PROPOSED STRATEGY FOR A REGIONAL EXCHANGE RATE ARRANGEMENT IN POST-CRISIS EAST ASIA

By

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The authors are thankful to Patrick Honohan, Yusuke Horiguchi, Paolo Mauro, Alexander Swoboda and several other IMF economists for their constructive comments, to Shigeru Akiyama, Taro Esaka, Kanda Naknoi, Kimiko Sugimoto, and Jo-Ann Tan for their assistance with data analysis, and to David Bisbee for editorial assistance. The findings, interpretations, and conclusions expressed in this paper are those of the authors and do not necessarily represent the views of the World Bank, its Executive Directors, or the countries they represent.

I. INTRODUCTION

This paper discusses major conceptual and empirical issues relevant to the exchange rate policies of East Asian countries and proposes a regional exchange rate arrangement designed to promote intra-regional exchange rate stability and regional economic growth. In particular, it argues that: (1) for developing countries, exchange rate volatility tends to have significantly adverse effects on trade and investment, making it inadvisable to adopt a system of freely floating exchange rates; (2) given the high degree of intra-regional trade and the similarity of trade composition in East Asia, exchange rate policy should be directed towards maintaining intra-regional exchange rate stability so as to promote trade, investment and economic growth; and (3) in view of the current sub-optimal policy of maintaining exchange rate stability against the US dollar as an informal and uncoordinated mechanism of ensuring intra-regional rate stability, a coordinated action may be profitably exploited to shift the target of nominal exchange rate stability to a basket of tri-polar currencies (the US dollar, the Japanese yen, and the euro) as an alternative numeraire which is more reflective of the diversity of trade and foreign direct investment structure.

In light of these considerations, the paper proposes that a coordinated action by East Asian countries to stabilize their currencies against a common basket of major currencies (which is broadly representative of their average structure of trade and foreign direct investment) will contribute to the simultaneous stabilization of intra-regional exchange rates along with effective exchange rates, in a way consistent with the continued medium-term objective of promoting trade, investment and growth in the region. No rigid peg is envisaged, however. At least initially, each country is allowed to choose its own formal exchange rate arrangement in the conduct of exchange rate policy, be it a currency board, a crawling peg or a basket peg with wide margins. In a time of crisis, the peg may be temporarily suspended, subject to the rule hat the exchange rate will be restored to the original level as soon as practical. Only in extreme circumstances, the level may be adjusted to reflect new equilibrium conditions. Such an arrangement is a pragmatic policy option for East Asia until greater political and institutional developments create an environment conducive to a more robust framework of monetary and exchange rate policy cooperation.

In some quarters of the academic and policymaking communities, there is an increasingly popular view that, in a world of high capital mobility, most countries have little alternative but to float their currencies or to “lock them in” through a currency board or a common currency arrangement (Eichengreen 1999b). In one of the earliest statements of this view, Obstfeld and Rogoff (1995), for example, argued that a fixed exchange rate was costly if the government’s promise not to devalue lacked credibility, and that it was becoming increasingly difficult nowadays to develop and maintain such credibility. Thus, according to this view, unless the government concerned was willing to assume the obligations of a rigid peg, the only other viable choice would be to float its currency. This choice in exchange rate policy available to countries with open capital accounts has been termed the “two corner-solution.” Undoubtedly, there is some merit in this argument, insofar as the massive volume of international capital flows has made the maintenance of exchange rate pegs more difficult, and enhanced the value of currency flexibility as a buffer against shocks (Eichengreen 1999a).

We do not necessarily share this "two corner solution" view of exchange rate policy, particularly as a sensible policy prescription for East Asia, because we believe that the objective of exchange rate policy is multidimensional. While the "two corner solution" view gives exclusive attention to the objective of crisis prevention, countries can rightly pursue growth, trade promotion, and other objectives through their use of exchange rate policy. As Frankel (1999) has argued, the optimal exchange rate regime depends on the circumstances of a particular country and time, and that there is no single regime that should fit all emerging market economies. In the context of East Asia, the many potential benefits of free floating seem to be outweighed by its potential costs. In fact, when the specific circumstances and needs of East Asia are properly understood, it becomes apparent that what is desirable is a policy designed to ensure intra-regional exchange rate stability (so as to promote trade and foreign direct investment) while minimizing the potential for large exchange rate movements disruptive of resource allocation within the region and ensuring stable capital inflows from outside the region (so as to promote growth). The purpose of this paper is to articulate the basis for such an exchange rate policy and to explore its ingredients.

The paper is organized as follows. Section II considers the recent experience of emerging market economies with exchange rate floats, focusing on the economies' observed practice of exchange rate stabilization under floating exchange rate arrangements, offering possible explanations for such practice, and summarizing the empirical evidence on the effects of exchange rate volatility on trade, investment and growth. Section III discusses the characteristics of East Asian countries in terms of their preparedness for a coordinated regional exchange rate arrangement (if not monetary union), including the applicability of optimal currency area criteria, the characteristics of trade shares and composition, the nature of economic shocks, and the speed of adjustment to those shocks. Section IV presents some quantitative assessment of the impact of exchange rate fluctuations among major currencies on East Asian economies based on structural vector autoregression. Section V discusses the multidimensional nature of exchange rate policy objectives for East Asia, and assesses the implications of the *de facto* dollar peg policy which was pursued by most of the East Asian countries prior to the currency crisis of 1997 and during the more recent, post-crisis period. Section VI presents a case for a regional approach to achieve the compelling objective of intra-regional exchange rate stability in East Asia and discusses some of the technical issues involved in the management of such an arrangement, including the need for institution building. Finally, Section VII presents concluding remarks.

II. RECENT EXPERIENCES WITH FLOATING EXCHANGE RATES IN EMERGING MARKET ECONOMIES

1. The Practice of Floating

Along with greater capital account convertibility, there has been a marked trend, at least in official classification, towards greater exchange rate flexibility among the developing countries in recent years. For example, according to the classification of the International Monetary Fund (IMF), the share of its developing member countries with some form of exchange rate flexibility rose from a little over 15 percent of total in 1978 to about 50 percent in 1999 (authors' estimates; see also Mussa, Masson, Swoboda, Jadresie, Mauro, and Berg 2000

and Kawai and Akiyama 2000).[1] The shift to greater flexibility, however, has not always been smooth. Looking at the 29 instances in which countries moved from single-currency or basket pegs to managed or independent floats during 1975-97, Eichengreen (1999a) noted that the "exits were typically preceded by gradual nominal and real appreciation, and followed by a step depreciation" and that growth had typically slowed in the period leading up to the "exit." The unfavorable manner in which the exits typically occurred might be due to the fact that they were often involuntary, with many of the countries concerned being forced to abandon the pegs that had turned out to be unsustainable (Quirk 1994).[2]

Perhaps for the same reason, the crisis-affected East Asian countries did not seem to reap the full potential benefits of free floating. At least initially in the economic crisis, capital outflows led to depreciation, which in turn caused further capital outflows and depreciation in a vicious circle manner, as confidence fell. Given the buildup of unhedged short-term external debt, the weaker rates caused the private sector balance sheets to deteriorate, exerting a deflationary impact on the economy (Kawai 1998; also Stiglitz 1998 and Radelet and Sachs 1998). With the passage of time, on the other hand, the currencies began to strengthen, causing the potential risk of damping the pace of budding economic recovery (Bayoumi, Eichengreen and Mauro 2000). Ogawa, Ito, and Sasaki (1999), for example, have argued that the worst of the Asian crisis (in the first half of 1998) came long after the currencies began floating. This experience in East Asia is consistent with the general rule that an overwhelming majority of "currency crashes" are associated with output losses (Furman and Stiglitz 1998).

In view of this experience, the crisis-affected East Asian countries began to stabilize their exchange rates against the US dollar in the latter part of 1998 (Kawai and Akiyama 2000). For all of the crisis-affected countries of Indonesia, Korea, Malaysia, the Philippines and Thailand, roughly nine months of sustained exchange rate depreciation were followed by several months of moderate appreciation. Then, from around November 1998, the respective currencies began to show relative stability against the US dollar (Figure 1). To take a closer look at Korea, for example, the standard deviation of daily exchange rate changes for the Korean won against the US dollar, which increased from 46.6 (won per dollar) during the pre-crisis period (March 1990 to September 1997) to 224.3 during the crisis period (October 1997 to September 1998), declined again during the post-crisis period (October 1998 to September 1999) to 50.2 (Park, Wang, and Chung 1999). A similar pattern was observed for many other currencies in the region, including those of non-crisis countries, except that the Singapore dollar and the New Taiwan dollar both began to show relative stability against the US dollar much earlier (say, from around March 1998), while the Hong Kong dollar remained pegged to the US dollar throughout this period.

In terms of observed exchange rate stability against a major anchor currency, East Asia is by no means a special case. In fact, most of the so-called flexible exchange rate arrangements adopted by emerging market economies have turned out to be highly managed. In this context, a considerable degree of difference has been observed between developed and emerging market economies, regarding the manner of exchange rate floating. Hausmann, Panizza, and Stein

[1] Here, flexible arrangements are defined broadly, i.e., those in which the exchange rate "is adjusted according to a set of indicators, follows a managed float or is independently floating."

[2] As exceptions, Eichengreen (1999a) notes Poland (in the 1990s), Israel (in the 1980s), and Singapore (in the 1970s) as countries that experienced greater exchange rate flexibility when capital inflows placed upward exchange rate pressure.

(1999) have noted that emerging country floaters typically show a greater tendency to intervene in the foreign exchange market, and that the "policy of benign neglect toward exchange rate policy is restricted to a small number of (developed) countries." To support such an exchange rate policy, developing country floaters hold a far larger level of foreign exchange reserves relative to monetary aggregates. Interestingly, the currencies of such industrial countries as Japan, the United States and the United Kingdom float much more freely than those of many emerging market economies. Emerging market economies seem to be particularly restricted in their ability and willingness to float their currencies freely, with a particular "index of free floating" for the emerging countries as a whole being one tenth the index for the three major industrialized countries and one half the index for other developed floaters, while it is twice the index for poorer developing countries (Hausmann, Panizza, and Stein 1999).

2. Explaining the Manner of Floating

As observed by Kawai and Akiyama (1998, 2000) for a large number of countries, the reluctance of developing countries to float freely is a fairly general phenomenon, and has been termed the "fear of floating" by Calvo and Reinhart (2000a, b) who have come to the same observation based on a smaller sample of countries. In the case of East Asia, the recently observed attempts at stabilization may in part reflect the authorities' concerns about the possibility of too rapid an appreciation when growth momentum was about to pick up. More generally, however, underlying the fear of floating may be the perception that floating exchange rates have shown a considerable degree of volatility that is unrelated to macroeconomic fundamentals, thereby increasing risk and uncertainty. Exchange rate uncertainty may increase the risk premium, hence the differential over major currency interest rates, adjusted for expected exchange rate changes. To be sure, a high risk premium is not an inevitable outcome of exchange rate floating, particularly when stable macroeconomic policies are followed.[3] But it is well known that deviations from uncovered interest parity (against major industrial countries' interest rates) are large for developing countries in general and particularly for those with a history of currency devaluation or depreciation (Montiel 1994).

Calvo and Reinhart (2000a, b) argue that because of the credibility problem (in part reflected in low credit ratings and high interest rate variability), exchange rate depreciation can be particularly costly for developing countries. Even a modest depreciation, for example, can lead to a total loss of confidence, causing the country concerned to lose access to international capital markets altogether, whereas, in the case of industrial countries, exchange rate expectations may be more regressive (McKinnon 1999). In addition, emerging market economies tend to be exposed to excessive exchange rate volatility and the relative thinness of foreign exchange markets.[4] As a result, developing countries may face a much higher risk

[3] As experienced in the European Monetary System (EMS), even fixed exchange rates are not immune from incurring large risk premia if credibility is lacking.

[4] The volatility of exchange rates that is seemingly unrelated to fundamentals has led Jeanne and Rose (1999) to argue that the "noise" component of exchange rate volatility depends on the structure of the foreign exchange market, which may be characterized by multiple equilibria with either high or low volatility. In their model, the entry of noise traders in a market changes the structure of risks and returns in a way that makes it more attractive for other noise traders to join, resulting in herd-like behavior. In this environment, it is shown that the monetary authorities can reduce exchange rate volatility induced by the arrival of noise traders, for example, by announcing a

premium under flexible exchange rates. It is possible that developing countries find this consequence of exchange rate floating particularly unacceptable. With a credible peg, on the other hand, the risk premium can diminish, creating an environment more conducive to greater investment in the tradables sector (Flood and Rose 1999; McKinnon 1999).

Given the threat of greater volatility, the fear of floating appears to be related to the vulnerability of certain countries to goods price fluctuations and their limited ability to hedge exchange rate risk. Hausmann, Panizza, and Stein (1999) have noted a correlation between the degree of pass-through in tradable goods prices faced by a particular country and the size of its international reserves (and its exchange rate volatility): high pass-through countries tend to hold large international reserves, and impose some limits on exchange rate volatility. Moreover, they have also noted a correlation between the ability to borrow in one's own currency and the size of its international reserves (and its exchange rate volatility): countries that have a greater ability to borrow in their own currencies tend to hold smaller international reserves and have greater exchange rate volatility.

