore monthly from February 1988 to February 1991. The fact that covered interest differentials are not zero, however, suggests that these forward and interest rate quotations are not precisely matched—through time or in the relevant offshore or onshore market.

More important to the authors, however, is to measure "the" risk premium, roughly the extent by which the domestic interest rate exceeds the U.S. dollar rate by more than the domestic currency is expected to depreciate, for each of the four countries. "The existence of monetary autonomy depends on the existence of a risk premium that could be due to a country risk premium . . . *and/ or* a the portfolio risk premium" (sec. 11.3). Unfortunately, their complex econometric analysis does not seem very robust. But the remarkably high risk premium of 3.1 percentage points estimated for Canada seems consistent with political risk: Canada could break up with the secession of Quebec.

The general problem with the authors' approach, however, is that most risk premia vary through time rather than being a single number that reflects political risk of long standing—such as Canada's. Indeed, implicit in the authors' analysis is a second, distinctly different concept of the risk premium: the interest differential varying with the short-run ebb and flow of domestic monetary policy relative to America's. As long as capital is imperfectly mobile, a relatively tight domestic monetary policy will force domestic interest rates above U.S. levels, generating a positive risk premium in the short run, and with easy money "the" risk premium becomes negative. But there is no one number to estimate from a multiyear data series, and whether the terminology "risk premium" is at all appropriate for this second concept is questionable. Better to call it just the "monetary residual" in the interest differential.

In short, I think the authors should try to measure the degree of capital mobility, that is, their σ parameter, more directly rather than reducing the problem to the estimation of a single-valued risk premium.

Indonesia's Swap Margin

In order to encourage foreign investment—or, more accurately, short-term foreign borrowing by Indonesians—Bank Indonesia simultaneously bought foreign currencies at the current spot exchange rate and entered into a contract to sell the same amount of foreign currencies at a specified future point in time at the then-current spot exchange rate. According to the authors, Bank Indonesia initially set the swap margin too low, at 2.5 percentage points per annum, with the maturity of the swaps ranging from 30 to 80 days.

The high demand for such swaps was due to the fact that the borrowing rate in Indonesia was much higher than the deposit rate. So even though 2.5 percentage points fairly reflects the gap between the deposit rate in rupiahs versus that in dollars, illiquid Indonesians facing a much higher borrowing rate would still want to borrow "too much"—particularly if they could cover forward with the government's swap facility. But if the swap rate was made much higher to deter borrowers as the authors wanted (probably correctly), the implicit forward rate would no longer be an unbiased estimate of the spot rate expected in the future. The rupiah would be overly discounted, and importers would not want to use such a rate to buy dollars forward.

In general, as long as there is a big wedge between the deposit and loan rates of interest, no forward exchange rate will clear the market properly. No one forward rate will more or less accurately reflect the spot rate expected in the future without "penalizing" one group or another. Thus, a cost to the Indonesian economy of operating with a repressed domestic banking system, one with with a large wedge between deposit and loan rates, is a missing market, that is, a well-functioning, thick market in forward exchange.

If the government contracts forward with one group or another to partially fill this gap, possibly creating windfall profits and/or losing monetary control, moral hazard is very high indeed. Perhaps the government should simply stay out of the forward exchange market altogether as the authors suggest. More positively, this forward exchange dilemma is another reason why the Indonesian authorities should liberalize domestic finance. By eliminating onerous bank reserve requirements and subsidized loans to favored borrowers, the wedge between deposit and free market loan rates can be reduced toward levels prevailing on world markets.

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Comment   Basant K. Kapur

Woo and Hirayama have written an interesting and wide-ranging paper, explor-
ing a number of issues relating to capital flows and monetary autonomy in
various East Asian countries. My comments will deal, first, with certain central
theoretical considerations in their argument and, second, with more specific
aspects of some of their country studies. At the theoretical level, I would like
to begin by making three observations:

1. As is well known, the IS-LM-BP framework that the authors employ is
a short-term, flow-oriented construct and—unless considerably elaborated—
cannot do full justice to stock adjustment dynamics.

2. There is a curious dichotomy in the literature between the view, prevalent
in open economy macroeconomics, that asset markets adjust instantaneously
and the common empirical finding of a lagged adjustment in the market for
money, which has been given a plausible theoretical underpinning in, among
others, the "buffer stock" approach advanced by Milbourne (1987), Laidler
(1984), and others. Unless monetary disequilibria are reflected entirely in op-
posite goods-market disequilibria, which is unlikely, adjustment lags in the
money market will entail lags in other asset markets as well.

3. As Woo and Hirayama correctly point out, portfolio balance models gen-
erally incorporate stocks of "outside bonds," the supplies of which (particularly
in the case of domestic bonds) are exogenous. However, their empirical work
uses interest rates on domestic vis-à-vis offshore bank deposits, which are not
outside assets. An excess demand for domestic bank loans can, for example,
through incipient loan and deposit interest rate movements induce reserve
flows and thereby domestic deposit expansion.

What is the implication of the three foregoing observations? Woo and Hiray-
ama are correct, in my view, in ascribing a significant part of the interest differ-
ential in various countries between domestic and foreign assets to the existence
of a portfolio risk premium. This was, in fact, also the conclusion from a study
on Singapore conducted a few years ago (Ariff, Kapur, and Tyabji, in press),
which also found that the Singapore-U.S. exchange rate could be modeled as
a random walk without drift. However, Woo and Hirayama jump too easily
from the demonstration of the existence of a portfolio risk premium to the
conclusion that there exists some—limited—monetary autonomy in the coun-
tries concerned. The time dimension is, in my view, crucial. In the very short
run, owing to the adjustment lags I have discussed under point 2 above, there
may indeed be some monetary autonomy. However, beyond the very short
run—in other words, beyond a period of, probably, six months at the most—
reserve flows are likely to occur (point 3 above) to serve to reequilibrate asset
supplies and demands at the same risk premium as had prevailed previously.

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The monetary autonomy is therefore not only limited but also temporary, and it is questionable whether such temporary monetary autonomy is of much use to policymakers from a macroeconomic standpoint.

The foregoing discussion also implies, from an analytical standpoint, that a distinction should be drawn between "temporary" imperfect capital mobility—based on asset adjustment lags—and "permanent" imperfect capital mobility—based genuinely on imperfect asset substitutability. One could even have a combination of the two, or of their consequences: there could exist a portfolio risk premium, implying imperfect asset substitutability, and yet at the same time the resulting interest differential would not be capable of manipulation by monetary authorities outside of the very short run because the supplies of the assets concerned are endogenous.

Finally, some more specific points:

1. It is doubtful whether in Singapore there does exist any deviation, even a small one, from covered interest parity, as the authors claim. Empirical studies on Singapore have failed to uncover any such deviation,[1] and the authors' findings may, as McKinnon has said, well be the result of measurement error.

2. In the Indonesian case, an examination of how widespread the access (of Indonesians) to the swap facility was would certainly be useful, since imperfect access could well imply some flexibility in the rupiah deposit rate around its covered interest parity value.

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1. See, e.g., Tse and Tan, chap. 12 in this volume.