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**Exchange Rate Policy and Foreign Exchange
Reserves Management in Indonesia in the
Context of East Asian Monetary Regionalism**

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CIES DISCUSSION PAPER 0302

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ABSTRACT

The first part of this paper examines the behaviour of rupiah over the last seven years (1996 - 2002) to ascertain whether in fact there is specific evidence of a return to *de facto* US dollar peg in Indonesia. To preview the main conclusion, we find evidence to suggest that this has been the case, hence justifying the need for accumulation of reserves by the Indonesian authorities. The next question that arises naturally from this is whether there is any way in which the liquidity yield from holding reserves may be generated without the need for Indonesia to continue to accumulate them. This is where a regional reserve pooling arrangement becomes relevant. But how might one judge the potential size of benefits of reserve pooling? This is the focus of the second part of the paper.

JEL Codes: F30, F32, F41

Keywords: Exchange Rate, Indonesia Rupiah, Reserves, US dollar, Volatility

1. Introduction

The appropriate exchange rate regime for economies in Asia remains a hotly debated subject ever since the East Asian financial debacle of 1997-98 (Rajan, 2002). The three East Asian economies most afflicted by the crisis, viz. Indonesia, Thailand and Korea all became official “floaters” since 1998 (Table 1). Nonetheless, there remain significant doubts at least in the cases of Indonesia and Thailand as to their *de facto* exchange rate policies. In the specific instance of Indonesia, a new central bank law enacted in 1999 clearly prescribes the stabilisation of rupiah’s value as the sole objective of Bank Indonesia. However, this Law has been subject to various interpretations. For instance, on the one hand, a “stable rupiah” could refer either to its value against the US dollar or some other benchmark (SDR, yen, currency basket). On the other, the objective could refer to domestic price stability which is effectively an “inflation targeting” regime. Indeed, the new Law in Indonesia has explicitly granted the central bank full authority to decide upon the inflation target to be achieved (goal independence) and freedom of choice over various monetary instruments to achieve the target¹.

Alamsyah et. al (2001) see no contradictions between the two alternative interpretations of the new Law. As they note:

(t)he distinction between these two interpretations, and any attributed ambiguity, may be overstated, however. In practice, exchange rate and price stability are usually closely correlated (p.314)².

Indeed, Siregar and Rajaguru (2002) find fluctuations of the Indonesian rupiah to have significant pass through effects on the domestic prices. However, the critical

¹ McLeod (2001) offers a useful discussion of Indonesia’s inflation target regime and questions its credibility.

² For a useful analytical discussion of the nexus between inflation targets and the exchange rate regime in emerging economies, see Eichengreen (2001).

point remains as to whether the *de facto* exchange rate policy involves explicit currency targeting as a goal in and of itself or as a means to achieving the inflation target (i.e. “flexible inflation target”). Statements by some senior Indonesian government officials appear to confuse more than clarify. There is a clear policy preference for a high degree of exchange rate stability for its own sake³.

But what do the data reveal? Examination of available data on Bank Indonesia’s open market operations points to a sharp increase in activity in recent years. By the end of 1999, the size of Bank Indonesia Certificate (SBI) outstanding for rupiah intervention increased around seven fold from its level in 1997 and has remained extremely large since then (Table 2). The rapid accumulation of international reserves in Indonesia is also suggestive of a penchant towards a relatively greater degree of exchange rate fixity. Indonesia’s average foreign exchange reserve position has increased pointedly in recent years as the country has sought to stockpile reserves since they were run down in 1997-98 (Table 3). The willingness of countries like Indonesia to accumulate reserves despite their high fiscal costs (as reserve accumulation involves foregone domestic investments) is revealing (Bird and Rajan, 2003), and is further evidence of the possible acute “fear of floating” that seem to have afflicted so many emerging economies (Calvo and Reinhart, 2002 and Rajan, 2002)⁴. There is a growing body of literature which suggests that some East Asian economies have reverted to soft US dollar pegs (Kawai and Takagi, 2000, Hernandez and Montiel, 2001 and McKinnon, 2001).

³ For instance, see “Indonesian VP Suggests Managed Float of Rupiah” by Agence France-Presse (www.inq7.net). The National Development Planning Minister, Kwik Kian Gie, had also proposed a fixed exchange rate regime to manage the volatile rupiah.

⁴ Of course, another obvious reasons to accumulate reserves is to enhance the country’s overall liquidity position and a financial safeguard against capital account crises (Bird and Rajan, 2002a, 2003, Rajan and Siregar, 2003 and Rajan, 2003).