The fact that most emerging market economies cannot borrow easily in their own currencies but tend to rely on foreign-currency borrowing, offers reasons for their preference toward exchange rate stability and large international reserves.[5] This reflects the fact that, with the limited ability to borrow in their own currencies, they cannot fully hedge their foreign currency positions, inasmuch as there is an excess supply of foreign currency-denominated debt relative to domestic currency-denominated debt at the national level, limiting the scope for currency swaps (see also Fernandez-Arias and Hausmann 1999; Eichengreen and Hausmann 1999). Worse still, as the risk premium (hence the cost of hedging) increases with volatility, putting upward pressure on the domestic interest rates, there would be a greater temptation to borrow abroad unhedged even if it were possible to hedge (McKinnon 1999). Thus, contrary to the popular view, floating exchange rates may not create greater incentives for economic agents to hedge their foreign exposure and minimize their vulnerability to large currency fluctuations (Eichengreen 1999b). With currency mismatches that necessarily arise from the lack of risk hedging, moreover, currency depreciation would create balance sheet problems (Fernandez-Arias and Hausmann 1999).

3. Effects of Exchange Rate Floating

Possibly in part owing to their greater vulnerability to external shocks and more limited ability to hedge exchange rate risk, exchange rate volatility seems to exert greater real effects on

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target zone. In other words, the very act of floating creates additional volatility (see also Flood and Rose 1999). This argument, applicable to any foreign exchange market, must apply with greater force to the foreign exchange markets of emerging market economies because of their relative thinness. In the context of Korea, Park, Wang and Chung (1999) explain the unwillingness of the Korean monetary authorities to allow the currency to float freely by the thinness of the foreign exchange market whose daily turnover amounted to only 1.6 percent of total exports and imports in 1998 (in contrast, daily turnover was over 20 percent of total exports and imports in the United States, Hong Kong SAR and Japan, over 100 percent in the United Kingdom, and over 60 percent in Singapore).

[5] Hausmann, Panizza, and Stein (1999) measure the ability to borrow in one's own currency by the ratio of all foreign securities issued in a particular currency (e.g., won) to foreign securities issues by the country (e.g., Korea). It turns out that, except for South Africa and Poland, developing countries do not generally issue foreign debt in their own currencies.

developing countries than industrial countries. For the industrial countries, it is well known that the extensive literature on the impact of exchange rate volatility on trade is inconclusive, possibly because of its likely small impact (for a survey of the literature, see McKenzie 1999). Recent research does show that the impact of exchange rate volatility on trade is negative but small. Dell'Ariccia (1998), for example, shows in a gravity model (in which the volume of trade between two countries increases with the product of GDPs and decreases with distance) that exchange rate volatility has a negative, though small, effect on bilateral trade flows among 14 member countries of the European Union during the period 1975-94 (see also Gagnon 1993). All in all, at least for industrial countries, exchange rate volatility is not usually considered to have a negative impact on trade.

For developing countries, however, the negative effect of exchange rate volatility on trade appears to be more pronounced, although the scope of existing empirical work is somewhat limited (Calvo and Reinhart 2000a; McKenzie 1999). For example, Kumar and Dhawan's (1991) work on Pakistan's exports to Germany, Japan, and the United States for 1974-85 suggests that exports were significantly adversely affected by variability in nominal bilateral exchange rates. Looking at the effect of real exchange rate variability on the exports of Chile, Colombia, Peru, the Philippines, Thailand and Turkey, Caballero and Corbo (1989) have obtained the clear evidence of generally significantly negative and substantial impact. Arize, Osang and Slottje (2000) have used quarterly data for 13 emerging market economies (including Indonesia, Korea, Malaysia, the Philippines, Taiwan Province of China [POC], and Thailand) during 1973-96 to confirm the significantly negative effect of real effective exchange rate volatility on exports. In addition, Calvo and Reinhart (2000a) and McKenzie (1999) cite additional studies that indicate the evidence of significantly negative effects of exchange rate volatility on trade, including the imports of some member countries of the Association of South East Asian Nations (ASEAN). Further systematic research is needed to clearly establish the negative impact of exchange rate volatility on trade in developing countries.

Exchange rate volatility may have a greater negative impact on domestic investment, because its longer-term orientation can magnify the effect of uncertainty.[6] This may be particularly true in the case of East Asian countries where much of foreign direct investment (FDI) is directed towards manufacturing (re-)exports as opposed to domestic sales.[7] Given uncertainty, firms may find it optimal to wait rather than to commit themselves to a decision in one way or another. Waiting thus becomes an alternative to investing or not investing. In this environment, Dixit and Pindyck (1994) argued that the net present value (NPV) rule should be modified to include the cost of waiting, such that the NPV of a project is given by the PV of expected returns less the value of the option to invest later. By incorporating exchange rate uncertainty to the Dixit-Pindyck model, Darby, Hallett, Ireland and Piscitelli (1999) have shown that there is a threshold level of exchange rate uncertainty beyond which investment is adversely

[6] On the other hand, to the extent that purchasing power parity is more likely to hold in the long run, uncertainty associated with exchange rate volatility may have a smaller role to play in investment decisions.

[7] If FDI is directed towards domestic sales, greater exchange rate uncertainty may cause local production to replace exports to that market, thus increasing FDI flows. If FDI is directed towards (re)exports, exchange rate uncertainty increases the riskiness of that particular host country as a production base. See Ito, Isard, Symansky and Bayoumi (1996) and Benassy-Quere, Fontagne and Lahreche-Revil (1999), as discussed below.

affected.[8] In a related vein, noting the inability of most developing countries to borrow in their own currencies and thus the limited ability to hedge foreign exchange risk, Fernandez-Arias and Hausmann (1999) have argued that, with floating exchange rates, countries will reduce unhedged foreign currency borrowing by simply reducing the total amount of foreign currency borrowing, thereby experiencing less investment and growth.

Addressing the need to attract foreign direct investment (FDI) as a stable source of long-term capital, Benassy-Quere, Fontagne and Lahreche-Revil (1999) analyzed the locational decisions of a risk averse multinational firm, considering two foreign locations in order to re-export (hence, trade and FDI are assumed to be complements). In this model (in which two developing countries are competing for FDI inflows), it is shown that exchange rate volatility is detrimental to FDI because it increases the variance of local costs (hence profits measured in the investing country's currency), thus diverting FDI to the other country with a smaller variance; this prediction is empirically confirmed by a panel of 42 developing countries receiving FDI from 17 OECD countries during 1984-96. In particular, while the real depreciation of a developing country currency against that of the investing country is shown to increase FDI inflows (through what they call the competitiveness effect), an increase in nominal exchange rate volatility reduces FDI inflows, controlled for distance and other country characteristics. As a policy implication, the importance of stabilizing the exchange rate against the currency of one's most important FDI supplier needs to be underlined.[9]

Finally, regarding the effect of exchange rate volatility on inflation and economic growth, Ghosh, Gulde, Ostry and Wolf (1997) investigated a data set covering 140 countries over 1960-90 by considering the degrees of exchange rate flexibility measured effectively in terms of officially stated classification. For both the entire sample and for the sample of developing countries,[10] they find unambiguously that inflation is both lower and less variable under pegged regimes. Likewise, domestic investment is somewhat higher under pegged regimes. The results for growth, however, do not look so conclusive. For the entire sample as well as for the sample of developing countries, growth does vary very little between floating and pegged regimes,

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[8] Theoretically, investment can rise or fall with greater exchange rate uncertainty. The types of industries more likely to benefit from exchange rate uncertainty are those with few alternative uses and little scrap value or with large entry costs. In contrast, the types of industries whose investment is likely to benefit from greater exchange rate stability are those with high scrap value but a low opportunity cost of waiting. Based on the estimation of aggregate investment equations for France, Germany, Italy, the United Kingdom and the United States, Darby, Hallett, Ireland and Piscitelli (1999) have found significant, negative coefficients for exchange rate volatility.

[9] In this connection, a recent study by Nakamura and Oyama (1998) provides an interesting insight into how the exchange rate sensitivity of FDI flows can be affected by the type of activities supported by FDI. Using the sample of eight East Asian economies (China, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan POC, and Thailand), Nakamura and Oyama (1998) have noted that Japanese FDI into these countries during 1979-97 was highly sensitive to changes in the real bilateral exchange rates, such that depreciation against the yen significantly increased FDI from Japan. The exchange rate sensitivity, however, was smaller for local market-oriented FDI inflows. On the other hand, no such strong exchange rate sensitivity was observed for American FDI into the region. For some countries, when the local currency depreciated against the US dollar, there was even a fall in FDI from the United States, suggesting that much of American FDI was in real estate and other non-manufacturing sectors where it assumed much of the character of portfolio investment. All in all, exchange rate sensitivity was the most distinguishing feature of Japanese FDI into East Asia.

[10] Separate statistics are reported for high and low per capita income countries. Here, we refer to the results for the low per capita income countries (which do not include industrial countries) as characterizing "developing countries."

prompting the authors to conclude that a nominal exchange rate regime matters little for real output.

When attention is given only to the "high growth" sample, however, a different picture emerges: while the average growth rate under pegged regimes (3.6 percent) may differ very little from the average rate under floating regimes (3.2 percent), the number of "high growth" observations under pegged regimes (318) far exceeds the corresponding number under floating regimes (149). Of course, this is by no means a statistically rigorous test of the effect of exchange rate regimes on growth. However, even allowing for the fact that the pegged exchange rate observations were concentrated in the high-growth 1960s, this result, though impressionistic, seems to substantiate the claim of McKinnon (1999) that pegged exchange rates supported the "remarkably rapid economic growth" of East Asian countries "in the 1980s through 1996" (and Japan in the 1950s and 1960s). Williamson (1999b) has also observed that, of the 33 instances of countries experiencing an annual growth rate of more than 6 percent after 1980, all but Peru (1995-97) had some type of pegged exchange rates, and concluded that floating exchange rates were not conducive to the "sustained high rates of growth that were experienced by East Asia before the crisis."

III. CHARACTERISTICS OF THE EAST ASIAN ECONOMIES

1. Application of Optimal Currency Area Criteria

It is self-evident that the design of an optimal exchange rate policy for East Asia is largely determined by the individual and collective characteristics of the economies in the region. In this context, several attempts have been made in the literature to assess the readiness of East Asia for monetary union on the basis of the theory of optimal currency areas, which is purported to evaluate the costs and benefits of fixing the exchange rate(s) for a particular country or a group of countries in terms of some real characteristics. The so-called optimal currency area (OCA) criteria, which have been proposed to make that evaluation, include, among others, (1) degree of factor mobility; (2) openness; (3) degree of commodity diversification; (4) price and wage rigidity; and (5) degree of market integration (for a review of the literature, see Tavlas 1993). Most of these studies seem to suggest that East Asia is not any less ready to constitute a single currency area than Western Europe was in the 1980s.

In one of the earliest such studies, Goto and Hamada (1994) analyzed an extensive set of economic variables (such as money, interest rates, price levels, real GDP, investment, trade intensity, trade dependence, labor mobility and FDI) to show that the degree of interdependence among East Asian countries through trade and factor movements was substantial, with some indicators showing higher integration than in Europe. In particular, they showed that, in 1990, bilateral trade linkage in East Asia was extremely high on the basis of the index of trade intensity, defined as follows.

$$I_{j,k} = (T_{j,k}/T_j)/(T_k/T_w) \qquad (1)$$

where $I_{j,k}$ is the index of trade intensity between country j and county k, $T_{j,k}$ is the volume of country j's trade with country k, T_j is the total volume of country j's trade, T_k is the total volume of country k's trade, and T_w is the volume of total world trade. In other words, the index of trade intensity measures the closeness of bilateral trade linkage, adjusted for relative volume in world trade. Note that $I_{j,k}$ is defined symmetrically, such that $I_{j,k} = I_{k,j}$. It was found that intensity was extremely high in many trading pairs in East Asia, frequently exceeding the corresponding figures in European pairs. Japan's trade intensity with East Asian partners was also high (even higher than Germany's intensity with many of its European partners), indicating the pivotal role of Japan in East Asian trade.

When we update the data for 1995, we find that what Goto and Hamada (1994) observed in 1990 remained essentially unchanged (Tables 1a and 1b). According to Table 1a, which updates and extends their results for East Asia in 1995, we find that a number of pairs (e.g., Laos-Cambodia, Thailand-Cambodia, Vietnam-Cambodia, China-Hong Kong SAR, Thailand-Laos, and Vietnam-Laos) had particularly intense trade links, with intensity indices exceeding five for as many as thirteen pairs. In Western Europe (Table 1b), in contrast, only four pairs (Sweden-Denmark, Finland-Sweden, UK-Ireland and Portugal-Spain) had trade intensity indices exceeding five. It is interesting to note that Japan-Korea had a more intense trade link than did France-Germany or the Netherlands-Germany. The pivotal position of Japan in East Asian trade in 1995 appeared more significant than that of Germany or France in Western European trade. In terms of trade intensity, therefore, East Asia is a highly integrated region, no less ready for a regional currency arrangement than Western Europe.