The remainder of this paper is organised as follows. The next section carefully examines the behaviour of the rupiah over the last seven years (1996 - 2002) to ascertain whether in fact there is specific evidence of a return to *de facto* US dollar pegging in Indonesia. To preview the main conclusion, we find evidence to suggest that this has been the case, hence justifying the need for accumulation of reserves by the Indonesian authorities. The next question that arises naturally from this is whether there is any way in which the liquidity yield from holding reserves may be generated without the need for Indonesia to continue to accumulate them. This is where a regional reserve pooling arrangement becomes relevant. But how might one judge the potential size of benefits of reserve pooling? Before this can be done, we first need to estimate the level of reserves that members would have to hold independently relative to pooling reserves (i.e. "hypothetical reserves"). Or, in other words, we need some measure of the extent of "excess reserves" that are generated with pooling of reserves. Section 3 therefore examines these issues from Indonesia's perspective if it were to participate in a regional reserve pooling with the rest of the East Asia (i.e. ASEAN-5 - Indonesia, Malaysia, Philippines, Thailand and Singapore and the North Asian economies of Hong Kong, Korea, China and Japan). Such a reserve pool has been recently suggested as an important way of enhancing regional monetary cooperation and a logical next step in the Chiangmai swap initiative (Rajan and Siregar, 2003 and Rajan, Siregar and Bird, 2003). Taking a broader perspective, the final section offers a few closing comments on the ongoing macroeconomic and financial situation in Indonesia.

2. Modelling the Behaviour of the Indonesian Rupiah

2.1 Estimating the Weights of the US Dollar and the Japanese Yen

Assuming that the Indonesian rupiah is managed against a basket of currencies, what are the *de facto* weights of the US dollar and the Japanese yen in the Indonesian rupiah's overall currency basket? This section attempts to answer this question.

For our purpose, the basic regression model employed to test for the behaviour of the nominal exchange rate of rupiah during the last seven years (1996-2002) is based on Frankel and Wei (1994). In their model, a relatively independent currency (Swiss franc) is chosen as an arbitrary numeraire for measuring nominal exchange rate variations. The regression is a multivariate ordinary least square (OLS) where the percentage changes in the nominal exchange rates of rupiah vis-à-vis the Swiss franc is regressed against the percentage changes in the nominal exchange rates of the US dollar and the yen against the Swiss franc.

$$(\% \Delta NEX^{IR/SF})_t = \beta_1 + \beta_2 (\% \Delta NEX^{US\$/SF})_t + \beta_3 (\% \Delta NEX^{JPY/SF})_t + \varepsilon_t \quad (1)$$

where:

- $(\% \Delta NEX^{IR/SF})_t$: The percentage change in nominal exchange rate of rupiah against Swiss franc at time t.
- $(\% \Delta NEX^{US\$/SF})_t$: The percentage change in nominal exchange rate of the US dollar against Swiss franc at time t.
- $(\% \Delta NEX^{JPY/SF})_t$: The percentage change in nominal exchange rate of the yen against Swiss franc at time t.

A large and statistically significant coefficient (β_2) implies that the movements of the US dollar have strongly influenced the fluctuations of the rupiah. A similar reasoning applies with regard to the coefficient for the Japanese yen (β_3).

To ensure that the test results are reliable we use high frequency weekly nominal exchange rate data from the Pacific Exchange Rate Service website (<http://pacific.commerce.ubc.ca/xr/>) We divide the observation sets into three sub-periods: a) the pre-crisis: January 1996 to May 1997; b) the crisis: July 1997 to

December 1999; and c) the post-crisis: January 2000 to December 2002. Consideration of these three sub-periods allows us to compare and contrast the weights of the two key world currencies in explaining the fluctuations of the nominal rupiah during a) the pre-1997 financial crisis; b) the height of the crisis (1998 and 1999); and c) the recovery years.

The regression results are summarised in Table 4.⁵ In addition to the constant parameter (β_1), the estimated coefficient for the US dollar (β_2) is the only other significant coefficient for the regression for the *pre-crisis period* (at 1 percent level). Judged by the adjusted R-square, the statistical model successfully explains over 90 percent of the fluctuation of rupiah. This confirms the official pre-crisis soft US dollar peg (crawling band arrangement).

Following a series of speculative attacks on regional currencies, the rupiah was floated on August 14, 1997. Our test result for the height of the *crisis period* (July 1997 – December 1999) captures the outcome of the free floating period. The coefficient estimates for both the US dollar (β_2) and the yen (β_3) are insignificant at the 10 percent level. The significantly larger standard errors for both the coefficients of the US dollar and the yen during the crisis vis-à-vis the pre-crisis period reflect the greater fluctuations of the rupiah against these two industrial country currencies during the height of the crisis. Furthermore, the adjusted R-square is only 18 percent, further reflecting the overall poor regression fit.

Interestingly, the regression result for the *post-crisis period* is suggestive of a return to the pre-crisis pattern of *de facto* US dollar pegging. Although the coefficient estimates for both the US dollar and the Japanese yen are statistically significant, the former (β_2) is significant at even the 1 percent critical level while the latter is (β_3) significant at only the 10 percent. The relative prominence of the US dollar in the

⁵ Before conducting the OLS regression on Equation (1), we have employed the ADF and the KPSS Unit-Root test to evaluate the property of the relevant series. The results confirm that all of them are

Indonesian currency basket relative to the Japanese yen during the post-crisis period is also reflected by the relative sizes of the individual coefficient estimates. Specifically, the post-crisis period coefficient estimate for (β_2) is 0.687 which is substantially larger than that for (β_3) which is 0.265. It is important to note that although the size of the post-crisis coefficient for the US dollar has risen compared to the second sub-period, it is still considerably lower than its pre-crisis level. Furthermore, while the goodness-of-fit as measured by the adjusted R-squared has increased in the post crisis period, it is only around 24 percent, far lower than during the crisis period.

We conclude from the foregoing test results that the importance of the fluctuations in the US dollar in explaining the movements of the rupiah has increased in recent years. This said, there is a relatively higher degree of flexibility of the Indonesian rupiah in comparison to the pre-crisis period. This conclusion is fully consistent with other studies on Southeast Asian currency regimes (see Rajan, 2002 and references cited within). The test results also seem to cast doubt over official claims that the rupiah is managed under a floating-cum inflation target regime. This said, we hasten to caution against drawing too definite a conclusion, as an inflation target could always be defined to be sufficiently “flexible” such that the exchange rate takes on a significantly high weight in the monetary policy objective function⁶.

2.2 Estimating the Volatilities of Rupiah vis-à-vis the US Dollar

To further examine the behaviour of the local currency, we complement the foregoing regression analysis by estimating the changes in the volatility rate of the rupiah during the period under consideration. For the purpose of modeling the week-to-week volatility of nominal exchange rates of rupiah against the US dollar, we

I(0). Hence, the OLS test should be adequate in this case. For the sake of brevity, the unit-root test results are not posted in the paper, but can be made available upon request to the authors.

employ the Generalised Autoregressive Conditional Heteroskedasticity (GARCH (1,1)) model which is based on the Autoregressive Conditional Heteroskedasticity (ARCH) family of statistical models.

The GARCH (1,1) specification that we consider takes the following form:

$$\ln \text{NER}_t = a_0 + a_1 \ln \text{NER}_{t-1} + a_2 \text{dummy}_t + e_t, \text{ where } e_t \sim N(0, h_t) \quad (2)$$

$$h_t = \alpha + \beta e_{t-1}^2 + \gamma h_{t-1} + \delta \text{dummy}_t + u_t. \quad (3)$$

Where u_t is a white noise process with $E(u_t) = 0$ and

$$E(u_t u_\tau) = \begin{cases} \sigma_u^2 & \text{for } t = \tau \\ 0 & \text{otherwise} \end{cases}.$$

NER represents the weekly nominal exchange rate of rupiah against the US dollar from January 1996 to December 2002 (Figure 1). The conditional variance equation (Eq. 3) described above is a function of three terms: a) the mean α ; (b) news about volatility from the previous period, measured as the lag of the squared residual from the mean equation: e_{t-1}^2 (the ARCH term); and c) the last period's forecast error variance, h_{t-1} (the GARCH term). We also add a dummy variable to capture the crisis period and the shift in the exchange rate policy. The dummy is set to 0 up to July 1997 and 1 from August 1997 to December 2002.

We estimated different types of ARCH models such as ARCH, GARCH and EGARCH models. The best results are found to be GARCH (1,1) (Table 5). All of the coefficient estimates (α, β, γ and δ) are significant at the 1 percent level. The positive and significant coefficient estimate for the crisis dummy implies that the conditional variance (or the volatility index), h_t , has increased due to the

⁶ This in turn leads to the important question of how one might distinguish between a sufficiently flexible inflating target and a currency basket regime *a la* Williamson (1999a,b).

uncertainties associated with the crisis. Several noteworthy findings bear highlighting (Table 5 and Figure 2).

Following the relative stability and a modest average of volatility during the pre-crisis period, the conditional variance of rupiah jumped by more than 450 times during the crisis period vis-à-vis the average for the pre-crisis. The speculative attacks at the peak of the crisis and the adoption of the “temporary” free-floating regime and consequent loss of the nominal anchor consequently brought about an unprecedented level of volatility of the rupiah in 1998 and 1999. Socio-political uncertainties, marked by the downfall of the Suharto regime in early 1998, as well as inconsistent and incoherent macroeconomic policies obviously contributed significantly to the volatility of rupiah (Soesastro and Basri (1998) and Johnson (1998)). The return of some degree of stability in rupiah against the US dollar started to be felt from 2000 onwards. The average post-crisis volatility rate is estimated at around 17 percent of the reported rate during the height of the crisis. These volatility patterns of the rupiah against the US dollar is yet further evidence of the possible reversion to a soft US dollar pegged regime in Indonesia.