In openness and size, too, many of the East Asian countries would seem to benefit from a common currency arrangement. For example, the value of exports and imports in the principal trading countries of East Asia either approaches or exceeds 100 percent of GDP, with the notable exceptions of China and Japan (Table 2). For one thing, small open economies would benefit from stable exchange rates as a way of ensuring domestic price stability. For another, the relatively large size of the external sector associated with openness would mean that stable exchange rates provide considerable savings in transactions cost. Eichengreen and Bayoumi (1999) argue that such savings would be particularly significant for some East Asian country pairs with intense trade linkages.

Operationalizing the OCA theory, Eichengreen and Bayoumi (1999) have regressed bilateral exchange rate volatility on four OCA criteria (i.e., relative output variability as a proxy for asymmetric output disturbances, dissimilarity of export composition, strength of bilateral trade, and economic size) for 1976-95, and found that more stable exchange rates were observed for countries that trade more heavily, countries that are small, countries whose GDPs fluctuate together, and countries with a more similar composition of exports. Based on this model, they have further shown that the simulated levels of exchange rate variability for Singapore-Malaysia, Singapore-Thailand, Singapore-Taiwan POC, Hong Kong SAR-Taiwan POC, and Singapore-Hong Kong SAR would approach Western European levels. In terms of preparedness for monetary union, East Asia in 1995 was not very far from continental Europe in 1987 (Bayoumi, Eichengreen and Mauro 2000).

Benassy-Quere (1999) has used the sample of 40 countries (including 9 in Asia) for 1986-95 to regress the volatility of their bilateral exchange rates with respect to the Japanese yen,

the US dollar and the deutsche mark on three OCA criteria (i.e., relative output variability, similarity of export structure, and strength of bilateral trade), and found that the OCA criteria explained the degree of bilateral exchange rate stability reasonably well. In other words, it was generally found that the first coefficient was positive, and the second and third coefficients were negative, suggesting that asymmetric shocks give incentives for exchange rate flexibility while trade integration leads to more stability. It should also be noted that while OCA theory may explain the degree of exchange rate volatility among East Asian economies, it does not explain their pegging behavior vis-à-vis the major international currencies, notably the high degree of nominal stability against the US dollar. It is possible that the "excess" stability of East Asian currencies against the US dollar (beyond what can be explained by OCA theory on the basis of bilateral linkage) is accounted for by the importance of trade linkage with other countries in the US dollar bloc (Kawai and Akiyama 2000).

While, all in all, the economies of East Asia appear to be plausible candidates for internationally harmonized monetary policies on standard OCA grounds, no less than the members of the European Union, attention has recently been directed to the self-evident fact that some of the celebrated OCA criteria are endogenous. In other words, it is likely that the very act of forming monetary union contributes to the fostering of an optimal currency area, thereby strengthening international trade linkages and the correlation of business cycles.[11] Indeed, the indices measuring the degree of simulated exchange rate volatility (based on OCA theory) of major Western European countries are shown to have declined rapidly from 1987 to 1995 (Bayoumi, Eichengreen and Mauro 2000). What this means in the context of East Asia is that the OCA criteria by themselves do not provide the overriding basis for determining the type of exchange rate arrangement to be chosen, although they may be useful for giving a quantitative sense of the reasonableness of one type of exchange rate regime or another in a particular situation.

2. Integration through Trade and FDI

In terms of trade shares, East Asia is almost equally connected with Japan, the United States and the European Union (Table 3). During 1990-98, for exports, the United States was by far the most important market for principal Asian exporters, such as Malaysia, the Philippines, Singapore, Thailand, Hong Kong, Korea and Taiwan, although Japan was more important for Vietnam, China and the resource exporting countries of Brunei and Indonesia. For imports, Japan was the most important source country, except in Brunei (for which the European Union was the most important). For total trade (exports plus imports), Japan was the largest trading partner for Indonesia (26 percent), Thailand (23 percent), Malaysia (19 percent) and China (18

[11] It should be noted that, theoretically, closer trade ties could result in either tighter or looser correlation of national business cycles. Cycles could become more idiosyncratic, if countries become more specialized. On the other hand, if demand shocks are dominant, or there are more common (supply and/or demand) shocks, or intra-industry trade accounts for most trade, cycles may become more similar. Concentrating their attention on the relationship between trade links and business cycle correlation, Frankel and Rose (1998) analyzed the panel data of 21 industrial countries over 30 years to obtain a strong positive relationship, i.e., closer international trade links result in more closely correlated business cycles across countries. This result is robust with respect to the choice of a particular measure of bilateral trade intensity (e.g., imports, exports or total of imports and exports) or bilateral real activity correlation (e.g. GDP, industrial production, or employment).

percent), while the United States was the largest trading partner for the Philippines (26 percent), Taiwan POC (24 percent), Korea (22 percent), Singapore (18 percent) and Hong Kong SAR (15 percent). The EU was the largest partner for Cambodia (12 percent) and the second largest for Indonesia and Thailand (17 percent each). This geographical diversification of trade should be a reason against a single currency peg, be it to the US dollar, the Japanese yen, or the euro.

Another characteristic of East Asia (including Japan) is its high share of intra-regional trade, which was 45 percent in exports, 49 percent in imports, and 47 percent in total trade during 1990-98; excluding Japan, the corresponding figures were 37, 35 and 36 percent (Table 3).[12] In other words, about a half of international trade in East Asia is conducted within the region itself, including Japan. Bayoumi, Eichengreen and Mauro (1999) state that this degree of intra-regional trade in East Asia is similar to the euro area and that intra-regional trade as a share of regional GDP is even higher than for the countries participating in MERCOSUR or NAFTA. Moreover, for exports, the composition of trade in East Asia is heavily weighted toward manufactures, accounting for four-fifths of total exports; the share of manufactures in imports is generally lower but of the same order of magnitude (Table 4). For example, in 1997, except for Indonesia, the share of manufactures in the exports of principal exporting countries in East Asia ranged between 71 percent for Thailand and 96 percent for Taiwan POC. On average, moreover, five of each country's closest competitors come from its East Asian neighbors. In terms of similarity of trade structure, East Asia is thus almost like Europe, and it may have come to the point where it can benefit from some coordination of exchange rate policies (Williamson 1999a).

Finally, the regional breakdown of FDI inflows into East Asia may be noted (Table 5). For 14 countries of East Asia (excluding Japan), about 11 percent of total FDI inflows during 1990-98 came from Japan, about 10 percent from the United States and about 9 percent from Europe. Over 40 percent, however, is accounted for by intra-regional sources, reflecting the fact that over 60 percent of the $540 billion inflows into China came from Hong Kong. For ASEAN only, almost 20 percent of the inflows came from Japan, while about 12 percent and over 13 percent came from the US and Europe, respectively. The presence of FDI from the US and Europe is much more significant in Korea, whereas Japanese FDI constitutes the largest segment in Taiwan. All in all, Japan, the US and the EU are equally important foreign direct investors in East Asia, with Japan being the most significant in ASEAN.

3. Nature of Economic Shocks and the Speed of Adjustment

Using the structural vector autoregression (VAR) approach, Eichengreen and Bayoumi (1999) have shown that the size of aggregate demand shocks was twice as large in Europe as in Asia over 1972-89, while that of aggregate supply shocks was about the same. Noting that the correlation of supply shocks was more informative for policy purposes,[13] they found two groups of Asian countries among which aggregate supply shocks were significantly correlated, namely,

[12] The corresponding figures for ASEAN only were 22, 18 and 20 percent, respectively. On this basis, East Asia is a far more self-contained area than ASEAN.

[13] The demand shocks can be highly sensitive to the choice of exchange rate arrangement and macroeconomic policy. For example, Eichengreen and Bayoumi (1999) showed that the demand shocks of Hong Kong SAR, Indonesia, Malaysia, Singapore, and Thailand were highly correlated with one another, suggesting the countries' dollar peg policy.

(1) Japan, Korea and Taiwan (which compete with each other in the US market); and (2) Hong Kong, Indonesia, Malaysia and Singapore (see also Bayoumi and Eichengreen 1994). In terms of demand shocks as well, most of the ASEAN countries seem to satisfy the symmetrical-disturbance criterion just as well as Europe, meaning that the benefit of an independent monetary policy made possible by exchange rate flexibility is limited against intra-regional shocks (Bayoumi, Eichengreen and Mauro 1999; also Bayoumi and Eichengreen 1994).

Eichengreen and Bayoumi (1999) have noted that labor markets are more flexible in East Asia than in Europe; Goto and Hamada (1994) present some evidence to show that labor mobility may also be higher. Perhaps, reflecting the more flexible labor markets, the speed of adjustment to a shock is shown to be much faster in Asia, indicating that the cost of permanently fixing the exchange rate (and foregoing policy autonomy) is lower. In East Asia, almost all of the change in output and prices in response to a shock takes place in the first two years, whereas at most half of the change occurs in the first two years in Europe, with the rest requiring much longer (see also Bayoumi and Eichengreen 1994).

On the basis of a similar line of analysis, Bayoumi and Eichengreen (1994) also compared Asia to other regions of the world, and concluded that Northern Europe, Northeast Asia (Japan, Korea, Taiwan), and Southeast Asia (Hong Kong, Indonesia, Malaysia, Singapore, and possibly Thailand) were plausible candidates for monetary union, but not North or South America. Each of the three regions consisted of economies with relatively small disturbances, high correlations across economies, and rapid speeds of adjustment. Conditions are more conducive to monetary unification in East Asia than in the Americas. In particular, ASEAN is a more logical candidate for a regional currency than either NAFTA or MERCOSUR (Bayoumi and Mauro 1999).

4. Greater Diversity in Levels of Economic and Financial Development

Against these positive scores, it should be noted that East Asia is characterized by greater diversity in terms of size, the level of economic development, industrial structures, the depth of financial markets, and broad institutional frameworks than Europe (Table 6). At one extreme, Hong Kong SAR and Singapore are city-states, with small populations, industrial and service sectors, and high per capital incomes. Korea and Taiwan POC are relatively large, highly competitive industrial powers. At the other, China and the recent ASEAN members, i.e., Cambodia, Laos, Myanmar, and Vietnam, are relatively populous, agricultural and poor economies with limited mobility of capital. Brunei Darussalam, Indonesia and Malaysia are oil exporters, while most other countries are oil importers. In addition, China and Vietnam are transition economies still dominated by state-owned enterprises and banks. In the middle, in terms of per capita income levels, are Malaysia, Thailand, the Philippines, and Indonesia.

This diversity in East Asia makes the task of monetary cooperation, let alone a common central bank, more difficult. To the extent that financial shocks are an increasingly prevalent source of asymmetric shocks, asymmetry in financial development may be an argument against a common peg, much less a common currency, in East Asia (Eichengreen and Bayoumi 1999). VAR analysis, however, shows less conclusive results about the comparison of the response of

economic variables to an interest rate shock between East Asia and Europe (Bayoumi, Eichengreen and Mauro 2000).

IV. THE IMPACT OF FLUCTUATIONS OF MAJOR CURRENCY EXCHANGE RATES ON THE EAST ASIAN ECONOMIES

1. Structural VAR Model of the East Asian Economies

It is useful to have some quantitative assessment of how an East Asian economy might respond to a change in its real effective exchange rate. Such an assessment is useful in considering an optimal exchange rate policy for East Asia, because a high sensitivity of income, prices and other macroeconomic variables to a change in the real effective exchange rate would mean the desirability of a policy of stabilizing the real effective exchange rate. On the other hand, if it turns out that the macroeconomic variables are insensitive to a change in the real effective exchange rate, exchange rate policy can be conducted without giving too much regard to stabilizing the real effective exchange rate, at least for the purpose of macroeconomic stability.

Here, for simplicity, the real effective exchange rate is assumed to be common across East Asia and is defined as a weighted average of the bilateral real exchange rate against the US dollar (with the weight of 0.4), the Japanese yen (0.3) and the European Currency Unit (0.3), a precursor of the euro introduced in January 1999. This set of weights was chosen to represent the broad geographical composition of trade and FDI in East Asia, with the weight of the dollar increased slightly to reflect its greater financial importance and the presence of large dollar bloc countries outside of the United States. Our experiments have shown that the results presented in this section will not change substantially with an alternative weighting scheme of 0.5 for the dollar, 0.3 for the yen and 0.2 for the ECU, or with the choice of the synthetic euro (instead of the ECU).[14] To the extent that many of the East Asian countries had maintained stable exchange rates against the US dollar during the period up to the currency crisis of 1997, most of the changes in the real effective exchange rate so defined in reality amounted to exchange rate fluctuations between the US dollar and the other major currencies, such as the Japanese yen.

For an East Asian economy, we consider the following moving average (MA) representation of a structural vector autoregression (VAR) model,

$$\Delta \ln Y_t = \Sigma\phi_{1j}\, u_{t-j} + \Sigma\phi_{2j}\, v_{t-j} + \Sigma\phi_{3j}\, w_{t-j} + \Sigma\phi_4 x_{t-j} \qquad (2)$$

$$\Delta \ln E_t = \Sigma\lambda_{1j}\, u_{t-j} + \Sigma\lambda_{2j} v_{t-j} + \Sigma\lambda_{3j} w_{t-j} + \Sigma\lambda_{4j} x_{t-j} \qquad (3)$$

$$\Delta \ln P_t = \Sigma\eta_{1j} u_{t-j} + \Sigma\eta_{2j} v_{t-j} + \Sigma\eta_{3j} w_{t-j} + \Sigma\eta_{4j} x_{t-j} \qquad (4)$$

[14] Prior to 1975, the ECU rate was calculated by assuming the initial ECU composition. The synthetic euro was also tried instead of the ECU without much difference in results. The value of the synthetic euro was calculated by taking the weighted average of the currencies of all EU member countries, with the weights given by nominal GDP shares in 1990.

where $\Delta \ln Y_t$, $\Delta \ln E_t$ and $\Delta \ln P_t$ are, respectively, the growth rate of relative real GDP, the rate of change in the real effective exchange rate, and the rate of relative inflation (measured in terms of GDP deflators); x_t is an unspecified set of exogenous variables affecting the VAR system; and u, v and w are, respectively, macroeconomic fundamental shocks to relative real GDP, the real effective exchange rate and relative inflation. Here, relative real GDP is defined as the country's real GDP relative to real world GDP and the rate of relative inflation is defined as the rate of change in the country's GDP deflator relative to the world GDP deflator, where the relevant world variables are given by the weighted average of the US (with the weight of 0.4), Japanese (0.3) and EU (0.3) variables; the EU variables are in turn given by the weighted averages of the relevant variables for its members, with the GDP shares in 1990. The real effective exchange rate is defined as the country's weighted exchange rates vis-à-vis the US dollar (with the weight of 0.4), the Japanese yen (0.3) and the ECU (0.3), using GDP deflators as the price variables.

Following the procedures suggested by Blanchard and Quah (1989) and Clarida and Gali (1994), we identify the underlying shocks by estimating the structural VAR model, which can be obtained by converting the above MA processes, under the restrictions that the sums of the coefficients ϕ_{2j}, ϕ_{3j} and λ_{3j} are respectively zero, that is, $\Sigma\phi_{2j}=0$, $\Sigma\phi_{3j}=0$ and $\Sigma\lambda_{3j}=0$. These restrictions reflect the conditions that (a) the real output shock u_t affects all the variables in the long run; (b) the real exchange rate shock v_t affects both the real exchange rate and price inflation, but not real output, in the long run; and (c) the nominal shock w_t affects only the rate of inflation in the long run (Clarida and Gali 1994). In view of the preliminary information based on AIC and other criteria (Kawai and Okumura 1996), lag length is set at one. For x_t, we use the real oil prices, which are given by the US dollar prices of oil adjusted for the US producer price index. Data frequency is annual and the sample period is 1970-98 (1979-98 for China).

2. Impulse Response Analyses

The above model can be used to analyze the patterns of impulse response of relative real GDP growth (simply real GDP hereafter) and relative price inflation (simply the price hereafter) when there is a shock in the rate of change in real effective exchange rates (simply the real effective exchange rate hereafter). In what follows, we will use the impulse responses of the two key macroeconomic variables as a way of assessing the impact of fluctuations in major currency exchange rates on the East Asian economies, namely, China, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan POC and Thailand.

Panels in Figure 2 depict, for the respective economies, the impulse responses of real GDP and the price to a one-standard deviation shock to the real effective exchange rate; they also show how the real effective exchange rate itself will respond over time. It appears that the initial responses of real GDP and prices are asymmetric between the crisis and non-crisis countries. First, in response to a unit depreciation of the real effective exchange rate, real GDP initially increases in the non-crisis countries, namely, China, Hong Kong SAR, Singapore and Taiwan POC. In contrast, real GDP initially declines in most of the crisis countries, namely, Indonesia, Korea, the Philippines and Thailand; in Malaysia, output remains virtually unchanged. These asymmetric responses between the crisis and non-crisis countries may reflect the impact of the currency crisis of 1997-98, where a sharp fall in output was associated with a sharp currency depreciation.

In fact, it turns out that the negative (or virtually nil) response of real GDP to a depreciation of the real effective exchange rate disappears in almost all crisis countries if only the pre-1997 sample is considered. In the pre-crisis sample of 1970-96 (1979-96 for China), the response of real GDP to a real effective depreciation is positive except in the Philippines. In the case of the Philippines, real GDP tended to react negatively in response to depreciation of real effective exchange rates regardless of whether the 1997-98 crisis period is included in the sample or not. This result for the Philippines may be explained by its crisis experience in the 1980s when the debt crisis was accompanied by political turmoil and large exchange rate depreciation. Hence, we may conclude that, in general, real effective depreciation initially has an expansionary impact on output in East Asia, except at the time of a crisis. In about half of the cases, the positive response of real GDP is followed by negative responses, which gradually diminish overtime, and in another half of the cases, the positive response diminishes monotonically over time.

Second, the initial response of the price level to a unit depreciation of the real effective exchange rate is also positive in all the non-crisis countries (China, Hong Kong SAR, Singapore, and Taiwan POC) and in Korea. In contrast, the response is negative in the majority of the crisis countries, namely, Indonesia, Malaysia, and the Philippines; in Thailand the response is almost nil. Again, when only the pre-1997 sample is considered, the response of prices to a depreciation of the real effective exchange rate becomes positive, except in Malaysia. In the case of Malaysia, prices tended to react negatively in response to a depreciation of real effective exchange rates, followed by positive movements which gradually diminish over time, regardless of whether the 1997-98 crisis period is included in the sample or not. In almost all cases, the positive initial response of prices is followed by negative responses, which gradually diminish over time; in Malaysia, the price movements are in the opposite direction.

3. Importance of Real Effective Exchange Rate Stability

To have some indication of the quantitative importance of the impulse responses, we have normalized the responses of real GDP, prices, and the real effective exchange rate by the magnitude of a one standard deviation shock to each of the variables, respectively (Figure 4). Note that the initial normalized response of the real effective exchange rate is always unity because one standard deviation shock to the real exchange rate is considered to be the triggering shock. We find that the output response is considerable in all countries: more than two standard deviations for China and Indonesia, over one standard deviation for Taiwan POC and Thailand, and about one standard deviation for other countries (for the crisis-affected countries, the figures are from the pre-crisis sample). The initial price response is also considerable, particularly for the small open economies of Hong Kong SAR (over two standard deviations) and Singapore (almost four standard deviations).

We conclude that, in all of the East Asian economies considered here, both real output and prices respond considerably to a change in the real effective exchange rate, suggesting that the policy framework that stabilized the real effective exchange rate would be important in ensuring macroeconomic stability.

V. THE OBJECTIVES OF EXCHANGE RATE POLICY IN EAST ASIA

Exchange rate policy may be assigned several specific objectives, such as maintenance of balance in payments equilibrium, stability of real output, prices and other macroeconomic variables, promotion of international trade and investment, reduction of exchange risk, uncertainty, and transactions costs, and crisis prevention. Of these objectives, it appears that the crisis prevention role of exchange rate policy has been almost exclusively emphasized in some of the recent literature, given the increasingly yet imperfectly globalizing environment for emerging market economies. Such an emphasis, though important, may not serve the best interests of these countries in the long run, if it is focused on exclusively. For one thing, even if crisis prevention is a worthy goal, the policymakers should balance the benefit of crisis prevention against the costs of potentially foregoing the achievement of other goals, such as trade and FDI promotion and economic growth. For another, given the fact that the two corner-solution approach to exchange rate policy may not prevent crisis, by and of itself in the absence of other credible macroeconomic policy and prudential measures, it may not be wise to assign that task to the exchange rate alone. We believe that the dynamic East Asian economies can and should continue to pursue growth-oriented policies in a stable macroeconomic environment by promoting trade, FDI, other forms of capital inflows, investment, and growth, without exposing themselves to the recurrence of a crisis.

1. Macroeconomic Stabilization

For most practical purposes, exchange rate policy for small open economies may broadly be considered to have a microeconomic or allocative role (e.g., maintaining international price competitiveness or facilitating relative price adjustment) and a macroeconomic role (including that of anchoring domestic prices). At times, the microeconomic role and the macroeconomic role can be conflicting, with one requiring exchange rate flexibility, while the other requiring exchange rate stability. The structural VAR analysis presented in the previous section clearly indicates that real output and price inflation in all major East Asian countries are sensitive to fluctuations in real effective exchange rates. Thus, from the standpoint of minimizing domestic output and price fluctuations, it is important that the East Asian economies pay sufficient attention to maintaining stability of real effective exchange rates. For this purpose, a peg to a single currency (be it the US dollar, the yen or the euro) may not be a good option, because it would inherently destabilize real effective exchange rates.

Maintaining stable macroeconomic environments is one of the key components of sound economic management. Given that the emerging market economies are subject to numerous types of shocks, such as sudden changes in terms of trade, foreign demand, and global interest rates, exchange rate flexibility may be useful as a buffer against these shocks originating abroad. In small open economies, however, exchange rate instability due to free floating can be a source of additional shocks to prices and other macroeconomic variables, thus making macroeconomic policy management difficult. Thus the potential benefits of floating as a shock absorber must be weighed against the potential costs of greater difficulties in macroeconomic management associated with exchange rate instability.

2. The Exchange Rate as a Nominal Anchor

Somewhat related to the question of macroeconomic stability is the nominal anchor role of the exchange rate. In this context, some authors have argued that the achievement of relative price stability in much of East Asia has not necessarily relied on the use of the exchange rate as a nominal anchor. Glick, Hutchson, and Moreno (1999), for example, noted that, in East Asia, the economies whose currencies appreciated relatively less against the US dollar in nominal terms tended to experience higher inflation, and argued that the exchange rate pegging policies did not necessarily ensure price stability but rather created inflationary pressure. According to their interpretation, the higher rate of inflation in East Asia can be explained by the fact that the policy of nominal exchange rate stability against the US dollar forced the needed real exchange rate appreciation to take place through price level adjustment (rather than nominal exchange rate adjustment), given the presumed higher productivity growth relative to the United States.[15] Glick, Hutchson, and Moreno then concluded that East Asia's low inflation was attributable not necessarily to the policy of nominal exchange rate stability, but to rapid economic growth, limited budget deficits, the importance of the traded goods sector, and political stability.

This consideration, however, should not minimize the contribution of stable nominal exchange rates to the environment of overall macroeconomic stability (i.e., the rate of inflation of about 7 percent in the 1980s, compared with 30 percent in developing countries as a whole). The East Asian experience may well suggest that, even with a stable nominal exchange rate, inflationary pressure could still emerge if productivity growth is sufficiently higher than in the country of the anchor currency, and that some upward adjustment in the nominal exchange rate may be desirable from time to time. Even so, the inflation performance of East Asia was impressive, and the broad nominal anchor role of the exchange rate probably should not be underestimated even in East Asia.

3. Price Competitiveness, Orderly Resource Allocation, and Economic Development

Compared to the nominal anchor role of the exchange rate, the use of exchange rate policy to promote price competitiveness, orderly resource allocation and economic development, on the other hand, may be more relevant in East Asia. In a broader context of developing countries in general, it is sometimes stated that the microeconomic role of exchange rate policy should be emphasized because of these countries' specific weaknesses, such as balance of payments constraints and vulnerability to external shocks. Aghevli, Khan, and Montiel (1991), for example, argued that exchange rate policy in developing countries should aim at protecting international competitiveness by stabilizing the real effective exchange rate. In some cases, the microeconomic role of exchange rate policy may call for engineering relative price changes for current account adjustment (Dornbusch and Park 1999), which would require some degree of exchange rate flexibility.

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[15] The evidence of faster productivity growth in East Asia, however, has not been established, and even if it is, there should be no a priori theoretical relationship between productivity growth and real appreciation. Over a much longer time horizon, Ito, Isard, Symansky and Bayoumi (1996) note that the real exchange rates (measured in GDP deflators) of fast-growing East Asia did not necessarily experience appreciation. For instance, the real exchange rates of Hong Kong SAR, Singapore and Thailand remained fairly constant, while Indonesia and Malaysia experienced a moderate real depreciation.

Flexible exchange rates, however, can be a double-edged sword. While exchange rate flexibility can be a tool of relative price adjustment, the system of floating exchange rates has often led to the emergence of large currency misalignment, i.e., a sustained period of overvaluation or undervaluation. Williamson (1999b) has argued that, in terms of limiting currency misalignment, the system of floating exchange rates is the worst possible regime, with the most resilient arrangement being a crawling band, followed by managed floating, and fixed rates. He then explains the difference in economic performance between India (good) and New Zealand (bad) following economic liberalization by the fact that India managed the exchange rate with an objective of maintaining international price competitiveness, while New Zealand made no attempt to contain the upward float of the exchange rate. On this score, an easy recourse to exchange rate flexibility, intended to engineer a real depreciation or undervaluation, may not be a sustainable means of promoting international price competitiveness. In this respect, ensuring exchange rate stability can be a more sensible way of maintaining price competitiveness over the medium term, provided that a stable macroeconomic environment is preserved.

Maintaining international price competitiveness through exchange rate stability has a particularly important dimension in a highly integrated region such as East Asia, where countries not only trade but also compete with each other in third markets and in attracting FDI to enhance export competitiveness. In such an environment, an attempt by one country to undercut another by depreciating its currency, for example, will result in a large reallocation of resources across countries, which may not be justified by long-run equilibrium considerations. In this respect, too, the system of floating exchange rates with a propensity towards short-term volatility and/or medium-term misalignment may be a costly arrangement for East Asia. It may thus be desirable to have some mechanism of avoiding beggar-thy neighbor exchange rate policies and ensuring intra-regional exchange rate stability. Such a mechanism is beneficial not only in avoiding wasteful exchange rate-induced resource reallocation but also in promoting capital inflows into the region and, hence, physical and human capital investment and economic growth throughout the region (Collignon 1999).