3. Assessing the Size and Benefits of a Reserve Pool

As noted, one of the consequences of maintaining a soft dollar peg is the need to hold a substantial amount of foreign exchange reserves. The costs of doing so might be reduced with a greater degree of regional monetary cooperation. The modalities and institutional arrangements needed for a reserve pooling arrangement have been detailed by Rajan and Siregar (2003) who also suggest two ways of estimating the benefits of a reserve pool. The first is a simple import-based one, while the second takes into account some measure of the level of reserve variability. We consider both measures in some detail below.

3.1 Reserve-to-Imports Ratio Revisited

A rather crude yet useful yardstick might be based on the following reasoning. Assume reserve pooling is undertaken as part of a larger policy of economic integration that includes trade integration. In such a case, a large part of intra-regional which was originally considered to be external will no longer be so. Insofar as the reserve to imports (R/M) ratio is considered a reasonable, albeit highly imperfect, yardstick of reserve adequacy (Bird and Rajan, 2003), the “disappearance” of a large chunk of external trade will now imply that the region will be holding a substantial pool of “excess reserves”⁷.

To ascertain the gains from reserve pooling we first compute the international reserves to imports ratio for Indonesia individually:

$$Ratio = \frac{R_{IND}}{M_{IND}} \quad (4)$$

where: R_{IND} is the average level of reserve held by Indonesia alone and M_{IND} is the average monthly level of imports of Indonesia. Therefore, *Ratio* is simply the number of months of import coverage for Indonesia.

If reserve pooling among the East Asian economies is part of a larger goal of trade integration, the arrangement implies that no reserves are needed to cover the imports of a member country originating from other member countries of the same group. Consequently, the same average level of individual country reserve holdings should correspond to a higher monthly import coverage. Conversely, to maintain the same import coverage, each member country and the region needs to hold a corresponding lower amount of reserves. This may be formally stated as follows:

$$Ratiopol = \frac{R_{IND}}{M_{IND} - s.M_{IND}} \quad (5)$$

where: (*s*) is the share of intraregional imports in the overall imports of Indonesia. The closer (*s*) is to one, the greater the proportion of intra-regional imports to total imports, and the larger the (*Ratiopol*) for Indonesia.

Next, our aim is to compute the “hypothetical reserve level” defined as *the level of total international reserves (HR) that Indonesia would have to hold to have the same months of import coverage that it would have under the pooling arrangement*. In other words:

$$HR = Ratiopol * M_{IND} \quad (6)$$

The average excess gains from joining the pooling for each individual member is:

$$ER = HR - R_{IND} \quad (7)$$

where: (*ER*) is the excess reserve level during the specified period.

Table 6 reports the findings for the period of 1990-1998. The selection of time period is dictated by the information available on the share of the intra-regional imports (*s*) available from ICSEAD (2000). We obtain the foreign exchange reserve data from the IFS CD-ROM of the International Monetary Fund (IMF).

The computations reveal that individually (without any pooling arrangement) the average reserve that Indonesia holds at anytime during the specified time period amounts to about 5 months of imports. A high average share of intra-regional imports

⁷ This was one of the questions asked during the advent of the euro.

in the overall imports of Indonesia is also found during the period, at about 43 percent. Based on the size of (s), we calculate the ($Ratiopol$) and find that the number of months of import coverage should increase to around 9 months of imports, equivalent to an extra of four months of import coverage from the non-pooling level. We next calculate the size of the Hypothetical reserve and the corresponding excess reserves. We find that roughly around US\$10 billion of excess reserve will be created by committing to the pooling. But what are the fiscal costs of holding the “excess” reserves?

Strictly speaking, since the opportunity costs of holding reserves are the real investments (capital imports) foregone, we ought to be using the difference between the marginal product of capital (MPK) and the yield on foreign interest rates on liquid assets to estimate the fiscal costs. Since accurate and timely information on the marginal product of capital in Indonesia is not easily available, we compute the fiscal costs (FC) as follows:

$$FC = (\text{int}^{IND} - \text{int}^{USA}) * ER \quad (8)$$

where: (FC) is the estimated fiscal cost. (int^{IND}) is the average annually of the 3 to 6 months time deposit rate offered by the commercial banks in Indonesia. (int^{USA}) is the equivalent average deposit rate offered by US commercial banks. We obtain interest rate data from the IFS CD-ROM⁸.