4. Intra-Regional Exchange Rate Stability

With this background, it may be useful to assess the actual exchange rate policies of East Asian countries, in which the US dollar has played the role of an anchor currency with a predominant weight (see, for example, Takagi 1999). While this overwhelming share of the US dollar is inexplicable in terms of trade share, much less debt denomination (Benassy-Quere 1999), several authors have noted that the *de facto* dollar peg policy has helped promote intra-regional exchange rate stability, an important policy objective for a highly integrated region such as East Asia (Bayoumi, Eichengreen and Mauro 1999; McKinnon 1999). Given the excessive weight of the US dollar, however, fluctuations in the dollar/yen rate has caused boom and bust cycles in East Asian countries, in part contributing to the currency crisis (Ito, Ogawa and Sasaki 1998; Ogawa, Ito, and Sasaki 1999) and leading McKinnon (1999) to call the yen/dollar exchange rate the "loose cannon in the pre-1997 East-Asian exchange rate regime." Against the benefit of intra-regional exchange rate stability and the cost of yen/dollar rate-induced effective exchange rate fluctuation, Williamson (1999a) has characterized this *de facto* regional arrangement as a classic collective action problem, whereby each country is compelled to stay

close to the dollar because it fears that appreciation against the dollar would weaken its competitiveness against its regional competitors.[16]

An interesting consequence of East Asia's *de facto* dollar peg policy has been suggested by Collignon (1999), namely, the possibility that fluctuations of the dollar/yen rate would be magnified. In his model of "bloc floating" (in which the exchange rates vis-à-vis currencies within the bloc are stable, while the exchange rates vis-à-vis out-of-bloc currencies remain volatile), he shows that as the relative size of a particular currency bloc increases in the world, so is the degree of volatility in the exchange rate between blocs as the only instrument of current account adjustment. As the currency bloc increases in size, exchange rates have to adjust in response to changes in fundamental variables, creating a tradeoff between greater intra-bloc exchange rate stability and higher exchange rate instability across currency blocs. With greater exchange rate volatility, the trade and FDI links with countries outside the bloc declines, while intra-bloc exchange rate stability promotes trade and FDI within the bloc. In the context of East Asia, this view suggests that as more and more countries began to peg their currencies effectively to the US dollar, the dollar/yen exchange rate became more volatile, and East Asia's trade and FDI share of the United States rose at the expense of Japan, a phenomenon not entirely inconsistent with the gradual decline of Japan actually observed in East Asian trade over the recent decade.[17]

VI. A REGIONAL CURRENCY BASKET SYSTEM: OPERATIONAL ISSUES

1. The Benefit of a Regional Exchange Rate Arrangement

A regional framework of exchange rate stabilization could conceivably allow the countries to retain the benefit (i.e., intra-regional stability) of the *de facto* dollar peg policy without the associated cost of effective exchange rate instability. East Asian economies would particularly benefit from such action because of their openness, their high share of intra-regional trade, and their increasing importance of manufactures in trade structure. As they are increasingly becoming competitors to each other, exchange rate policies that do not closely follow the same pattern will have a major impact on relative competitiveness (Dornbusch and Park 1999).

For this reason, Williamson (1999a) has suggested the adoption of a common basket peg, which ensures intra-regional stability while allowing some flexibility against the dollar, the yen and the euro (see also Bayoumi, Eichengreen and Mauro 1999). The collective choice of a common basket for East Asia helps avoid the possibility that changes in industrial country exchange rates would destablize effective exchange rates, as would be the case when each currency were pegged to the US dollar. According to his experiment with a common basket (consisting of the US dollar, the yen and the euro) for nine East Asian economies (i.e., China, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan POC, and

[16] See Ohno and Shirono (1997) for an early statement of the collective action approach to the *de facto* dollar peg in East Asia.

[17] Continuing this line of argument, Collignon (1999) states that the emergence of a European currency bloc has made exchange rates between the three major world currencies more volatile and thereby contributed to the reduction of cross-border investment worldwide.

Thailand), given the geographical distribution and industrial structure of trade that are broadly similar across countries; it is shown that a common basket would have been far better for all countries than the actual exchange rate policies taken. A common basket would give results "surprisingly close" to those of individual currency baskets in terms of stabilizing the real effective exchange rates for almost all countries.

Once again in Collignon's (1999) model of bloc floating, a regional approach to exchange rate stability may also have the benefit of reducing the volatility of major industrial country exchange rates, in addition to that of coping with volatile exchange rates among the major currencies. As the number of countries whose currencies are pegged to the US dollar rises and hence the size of the dollar bloc expands, the exchange rate volatility of currencies that remain floating against the dollar, that is, the yen or the euro, tends to increase. A regional approach to exchange rate stability based on a currency basket system does not promote a particular currency bloc (be it the dollar bloc or yen bloc) and, hence, is expected to contribute to stability of inter-bloc exchange rates. In this sense, it can reduce the volatility of East Asia's effective exchange rates by helping stabilize major currency exchange rates, including the dollar/yen and the dollar/euro rate.

2. Need for Coordinated Action

Recent authors have stressed the existence of strategic interdependence in the choice of exchange rate regimes for countries that, in broad terms, produce similar goods, are rivals as host locations for FDI inflows, and compete for exports in common, third markets. Honahan and Lane (1999) have emphasized that exchange rate stabilization to a common anchor currency can be regarded as strategic complements—if a country stabilizes the exchange rate to an anchor currency, then other neighboring countries also find it attractive to stabilize their exchange rates against the same anchor currency. In this sense, *de facto* exchange rate stabilization vis-à-vis the US dollar in East Asia provided an alternative to costly beggar-thy-neighbor competitive depreciation strategies, making the *de facto* dollar peg an attractive collective equilibrium. This is obviously a Nash equilibrium and, hence, the question remains whether coordination can improve the outcome in a Pareto sense.

Benassy-Quere (1999) has considered the case for coordinated action in the context of conflicting exchange rate objectives. Suppose that the authorities of two identical East Asian competitor countries are faced with a tradeoff between stabilizing the debt-weighted effective exchange rate (with a higher share of the yen but no share for the other competitor country's currency) and the trade weighted effective exchange rate (with a lower share of the yen and a positive share for the other competitor country's currency). In this case, it is shown that a cooperative solution is superior to the Nash equilibrium, because cooperation can allow the share of the yen to increase by placing the determination of the bilateral exchange rate out of competitive consideration. Cooperation thus stabilizes the debt-weighted effective exchange rate with little loss in trade-weighted effective exchange rate stability. She argues that the low weight of the yen in the exchange rate policies of East Asia is a result of a non-cooperative optimization process (in which too much weight is given to bilateral competitiveness), and that cooperation (designed to minimize the combined loss function) would lead to a larger share of the yen, especially in Indonesia and Thailand, where it is an important currency of debt denomination.

Ogawa, Ito, and Sasaki (1999) have also shown the benefit of policy coordination. Starting with the observation that the optimal weight depends on the weights a neighboring country is adopting, they have shown in an extreme case that, if one country adopts a dollar peg, the other county may also need to adopt a dollar peg; and vice versa, the dollar peg being the Nash equilibrium. Alternatively, a basket peg arrangement can become a Nash equilibrium, if both countries consider adopting one. Which of the Nash equilibria is chosen depends on inertia and rational calculation. On the other hand, if the countries can coordinate, they should choose the best equilibrium. This process can be regarded as a regional currency arrangement.[18] Both countries would be better off, if the decision to move to a Pareto dominant situation (i.e., adoption of a basket peg) were made simultaneously. A common currency basket may be a way of overcoming coordination failure.

3. Currency Weights

There is a large theoretical literature on how to calculate optimal currency weights in a basket (see Williamson 1982 for a survey of the literature). Not unexpectedly, the literature suggests that optimal weights depend on the objective of exchange rate policy, so that there can be consensus on currency weights as long as there is agreement on the model and policy objective. Under these circumstances, a broad qualitative approach may be justified. Fortunately, it is well known that exact weights make little difference in the overall performance of a currency basket. It is on this basis that Williamson (1999a) has proposed the inclusion of only three major currencies in the basket, with the weights of 0.4 for the dollar and 0.3 each for the yen and the euro, which correspond broadly to the weighted average of the extra-regional trade of the nine East Asian countries, with Western Hemisphere added to the US and the rest of the world distributed among the US, Japan and Europe. In fact, these weights are the same as those that we have used to construct the effective exchange rate index in our structural VAR analyses.

Some may object that the share of the yen in the Williamson basket is too small in the light of the importance of Japan as a supplier of FDI, financial capital, official development assistance, and capital goods, and increasingly as a competitor. If the role of Japan as a competitor is emphasized, a greater weight of the yen should be called for to ensure greater exchange rate stability within East Asia. On this score alone, Dornbusch and Park (1999) have even argued that a yen bloc strategy may bring important strategic advantages by cutting out easy beggar-thy-neighbor strategies.[19] On the other hand, Benassy-Quere (1999) has argued that, from the standpoint of Japan as a capital goods supplier, although a depreciation against the yen raises the competitiveness of exports, more imported capital goods are needed to produce the additional exports, so that the net effect on the trade account is ambiguous. Some undervaluation, if any, of the yen probably does not make much difference. Eichengreen and Bayoumi (1999) note that, even for Korea, Indonesia and Thailand for which a yen peg is marginally preferred, as well as for Hong Kong and Singapore for which a dollar peg is marginally preferred, the common basket is almost as good as the best single currency peg.

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[18] For an early statement of this view, see Ohno and Shirono (1997).

[19] It should quickly be noted, however, that they do not advocate a yen bloc on a different ground, namely, Japan's on-going structural change would involve a significant real depreciation over the medium term.

4. Exchange Rate Margins and Flexibility

At least initially, the operation of the regional currency basket arrangement requires less formality and greater flexibility than the EMS of 1979-98 did in Europe because, as long as the basket only includes currencies that are external to the region (as opposed to internal currencies in the case of Europe's ECU), the need for a formal structure of policy coordination and surveillance is less compelling.[20] This is an important consideration, given the currently lacking commitment to full-fledged regional monetary cooperation in East Asia, the greater diversity in the level of economic and financial development across countries, and the dynamic nature of East Asian countries with rapid growth, changing economic structures, and possibly differing inflationary tendencies. Countries with different rates of inflation and productivity growth can (and are expected to) adjust the reference rates with respect to the basket differently over the medium term. In the absence of sufficient nominal convergence, adjustment for inflation may be just as important as the choice of the basket itself (Ohno 1999).

Given the need for flexibility, Williamson (1999b) envisages that each country can choose its own exchange rate system with respect to the common basket. Hong Kong SAR, for example, can continue to use a currency board arrangement, except that the dollar is replaced by the basket. For most countries, however, the combination of a crawl and a band is considered to be the norm. Dornbusch and Park (1999) have called this arrangement "BBC" (for "band, basket and crawl") which presumably "offers the desirable possibility of flexibility of nominal rates without sacrificing the predictability of real exchange rates." In their view, however, the BBC proposal is only a "learning mechanism and operating setting" in transition to a more flexible regime. This is where they depart from the spirit of the Williamson (1999b) proposal and our own view that a regional peg to a common basket should ideally become a catalyst for greater nominal convergence and greater exchange rate stability within East Asia. In the meantime, however, a formal exchange rate regime is of less importance. Whatever the formal arrangement may be (be it a flexible exchange rate regime or a managed float), the important point is that each country in the region should stabilize the real effective exchange rate at normal times by targeting a common currency basket.

In time of a currency crisis, some countries may find it necessary to allow for greater exchange rate flexibility. In such a situation, credibility for exchange rate stability can be maintained by establishing what McKinnon (1999) has called "the restoration rule": the authorities are allowed to suspend the peg (or quasi-peg) temporarily when faced with a massive speculative attack, subject to the condition that the exchange rate will be restored back to the original parity as soon as practical. It has already been noted that, while the exchange rates of industrial countries are generally regressive, those of developing countries are not, with moderate devaluation leading to a loss of confidence. The restoration rule is a way of instilling regressivity into developing country exchange rates even when a rare and extreme event calls for a temporary suspension of the peg. The restoration rule not only makes exchange rate expectations (hence the actual exchange rates) more regressive, but also may well diminish the potential for speculative attack to begin with. We depart from McKinnon, however, in that if the

[20] Nonetheless, some consultation and surveillance processes among the participating countries are desirable. For technical issues related to the operation of a basket peg, see Takagi (1988).

shock is sufficiently large and permanent, the post-crisis rate may need to be set at a level consistent with the new equilibrium.[21]

5. Compatibility with Inflation Targeting

In recent years, a number of countries, including some in East Asia (such as Korea and Thailand), have adopted inflation targeting as a means of securing a nominal anchor under flexible exchange rate regimes. The policy of pre-announcing target ranges for inflation, moreover, is expected to serve as a way of imposing accountability on central banks, as they have assumed greater independence in these countries. Within the present context of East Asia, the policy of exchange rate flexibility combined with inflation targeting may well be a reasonable mechanism of securing stable prices and exchange rates. In our view, the type of regional monetary arrangement we are proposing in this paper is compatible with the appropriately defined policy of inflation targeting.

In general, there is a limit to the ability of monetary authorities to pursue both nominal exchange rate targets and inflation targets, when there is a commitment to open capital accounts.[22] However, if inflation targeting is defined as a policy of achieving a weighted average of inflation rates of the United States, Japan and the European Union and if nominal exchange rate targeting is defined as a policy of stabilizing the nominal exchange rate vis-à-vis a basket of the US dollar, the Japanese yen and the euro, then these two policies are in fact one and the same, at least in the long term when purchasing power parity (PPP) tends to hold.

Admittedly, one of the key benefits of the currency basket approach—avoiding changes in the real effective exchange rate that are brought about by fluctuations in the US dollar-Japanese yen rate—could also be achieved in principle with an exchange rate float and appropriately defined inflation targeting. However, floating exchange rates have a tendency to display short-term volatility and medium-term misalignment and, as a result, can induce large fluctuations in intra-regional exchange rates. In the short term, the asset market tends to respond to news and shocks more rapidly than does the goods market, thereby often creating exchange rate overshooting and deviations from PPP as well as causing volatile fluctuations in the nominal exchange rate. In the medium term, as pointed out earlier, currency misalignment can persist particularly under a flexible exchange rate regime. Hence, inflation targeting by itself will not guarantee intra-regional exchange rate stability in the short to medium term. Given these problems associated with a floating rate regime, a policy of nominal exchange rate targeting (with some bands) can better ensure exchange rate stability in a way consistent with inflation targeting (with some bands). This is particularly the case for East Asia where the economies are small and relatively open so that domestic price inflation reflects international price movements. In essence, a "soft" peg to a basket of the tri-polar currencies can minimize both short-term

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[21] This was particularly the case in East Asia where a large shock caused massive insolvency problems in the corporate sector and serious NPL problems in the financial system, requiring permanently weaker real exchange rates for adjustment.

[22] If assets denominated in different currencies are imperfect substitutes, however, the impossibility theorem, i.e., the impossibility of pursuing three simultaneous policy objectives of free capital mobility, exchange rate stability and monetary policy independence, does not hold even with free mobility of capital.

volatility and medium-term misalignment of exchange rates, while maintaining a targeted range of inflation rates.

6. Political and Institutional Considerations

In the final analysis, the success of any regional arrangement crucially depends on the strength of political commitment. In this connection, some authors have argued that, in an analogy to the case of individual countries, regional exchange rate pegs are "dangerous" in the absence of "the requisite political commitment" (Bayoumi, Eichengreen and Mauro 2000; Eichengreen and Bayoumi 1999). This and other similar views, however, seem to overstate the case for the required degree of political commitment for the type of regional arrangement being proposed. It is true that any regional arrangement would involve a series of political decisions that constitute an intergovernmental agreement. However, in our proposal, once the agreement is reached on the composition of the basket and the broad commitment to use it as a reference value, everything else is pretty much left to the discretion of the country authorities. This is not much different from most of the exchange rate arrangements currently in place, except that the US dollar is replaced by a common basket as the anchor currency.

This, however, does not mean that East Asia will not benefit from developing a more organized coordination framework for regional policy surveillance and consultation as time goes on. To the extent that the purpose of regional monetary cooperation is, first and foremost, to stabilize intra-regional exchange rates, there must ideally be a mechanism of ensuring that no country jeopardize this objective by taking unilateral action that is completely out of line with those pursued in the rest of the region. The mechanism of regional surveillance and consultation becomes all the more important if Japan (whose currency is an element of the common basket and whose potential role is to provide international liquidity in the event of a regional currency crisis) is included in the regional exchange rate arrangement. As the actions of Japan directly influence the external value of the common basket, there must necessarily be a mechanism by which they can be subjected to the scrutiny of other participating countries.[23] We have already seen that the participation of Japan in the East Asian regional arrangement may be beneficial, as East Asia is much more self-contained as a *de facto* trading bloc with Japan than without it. The region will also benefit from the voluntary participation of the United States and the European Union in policy surveillance and consultation. The usefulness of their participation in the mechanism of regional monetary cooperation must be examined against the costs associated with the greater diffusion of the mechanism itself, in light of the extent of their commitment to the regional cooperation process.

As the region becomes more integrated and hence more prepared, in terms of both economic criteria and political climate, for a more permanent commitment to economic and monetary union, greater efforts should be made to build institutions capable of supporting such a commitment. Given the endogeneity of the OCA criteria, the process can be self-promoting. In this regard, we are already witnessing the seeds of important institutional developments in East Asia, particularly in ASEAN, including the ASEAN Finance Ministers' Meeting, EMEAP

[23] In this sense, a regional surveillance mechanism requires mutual consultation among the participating countries about their economic performance and policies, including those of developed nations, and hence differs in nature from the IMF's bilateral consultation process based on Article IV.

(which organizes high level meetings and hosts working groups on financial markets, central bank operations, and prudential supervision), and the Four and Six Markets Meetings. More recently, in 1995, the monetary authorities of Hong Kong SAR, Indonesia and Thailand made US dollar repurchase agreements, with Japan, the Philippines and Singapore joining subsequently. In November 1997, the East Asian economies and other Asia-Pacific countries, including the United States and Canada, formed the Manila Framework Group to institutionalize the surveillance process in the region. In May 2000, ASEAN, Japan, China and Korea made a historical statement, announcing the establishment and enhancement of swap facilities among the East Asian countries, as a way of complementing the existing international facilities. These institutions may be insufficient in their current form. Even so, they are important steps toward a more permanent institutional framework for regional exchange rate stability in East Asia, which may include institutions comparable to the European Monetary Cooperative Fund (EMCF) and the European Monetary Institute (EMI) which played significant roles in the monetary integration of Europe.

VII. CONCLUSION

This paper has discussed major conceptual issues relevant to the exchange rate policies of East Asian countries and proposed a regional exchange rate arrangement designed to promote intra-regional exchange rate stability and regional growth. In particular, it has argued that: (1) for developing countries, exchange rate volatility tends to have significantly adverse effects on trade and investment, making it inadvisable to adopt a system of freely floating exchange rates; (2) a system that ensures intra-regional exchange rate stability will be beneficial for East Asia to promote trade, FDI and economic growth; (3) in terms of various economic criteria, East Asia is no less ready for a regional monetary arrangement than Europe was before EMU; furthermore, the celebrated OCA criteria are likely to be endogenous, so that the very act of forming a regional monetary arrangement will enhance the suitability of East Asia for such an arrangement; (4) given the high degree of intra-regional trade and the similarity of trade composition in East Asia, each economy's exchange rate policy should be directed towards maintaining intra-regional exchange rate stability; and (5) in view of the sub-optimality of the current *de facto* dollar peg policy as an informal and uncoordinated mechanism of ensuring intra-regional stability, a coordinated action may be profitably employed to shift the target of nominal exchange rate stability to a common currency basket, consisting of the US dollar, the Japanese yen and the euro, which is broadly representative of the diversity of trade and FDI structure.

At least initially, a regional peg to the common basket does not have to be rigid. Each country may choose its own formal exchange rate arrangement, provided that the common basket serves as the reference anchor in the conduct of exchange rate policy, be it a currency board, a managed float or a basket peg with wide margins. In a time of crisis, the exchange rate stabilization policy may be temporarily suspended, subject to the expectations that the exchange rate will be restored to its original parity (for a small shock) or a new parity (for a large shock) as soon as practical. Such an arrangement is likely to contribute to the simultaneous stabilization of intra-regional exchange rates as well as individual countries' effective exchange rates, in a way consistent with the continued medium-term objective of promoting trade, investment and growth in the region, and is a pragmatic policy option for East Asia until greater political and institutional developments create an environment conducive to a more robust framework of

monetary and exchange rate cooperation. Over time, greater efforts should be made to build institutions for mutual policy surveillance and consultation, which will be supportive of fostering such a framework, including the East Asian counterparts of the EMCF and the EMI.

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Table 1. Trade Intensity in East Asia and Western Europe, 1995

(a) Trade Intensity Indices in East Asia, 1995

	Brunei	Cambodia	China	Hong Kong SAR	Indonesia	Japan	Korea	Laos	Malaysia	Myanmar	Philippines	Singapore	Taiwan POC	Thailand	Vietnam
Brunei Darussalam	--														
Cambodia	0.00	--													
China	0.18	1.09	--												
Hong Kong SAR	0.13	0.83	9.37	--											
Indonesia	0.75	5.96	1.39	0.98	--										
Japan	4.25	0.64	2.33	1.53	3.75	--									
Korea	3.40	0.00	2.23	1.63	3.01	2.72	--								
Laos	0.00	15.92	2.14	0.26	0.20	0.52	0.00	--							
Malaysia	3.36	3.43	0.72	1.08	1.64	2.37	1.38	0.08	--						
Myanmar	0.25	0.00	8.05	1.12	5.20	1.04	0.00	0.00	5.62	--					
Philippines	0.80	0.04	0.91	1.80	1.84	2.89	1.73	0.00	1.40	0.14	--				
Singapore	11.92	13.12	0.92	1.91	2.07	1.90	1.78	1.96	10.93	11.25	2.73	--			
Taiwan Province of China	0.79	0.90	0.57	4.36	2.16	2.78	1.29	0.55	1.69	0.91	2.33	1.93	--		
Thailand	5.53	22.14	0.95	1.09	1.54	3.25	1.09	39.79	2.43	0.94	2.15	5.22	1.75	--	
Vietnam	0.01	42.75	2.42	1.71	2.53	2.12	4.30	78.69	1.67	0.00	2.34	7.02	4.60	3.05	--
United States (US)	0.30	0.14	0.94	1.15	0.91	1.91	1.54	0.06	1.22	0.22	1.88	1.20	1.67	1.02	0.21
European Union (EU)	0.29	0.07	0.34	0.35	0.46	0.40	0.33	0.26	0.36	0.18	0.34	0.33	0.35	0.41	0.27

(b) Trade Intensity Indices in Western Europe, 1995

	Austria	Belgium-Luxembourg	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Portugal	Spain	Sweden	UK	US
Austria	--														
Belgium-Luxembourg	0.82	--													
Denmark	0.96	0.96	--												
Finland	0.99	0.98	4.19	--											
France	0.89	2.95	1.05	0.78	--										
Germany	4.41	2.18	2.46	1.53	2.06	--									
Greece	1.12	1.09	1.37	1.15	1.38	1.81	--								
Ireland	0.44	1.03	1.21	0.94	1.33	1.20	1.10	--							
Italy	2.18	1.35	1.05	0.78	2.50	2.07	4.03	0.82	--						
Netherlands	0.98	3.65	1.55	1.26	1.58	2.48	1.47	1.52	1.08	--					
Portugal	0.71	1.10	1.71	1.07	2.34	1.80	0.77	0.63	1.75	1.24	--				
Spain	0.83	1.14	0.89	1.02	3.56	1.66	1.82	0.93	2.39	1.16	10.04	--			
Sweden	1.10	1.41	8.08	8.54	1.01	1.71	1.01	1.25	0.89	1.57	1.19	0.89	--		
United Kingdom (UK)	0.60	1.61	1.57	1.96	1.74	1.47	1.21	5.93	1.25	1.89	1.70	1.64	1.96	--	
United States (US)	0.24	0.49	0.30	0.44	0.42	0.48	0.39	0.77	0.47	0.47	0.26	0.35	0.51	0.88	--
Japan	0.23	0.33	0.43	0.49	0.28	0.48	0.28	0.61	0.31	0.44	0.22	0.25	0.40	0.55	1.91

Source: IMF *Direction of Trade Statistics* various Issues

Table 2. Openness in East Asia and the European Union Countries (Total Trade as a Ratio of GDP)

(a) East Asia (percent)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Brunei Darussalam	89.5	101.3	96.4	97.9	93.8	85.6	91.0	85.3	83.4
Cambodia	n.a.	n.a.	35.8	37.5	51.2	69.5	54.6	58.3	62.8
Indonesia	41.5	42.9	44.0	41.2	40.7	42.6	40.8	44.1	80.9
Laos	30.5	25.9	35.7	50.7	56.0	51.0	54.0	61.7	73.1
Malaysia	137.3	150.9	138.3	144.6	163.4	173.6	155.4	157.5	181.6
Myanmar	2.5	3.6	2.9	2.4	2.1	2.1	1.6	1.6	1.5
Philippines	47.7	47.7	47.6	55.0	56.1	61.8	65.8	77.3	93.6
Singapore	309.8	292.1	277.3	277.0	286.1	290.4	280.3	270.6	254.3
Thailand	65.7	67.2	65.6	66.3	69.1	75.7	70.6	80.7	87.5
Vietnam	54.2	43.2	50.8	50.6	60.0	62.9	76.3	73.1	n.a.
China	32.5	36.0	39.6	44.9	43.6	39.7	35.5	36.2	33.8
Hong Kong SAR	220.2	231.1	241.2	236.1	239.5	263.2	246.1	228.5	215.4
Korea	53.4	52.0	50.3	48.0	49.3	53.2	53.8	58.9	70.3
Taiwan Province of China	76.1	77.6	72.4	72.7	74.0	82.7	79.7	83.0	82.7
Japan	17.6	16.2	15.4	14.1	14.3	15.2	16.5	18.1	17.7

(b) European Union (percent)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Austria	56.6	55.1	52.6	48.6	51.2	53.7	54.9	59.9	61.8
Belgium	n.a.	n.a.	n.a.	112.3	117.9	122.6	126.4	135.7	137.0
Denmark	50.5	51.0	51.8	48.8	50.3	52.4	51.4	54.0	53.1
Finland	39.7	37.0	42.5	49.1	54.0	53.8	54.2	57.7	60.9
France	37.7	37.4	36.0	33.1	35.2	36.9	30.9	40.3	41.8
Germany	n.a.	46.1	41.8	38.1	39.7	41.1	42.0	45.8	47.6
Greece	33.6	34.0	33.6	33.0	28.5	29.2	27.2	26.9	19.3
Ireland	97.6	97.3	97.4	104.1	110.2	118.4	117.4	120.2	133.2
Italy	32.2	30.6	30.1	32.1	35.5	40.4	37.9	39.3	39.6
Luxembourg	129.4	125.4	113.0	102.8	100.3	99.4	95.7	99.8	88.1
Netherlands	91.0	89.9	85.4	84.3	88.0	93.7	95.2	102.7	101.9
Portugal	60.3	54.6	51.5	47.4	51.4	54.0	54.9	58.3	57.4
Spain	29.1	28.7	28.5	29.4	34.1	36.5	38.4	42.7	43.8
Sweden	48.7	44.0	42.9	49.8	57.0	62.5	62.7	65.3	67.6
United Kingdom	42.0	39.0	39.3	41.1	42.2	45.8	47.6	45.8	43.2

Note: Openness is defined as the ratio of total trade (exports plus imports) to nominal GDP.