⁸ We assume for simplicity that the bulk of East Asian reserves is held in US dollars. This is probably not too far from reality. In 1999, 78 percent of global international reserves were in US dollars (D’Arista, 2000). Eichengreen and Mathieson (2000) offer a recent discussion on the currency composition of international reserves.

The average interest rate in Indonesia is close to 15 percent premium over the equivalent US rate. This translates to about more than US\$ 1.5 billion of an annual average fiscal cost that Indonesia had to incur during the period examined. It is important to note here however that the results summarized in Table 6 are likely to undercount the true fiscal cost as the cost of the financial capital in East Asia (reflected by the deposit interest rate) is invariably far lower than the marginal cost of capital.

3.2 Variability of Reserves: Coverage Index

While the preceding measure of excess reserves is certainly intuitive, there are at least two problems with it.

One, there are obvious limitations of using imports as a scaling factor for determining reserve adequacy. Crises of the 1990s and beyond that have afflicted many middle-income developing countries have predominantly been crises of the capital account (Rajan, 2003). Reserve adequacy benchmarks accordingly need to be modified to allow for both imports and capital outflows as potential drains on reserves (Bird and Rajan, 2003 and Reddy, 2002). For instance, the Reserve Bank of India (RBI) states

(W)ith the changing profile of capital flows, the traditional approach of assessing reserve adequacy in terms of import cover has been broadened to include a number of parameters which take into account the size, composition, and risk profiles of various types of capital flows as well as the types of external shocks to which the economy is vulnerable (Reddy, 2002, p.6).

Two, the foregoing implicitly assumes that reserve pooling is done in tandem with intensified trade integration. While the issue of trade versus monetary regionalism in an era of intensified capital flows is an important one that has been explored elsewhere (see Bird and Rajan, 2002b), what if the region does not form a

free (preferential) trade bloc?⁹ Is there some way of gauging the amount of “excess reserves” independent of any assumptions regarding regional trade integration?

Since international reserve holdings have been found to be a theoretically and statistically significant determinant of creditworthiness (see Bird and Rajan, 2003 and Wijnholds and Kapteyn, 2001 and references cited within), depleting them as a way of cushioning the effect of capital outflows on the exchange rate may make matters worse by inducing further capital outflows. If capital outflows reflect a perception within private capital markets that a country is illiquid, reducing international reserves and therefore curbing liquidity further in a financially fragile environment is unlikely to be an effective strategy. In other words, the reversibility that makes reserve depletion credible in the context of trade deficits is often absent in the context of capital outflows. As noted by Reddy (2002)

There is a tendency among the analysts and media to react negatively to erosion in a more intensive way and positively to addition to reserves in a less intensive way. A higher level of reserves may possibly give greater scope for changes by making them appear marginal (p.10).

In view of the foregoing, there seems to be sound rationale to minimise the degree of variability of reserve holdings. How is this related to a reserve pool? Medhora (1992b) observes

By belonging to the reserve pool, the member countries have...access to the others’ reserve during times of need. At the same time, by pooling, each country is taking on the variability of the entire pool, rather than just the variability of its own reserves (p.213).

Coverage Index: It has long been argued that one of the more appropriate ways of measuring international reserve adequacy is to compare average reserve holdings to their variability (Medhora, 1992a,b and Williams et al., 2001). This so-called reserve coverage index encompasses the two potential sources of gains in

⁹ This is an important point -- while the ASEAN and China are planning on forming an FTA over the next decade or so, Japan and Korea are not (yet) part of this policy initiative.

reserve pooling, viz. an increase in average reserve holdings (or access to reserves) and a decrease in its variability.

We define coverage in country i as:

$$C_i = \frac{PR}{Var(PR)} \quad (9)$$

where: PR is the average level of reserve holdings (or access to reserves) during a time period, $Var(PR)$ is their variability during the same period¹⁰.

Each individual country may also consider a partial pool, whereby they can each access all its own reserves as well as the partially pooled reserves of all the other members. The coverage index for the partial pool is computed as follows:

$$C_i = \frac{R_i + \sum_{j \neq i} p \cdot R_j}{Var \left[R_i + \sum_{j \neq i} p \cdot R_j \right]} \quad (10)$$

where: p is the degree of pooling ($0 \leq p \leq 1$) and R_i and R_j are the total reserves of country i and j (the members of the pool).

From Eqs. 9 and 10, it is clear that the coverage under reserve pooling will be higher than that in the autonomous state if the variability of the pool is lower than that of each country's reserves separately, or if the increased access to the larger pool of reserves outweighs the higher variability of the pooled reserves. The formulation of the pooled-coverage index assumes each country has unrestricted access to the pool.

¹⁰ Variability of PR is represented by the standard deviation of the reserve during a specified time period.

When one country draws down the pool, it reduces coverage for the other member countries. Hence, the pooled system is a zero sum game. The gains and losses from pooling can be quantified by examining the hypothetical scenario of “what if each country had wanted to maintain the level of coverage that it actually enjoyed from the pooling arrangement, but did not belong to the pool” (Medhora, 1992b, p.217).

The hypothetical reserve is calculated as follows:

$$HR_i = C_i * Var(R_i) \quad (11)$$

HR_i is the hypothetical reserve -- the level of reserves that each country would have had to hold had it not belonged to the pool, but still wanted to maintain the coverage actually afforded by the pool. C_i is the coverage index of country i under the pooling, and $Var(R_i)$ is the variability of country i 's own reserves. The gains/losses from reserve pooling may be measured as follows:

$$G/L = HR - PR \quad (12)$$

where: (G/L) is the gain (+) or loss (-) in international reserve levels. HR and PR are the hypothetical and actual average foreign exchange reserves, respectively.

Table 7 reports the average quarterly reserve holdings for Indonesia and its variability from the last quarter of 1993 to the first quarter of 2002¹¹. Based on this data, we first compute the coverage index without pooling (0 percent) and simulate the country's coverage index by imposing an additional 10 percent level of pooling

¹¹ The initial period of last quarter 1993 was selected due to the availability of the foreign exchange reserve holding data for a selected number of countries from the IFS CD-ROM, IMF.

commitment at each stage (from 10 percent pooling to 100 percent pooling). As shown in Table 7, the highest coverage index for Indonesia can be attained if the country commits to 20 percent pooling¹²

Without pooling, the coverage index for Indonesia is at around 3.07. Indonesia enjoys the highest coverage (3.15) if it pools 20 percent of its reserves. In such a case, the reserve pooling arrangement generates excess reserves of around US\$539 million which translates into an annual fiscal cost of around US\$77 million. As noted, this fiscal cost is in all likelihood an underestimation as the financial cost of capital in Indonesia (which was used in our computations) will be far lower than the marginal product of capital which is the more theoretically appropriate measure to use.

4. Concluding Comments: Current Macroeconomic and Financial Situation in Indonesia

Although both fiscal and external vulnerabilities continue to decline in Indonesia, financing of economic recovery remains extremely precarious.

On the external front, the external debt to GDP ratio has fallen substantially from 120 percent at the peak of the crisis in 1998, but remains uncomfortably high at around 72 percent in September 2002. The World Bank (2003) claims that the country's external debt due in 2003 is about 58 percent of the gross international reserves.

On the fiscal front, the country has also managed to cut its budget deficit from around 3.7 percent of GDP at the end of 2001 to around 2.5 percent in 2002. The government has targeted a budget deficit of around 1.8 in 2003, roughly 0.5 percent higher than originally planned because of the stimulus needed to assist Bali recovering from the terrorist attacks in late 2002.

Cuts in oil price subsidies and electricity and telephone tariffs were initially expected to contribute to the attainment of targeted smaller budget deficit in 2003. However, the official announcement in early 2003 to reduce the subsidies on these key commodities was met by street protests. The government was eventually forced to backtrack and indefinitely postpone these essential cuts in subsidies. With a deficit of 1.8 percent of GDP, the total budgetary financing needs for the fiscal year 2003 are expected to be around US\$3.8 billion of foreign financing (World Bank, 2003). Of this, about US\$2.5 billion is to be financed domestically, including from the privatisation and the Indonesian Bank Restructuring Agency (IBRA) asset sales. To meet the rest of the budgetary needs, the government of Indonesia has often relied on the annual financing agreed upon between the government of Indonesia and the Consultative Group on Indonesia (CGI)¹³.

The problem at the financial front has been further compounded by a poor domestic investment climate. Increased violence and crime, corruption and bureaucratic delay and inefficiency, uncertainty in the labour market, and excessive taxation by some local governments are some of the fundamental problems deterring investments. By the end of 2002, investment approvals had fallen to slightly over US\$10 billion, from more than US\$25 billion in 2000. The country's share in Japanese outward FDI to Asia has fallen to about 5 percent during the first 9 months of 2002, from about 21 percent in 1996 (World Bank (2003))

Finding alternative sources of funds is undoubtedly a critical task for Indonesia at this stage. As shown in this paper, pooling of reserves with other East

¹² This 20 percent figure is specific to Indonesia. It varies for other countries individually and for the whole group. See Rajan and Siregar (2003) and Rajan, Siregar and Bird (2003) for detailed discussions.

¹³ The CGI consists of over 30 multilateral and bilateral donors led by the World Bank. They meet with the government of Indonesia annually. Around US\$2-3 billion of fresh loans for Indonesia have been decided by the annual meeting during the past three years. The last meeting was held in January 2003.