Sources: IMF, *International Financial Statistics* ; and World Bank data base.

Table 3. Regional Breakdown of East Asian Trade, Average for 1990-98 (share of total)

(a) Exports (percent)

Exporters \ Exports to	ASEAN	Other EA	EA-14	EA-14 & J	Japan	US	EU	ROW
Brunei Darussalam	21.1	16.3	37.4	93.0	55.6	2.7	2.2	2.1
Cambodia	56.8	5.5	62.3	69.0	6.7	6.0	18.6	6.4
Indonesia	14.2	16.6	30.8	60.1	29.3	13.8	14.5	11.5
Laos	46.5	5.3	51.9	62.6	10.7	2.6	18.0	16.8
Malaysia	28.2	13.6	41.7	54.9	13.2	19.2	14.8	11.0
Myanmar	22.2	20.4	42.6	50.0	7.4	7.2	8.4	34.4
Philippines	10.1	11.4	21.5	38.5	17.0	36.5	18.2	6.7
Singapore	26.1	17.2	43.2	50.9	7.7	19.6	14.4	15.1
Thailand	17.3	11.0	28.3	44.8	16.5	20.7	18.2	16.3
Vietnam	20.3	18.1	38.4	62.8	24.4	2.0	12.2	23.0
China	6.3	35.4	41.7	58.4	16.7	15.1	12.2	14.2
Hong Kong SAR	6.6	36.2	42.8	48.5	5.7	22.7	16.1	12.7
Korea	12.4	16.4	28.8	42.8	14.0	21.4	12.8	23.0
Taiwan Province of China	11.7	22.6	34.3	45.2	11.0	27.0	15.0	12.8
ASEAN	22.1	14.9	37.0	52.4	15.4	19.1	15.2	13.3
EA-14	13.6	23.7	37.2	50.1	12.9	20.7	14.5	14.6
EA-14 & Japan	13.8	23.2	37.0	45.4	8.3	23.7	15.6	15.3

(b) Imports (percent)

Importers\ Imports from	ASEAN	Other EA	EA-14	EA-14 & J	Japan	US	EU	ROW
Brunei Darussalam	41.5	6.3	47.8	58.6	10.8	14.0	21.4	6.0
Cambodia	57.5	13.6	71.2	81.1	9.9	1.6	9.7	7.6
Indonesia	11.5	15.6	27.2	49.2	22.1	11.8	20.2	18.7
Laos	61.8	8.8	70.6	80.0	9.4	0.5	3.7	15.8
Malaysia	19.9	13.7	33.7	58.5	24.9	16.6	14.2	10.6
Myanmar	41.7	31.6	73.2	82.7	9.5	1.4	9.0	7.0
Philippines	11.3	17.6	28.9	50.1	21.2	19.5	11.0	19.4
Singapore	21.2	13.9	35.2	55.2	20.0	16.3	13.4	15.1
Thailand	13.1	13.0	26.1	54.6	28.4	12.1	15.2	18.2
Vietnam	28.4	26.4	54.8	64.7	9.9	1.0	10.2	24.0
China	7.0	29.2	36.1	55.6	19.5	11.7	15.0	17.7
Hong Kong SAR	9.1	50.7	59.9	75.1	15.2	7.6	10.3	7.0
Korea	8.0	7.5	15.5	38.5	23.0	22.2	13.1	26.2
Taiwan Province of China	9.9	7.9	17.7	46.2	28.5	21.0	14.9	17.8
ASEAN	18.0	14.6	32.7	55.2	22.6	14.8	14.5	15.5
EA-14	12.1	22.5	34.6	56.0	21.4	14.6	13.5	15.8
EA-14 & Japan	12.7	21.5	34.2	49.4	15.3	17.0	13.8	19.8

(c) Total Trade (Exports plus Imports) (percent)

Trading Economies\ Trade with	ASEAN	Other EA	EA-14	EA-14 & J	Japan	US	EU	ROW
Brunei Darussalam	30.2	11.8	42.0	78.4	36.4	7.3	10.4	3.9
Cambodia	58.8	10.6	69.4	78.4	9.0	3.5	11.6	6.5
Indonesia	12.9	16.2	29.1	55.1	26.0	13.0	17.1	14.8
Laos	55.3	7.6	62.9	74.0	11.1	1.2	8.5	16.3
Malaysia	24.0	13.6	37.7	56.6	19.0	17.9	14.6	10.8
Myanmar	34.8	27.8	62.6	71.3	8.7	3.3	8.7	16.6
Philippines	10.8	15.1	25.9	45.4	19.5	26.3	13.9	14.3
Singapore	23.5	15.5	39.1	53.1	14.1	17.9	13.9	15.1
Thailand	15.1	12.1	27.2	50.2	23.0	16.0	16.6	17.3
Vietnam	24.8	23.0	47.8	64.1	16.3	1.4	11.0	23.5
China	6.6	32.4	39.0	57.1	18.1	13.5	13.5	15.9
Hong Kong SAR	7.9	43.7	51.6	62.1	10.6	15.0	13.1	9.8
Korea	10.1	11.9	22.0	40.6	18.6	21.7	13.0	24.6
Taiwan Province of China	10.8	15.6	26.5	45.7	19.2	24.2	15.0	15.1
ASEAN	19.9	14.7	34.7	53.8	19.1	16.9	14.8	14.5
EA-14	12.8	23.1	35.9	53.0	17.2	17.7	14.1	15.2
EA-14 & Japan	13.3	22.4	35.6	47.3	11.7	20.5	14.8	17.5

Notes: (a) Other EA includes China, Hong Kong SAR, Korea and Taiwan POC. EA-14 includes ASEAN and other EA.
(b) ROW is the rest of the world.

Source: IMF, *Direction of Trade Statistics*

Table 4. Manufacturing Trade in East Asia, 1990 and 1997
(Share of Total Trade)

	1990			1997		
	Exports	Imports	Total Trade	Exports	Imports	Total Trade
Brunei Darussalam	2.6	78.4	26.2	1.3	82.5	39.5
Cambodia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Indonesia	37.0	78.0	55.8	43.3	74.7	57.1
Laos	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Malaysia	55.4	80.2	67.8	76.8	85.0	80.8
Myanmar	3.8	58.6	39.4	12.4	57.7	43.4
Philippines	41.4	54.5	49.4	84.6	78.5	80.8
Singapore	72.3	74.8	73.6	85.2	83.7	84.5
Thailand	63.7	76.5	71.2	71.2	79.6	75.6
Vietnam	28.6	13.2	20.4	20.6	22.1	21.5
China	72.3	80.8	76.2	86.7	79.4	83.5
Hong Kong SAR	92.5	84.5	88.5	93.9	88.3	90.9
Korea	93.8	65.9	79.3	89.4	67.1	77.4
Taiwan Province of China	93.5	70.9	83.3	95.6	76.0	86.1
Japan	96.6	46.8	74.2	95.4	56.9	78.3

Notes: (a) Manufacturing goods are defined by SITC 5+6+7+8.
(b) Latest data are available for Brunei Darussalam, 1994; Vietnam, 1995; Malaysia, Myanmar, Philippines, and Korea, 1996.

Sources: UN. *International Trade Statistics Yearbook* :
Taiwan Province of China. *Statistical Yearbook of the Republic of China*.

Table 5. FDI Inflows to East Asia, 1990-98

(millions of $US; percent of total)

Investors \ Recipients	ASEAN (a)	China	Korea	Taiwan POC	Total
Japan	57,693 (19.2)	29,715 (5.5)	2,769 (10.5)	4,935 (22.7)	95,112 (10.7)
USA	35,082 (11.7)	42,658 (7.9)	9,331 (35.3)	3,885 (17.8)	90,956 (10.3)
Europe (b)	40,375 (13.4)	27,311 (5.1)	8,935 (33.8)	2,484 (11.4)	79,105 (8.9)
ASEAN	27,493 (9.1)	33,421 (6.2)	3,271 (12.4)	1,108 (5.1)	65,293 (7.4)
Other East Asia (c)	46,731 (15.5)	336,132 (62.4)	551 (2.1)	1,571 (7.2)	384,985 (43.4)
Total, including others	301,074 (100.0)	538,477 (100.0)	26,422 (100.0)	21,778 (100.0)	887,751 (100.0)

Notes: (a) 1991-98 for Brunei and Vietnam; 1992-98 for the Philippines; and 1994-98 for Cambodia
(b) Authors' estimates. These figures underestimate the actual volumes because some countries with small volumes are not included.
(c) Hong Kong SAR, Korea, and Taiwan POC only.

Sources: ASEAN Secretariat. *ASEAN Investment Report 1999: Trends and Developments in Foreign Direct Investme*
Japan External Trade Organization