Asian economies may be a means by which Indonesia and other regional economies are able to generate the much-needed extra financial resources to aid development. For a highly indebted economy such as Indonesia, in particular, the excess foreign exchange reserves could be put in a better use by paying some of the debt. As the Economist (September 23-29, 2000) put it, “it is rather as though a household with lots of cash sitting idle in a low-interest bank account was at the same time paying a much higher interest rate on its debt. It would make more sense to repay some of that debt” (p.90).

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Table 1: Official Exchange Rate Arrangements

January 1990 – July 1997	August 1997 – December 2002
Managed Floating	Independent Floating

Source: Exchange Arrangements and Exchange Restrictions, IMF (various years)

Table 2: Rupiah Intervention

SBI Rupiah Intervention Rate: 7 Day Term					
Dec 1996	Dec 1997	Dec 1999	Dec 2000	Aug 2001	Nov 2002
8.50%	16.00%	10.50%	10..88%	15.88%	13.00%
Total Amount of Outstanding SBI for Rupiah Intervention in the Market (in Trillion of Rupiah)					
Dec 1996	Dec 1997	Dec 1999	Dec 2000	Aug 2001	Nov 2002
N/A	3517	23806	18842	15798	18961

Note: Data for 1998 is not available.
Source: Bank Indonesia Data Base.

Table 3: Accumulations of Foreign Exchange Reserves

(in US\$ million)

<u>Pre-Crisis:</u> Quarter 1, 1996- Quarter 1, 1997	<u>Crisis:</u> Quarter 2, 1997- Quarter 4, 1999	<u>Post-Crisis:</u> Quarter 1, 2000- Quarter 3, 2002
16657	21567.13	28237.82

Table 4: Weekly Regressions of Rupiah, US dollar and Yen

	US\$ coefficient: β_2 (standard error)	Yen coefficient: β_3 (standard error)	<i>R-squared</i>
Pre-Crisis: (January 1996 – May 1997) (73 observations)	1.030 (0.0338)***	-0.013 (0.0336)	0.941
Crisis: (July 1997 – December 1999) (135 observations)	0.113 (0.618)	0.628 (0.446)	0.018
Post-Crisis: (January 2000 – December 2002) (156 observations)	0.687 (0.178)***	0.265 (0.154)*	0.255

* significant at 10 percent level;

** significant at 5 percent level;

*** significant at 1 percent level.

Table 5: Volatility of Nominal Exchange Rate of Rupiah against the US dollar

α	β	γ	δ	Mean of h		
				Pre-Crisis ^a	Crisis ^b	Post-Crisis ^c
0.000001***	0.2174***	0.6425***	0.0001***	0.0000076	0.003468	0.000595

* significant at 10 percent level; ** significant at 5 percent level; *** significant at 1 percent level; ^a/ Pre-crisis period: January 1996 - May 1997; ^b/ Crisis: July 1997 - December 1999; ^c/ Post-Crisis: January 2000 – December 2002.

Table 6: Reserve-Import Ratio With and Without Pooling(ASEAN-5) + Korea + China + Hong Kong + Japan
(1990-1998)

Average Reserve (in US\$ million) (I)	Reserve-Import Ratio (in months of imports)		Average Hypothetical Reserve (in US\$ million) (II)	Excess Reserve (in US\$ million) (II-I)	Fiscal Cost (in US\$ million)
	Without Pooling	With Pooling (s = 43.2%)			
13535.60	5.08	8.94	23832.25	10296.65	1518.75

Table 7: Reserve, Coverage Index and Fiscal Cost

(Without Pooling and With 20% Pooling)

(Quarter 4, 1993 – Quarter 1, 2002)

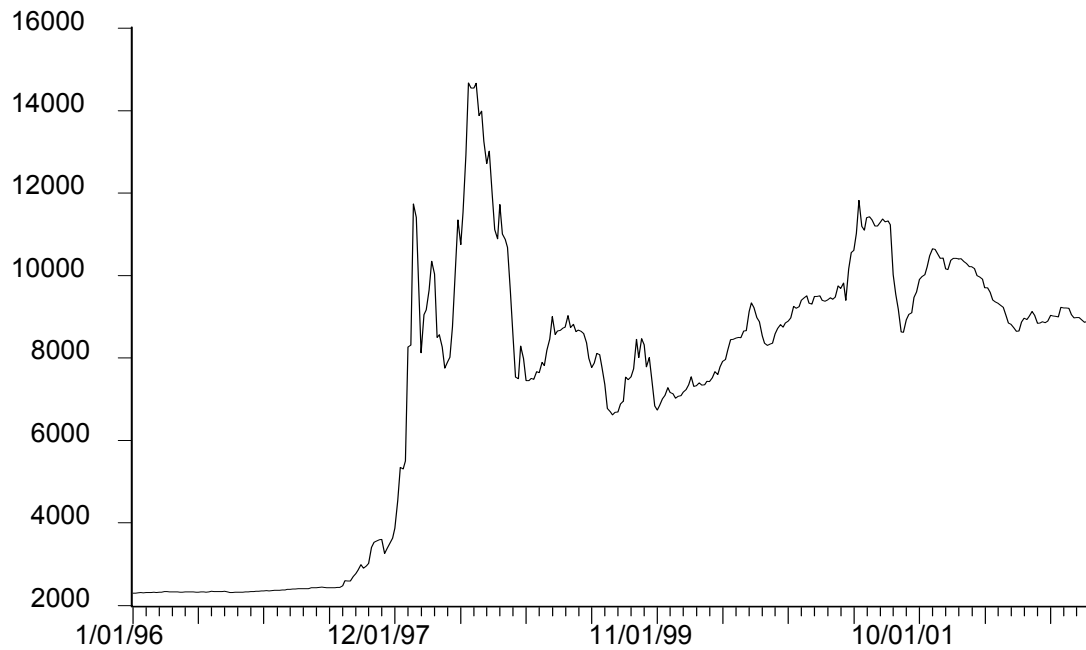
Average Reserve (in US\$ million) (I)	Variability of Reserve (in US\$ million)	Coverage Index		Average Hypothetical Reserve (in US\$ million) (II)	Excess Reserve (in US\$ million) (II-I)	Fiscal Cost (in US\$ million)
		Without Pooling	With Pooling			
20089.50	6544.70	3.070	3.152 ^a	20628.89 ^b	539.40	76.81

^a / The largest coverage index for Indonesia can be attained when the country commits to 20 percent pooling. The pooling includes ASEAN-5 (Indonesia, Malaysia, Philippines, Thailand and Singapore), Korea, China, Hong Kong and Japan.

^b / The hypothetical reserve is calculated for the 20 percent pooling.

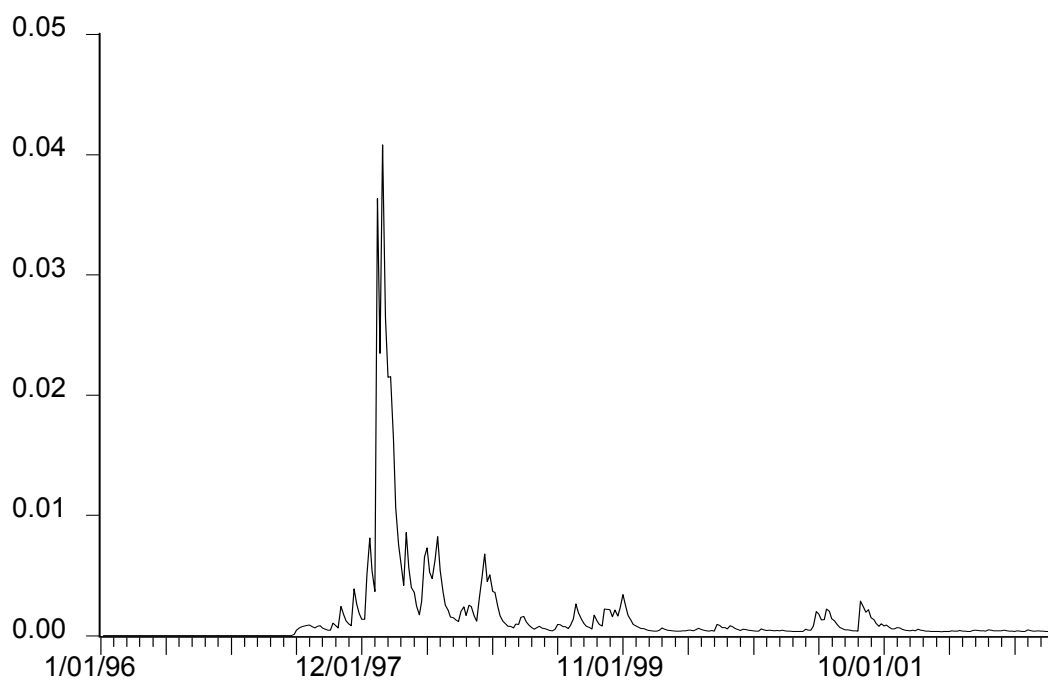
Figure 1: Weekly Nominal Exchange Rate of Rupiah against the US dollar

(A rise in the series implies a depreciation of rupiah)



Source: Pacific Exchange Rate Database

Figure 2: GARCH (1,1) volatility index of rupiah



Source: Authors' own calculation

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