TABLE 6. Major Economic Characteristics of the East Asian Economies, 1999

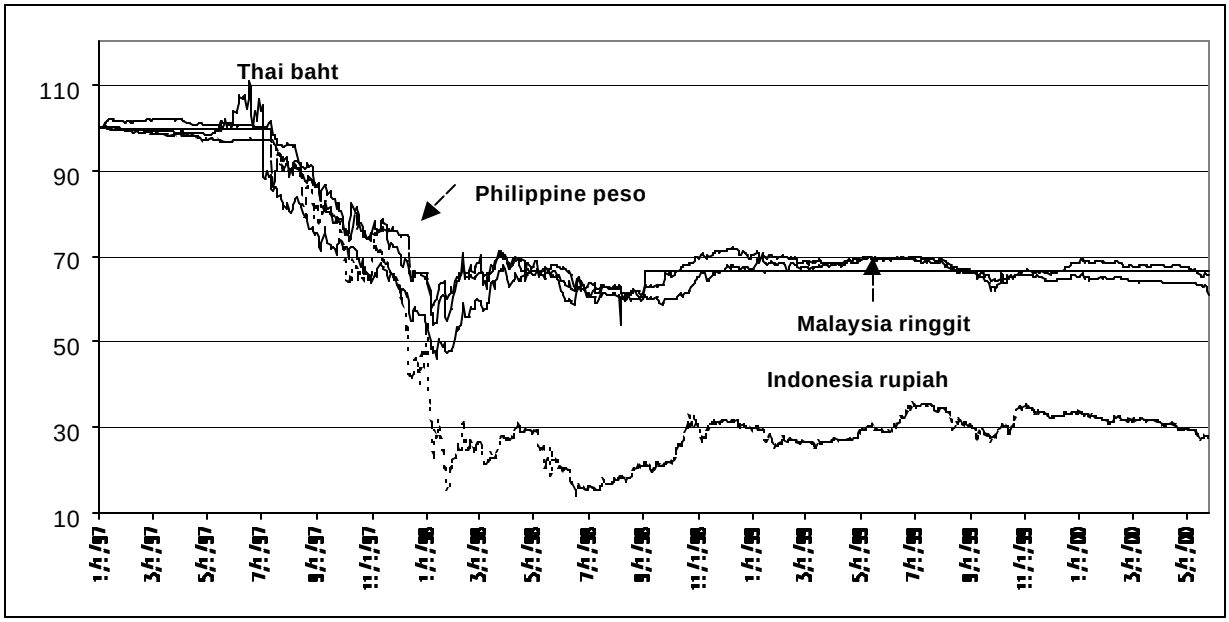
	GDP	Population (POP) Mid-Year	Area	GDP/POP	Trade Openness (Ratio of GDP)			Distribution of GDP (Ratio of GDP)				Savings and Investment (Ratio of GDP)			Fiscal Balance and Debt (Ratio of GDP)			Financial Deepening (Ratio of GDP)		
					Exports	Imports	Total	Agr.	Ind.	(Manuf.)	Serv.	GDS	GDI	Current Account	Fiscal Balance	Public Debt	External Debt	M1	M2	SMC
	US$Million	Million	1000 Km2	US$	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Japan	4,348,950	126.5	377	34,376	9.6	7.2	16.8	1.7	37.2	24.3	61.1	27.8	26.1	1.6	-9.2	125.4	---	48.4	125.7	57.4
Australia	393,991	19.0	7,682	20,769	14.2	17.5	31.8	3.2	26.2	14.0	70.6	22.6	24.8	-2.7	0.4	21.3	---	20.6	70.6	221.9
New Zealand	53,933	3.8	268	14,156	23.1	26.5	49.6	7.4	26.0	18.5	66.6	19.4	20.4	-1.0	0.5	37.0	---	14.4	93.9	165.7
China	991,200	1,266.8	9,326	782	19.7	16.7	36.4	18.4	48.7	37.1	32.9	39.0	38.3	2.9	-2.1	29.0	16.4	61.9	147.5	33.4
Hong Kong SAR	158,845	6.8	1	23,223	109.5	113.0	222.5	0.1	14.7	6.5	85.2	29.9	25.4	4.6	-2.5	n.a.	20.9	15.0	222.8	216.2
Korea	406,940	46.9	99	8,684	35.6	29.4	65.0	4.9	43.5	30.7	51.6	33.6	26.8	6.8	-4.6	29.5	44.0	9.2	68.1	75.8
Taiwan POC	288,576	22.0	36	13,117	42.1	38.4	80.6	2.9	34.1	27.1	63.0	26.1	24.3	1.8	0.1	n.a.	11.8	48.4	190.6	126.6
Cambodia	3,008	11.0	177	275	23.8	35.7	59.5	50.6	14.8	6.2	34.6	5.5	15.0	-9.5	-4.4	n.a.	77.7	5.1	11.4	---
Indonesia	140,964	209.3	1,812	674	34.5	17.0	51.6	19.5	45.3	24.9	35.2	19.5	11.6	7.9	-1.8	91.5	176.5	10.3	57.8	45.5
Lao, RPD	1,292	5.3	231	250	28.6	42.8	71.4	52.6	22.0	16.7	25.4	23.7	24.9	-1.2	-15.8	n.a.	199.1	4.0	20.3	---
Malaysia	78,735	22.7	329	3,467	107.3	82.5	189.8	13.2	43.6	28.7	43.3	47.1	22.4	24.7	-3.2	52.0	65.3	25.3	105.9	184.7
Myanmar	253,781	45.1	658	5,703	0.4	1.1	1.5	46.9	8.5	6.3	37.8	12.1	12.8	-0.6	-4.5	n.a.	3.0	17.5	26.9	---
Philippines	76,468	74.8	298	1,023	47.8	42.6	90.4	16.9	31.6	21.9	51.5	14.6	18.8	0.4	-3.7	105.0	70.1	13.2	62.9	62.9
Singapore	84,947	3.9	1	21,837	135.0	130.7	265.8	0.1	35.2	23.2	64.6	49.9	33.5	17.8	10.1	71.6	16.7	21.6	121.2	111.2
Thailand	124,371	61.8	511	2,012	43.8	35.9	79.7	11.2	41.2	32.1	47.7	33.4	21.0	11.8	-3.3	50.3	76.4	15.7	106.7	46.9
Vietnam	28,500	76.6	325	372	34.4	41.9	76.3	25.4	34.5	17.9	40.1	21.4	28.7	-7.3	-0.9	4.1	82.3	12.5	24.2	---
Ref: United States	9,256,100	273.1	9,159	33,889	7.6	11.4	19.0	1.7	26.2	17.8	72.0	14.8	17.5	-2.7	1.7	26.4	---	15.8	61.8	145.3

Notes: (a) GDS = Gross domestic savings; GDI = Gross domestic investment; CA = Current account; SMC = Stock market capitalization.
(b) GDP data for Laos and Myanmar are those of 1998.
(c) Trade opennes data for Laos, Myanmar and Vietnam are those of 1998; and 1997 for Cambodia.
(d) Distribution of GDP is for 1998, except in Japan, USA and Hong Kong (1997), Australia (1996), and New Zealand (1994).
(e) The savings rates of Cambodia, Laos, Myanmar, Singapore and Vietnama are for 1998.
(f) The fiscal balance data are: Australia, 1997; New Zealand, 1998; Hong Kong, Indonesia, Cambodia, Laos, Myanmar, and Vietnam are those of 1998.
(g) The public debt data are: Australia and New Zealand, 1997; and Vietnam, 1994.
(h) The external debt data are: Australia, 1997; Hong Kong, Myanmar, Singapore, and Taiwan those of 1997; and 1998 for other developing countries.
(i) Money supply data for Cambodia, Laos, Myanmar and Vietname are those of 1998.

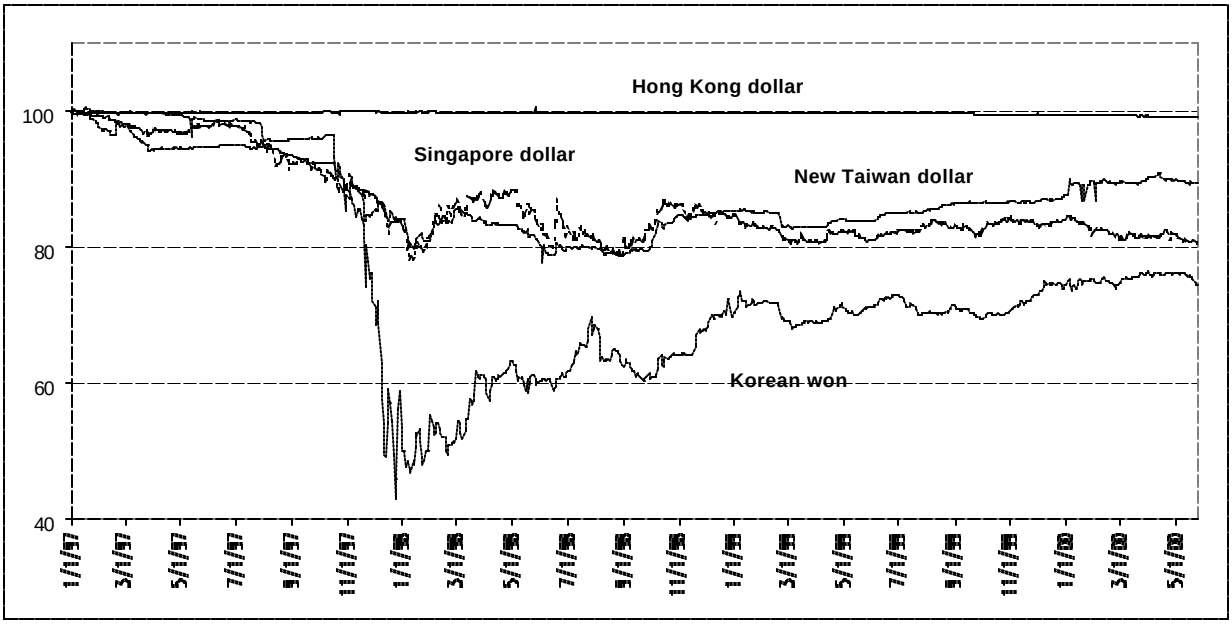
Sources: International Monetary Fund. *International Financial Statistics* .
World Bank. *World Development Indicators*; and Worlbank database.
Asian Development Bank. *Key Indicators of Developing Asian and Pacific Countries* . 1999.
Central Bank of China (Taiwan District). *Financial Statisitcs* : and *Monthly Bulletin of Statistics* .
World Bank. *East Asia, Recovery and Beyond*. 2000.

Figure 1. The East Asian Economies' Exchange Rate Movements

(a) ASEAN Countries' Exchange Rate Indices, Offshore Rates (January 1997 = 100)

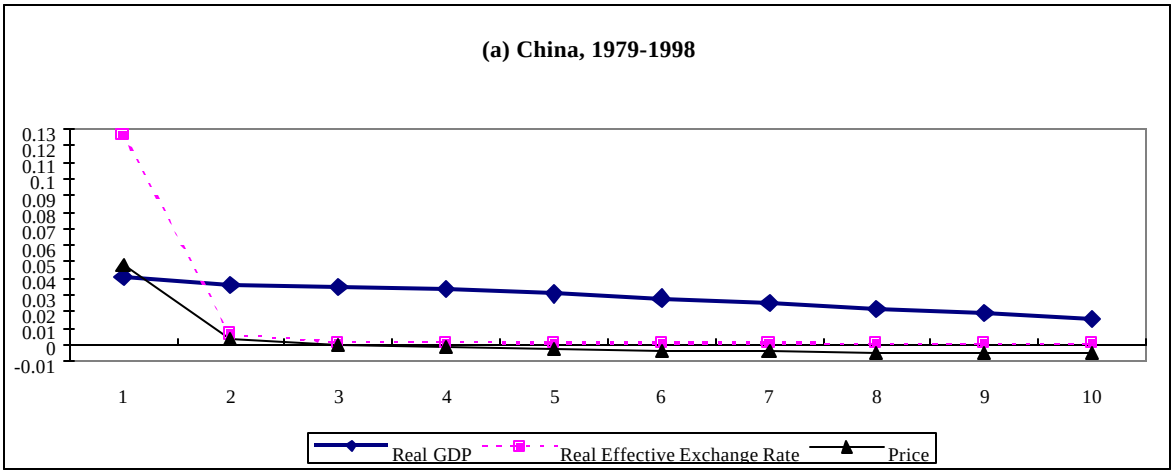


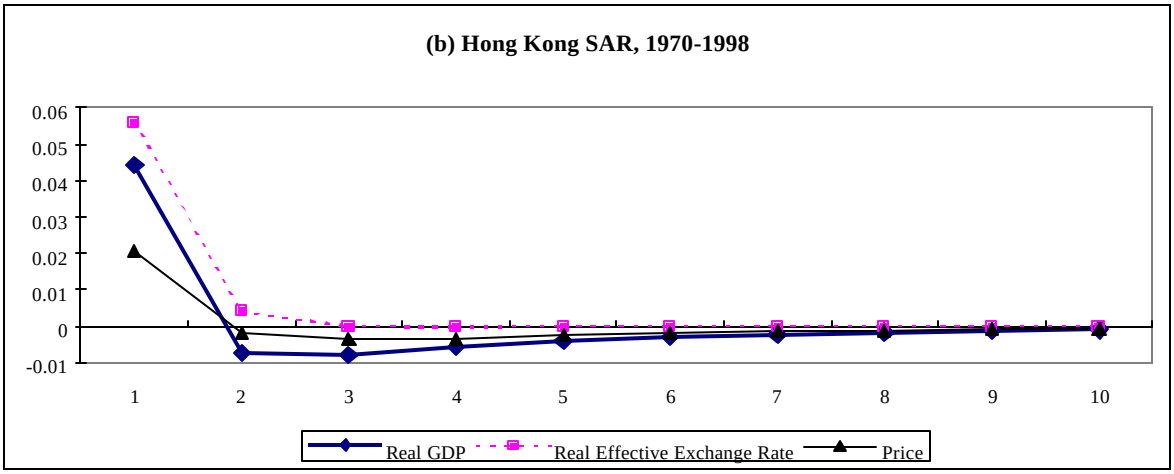
(b) The Asian NIEs' Exchange Rate Indices (January 1997 = 100)



Source: Datastream.

Figure 2. Impulse Responses to a Shock to Real Effective Exchange Rates: Full Sample





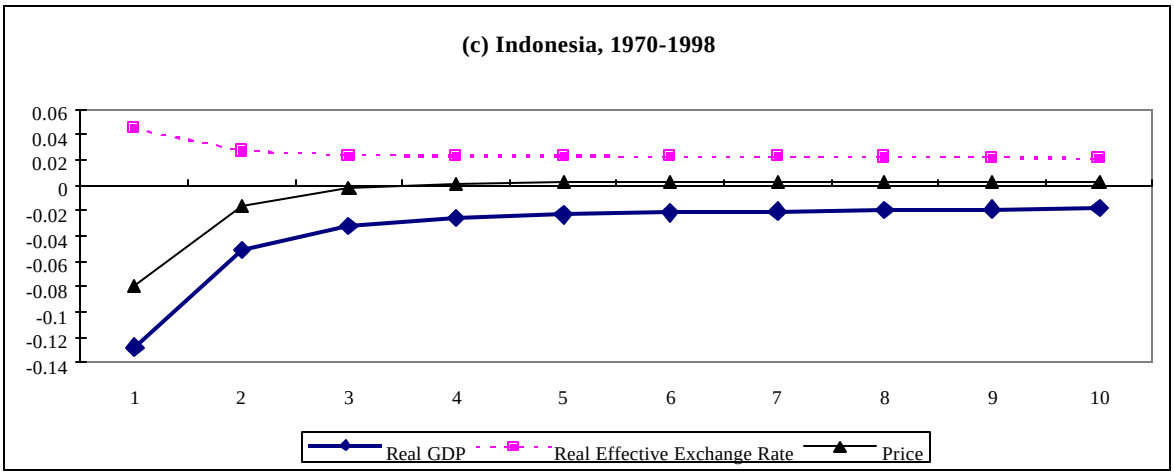
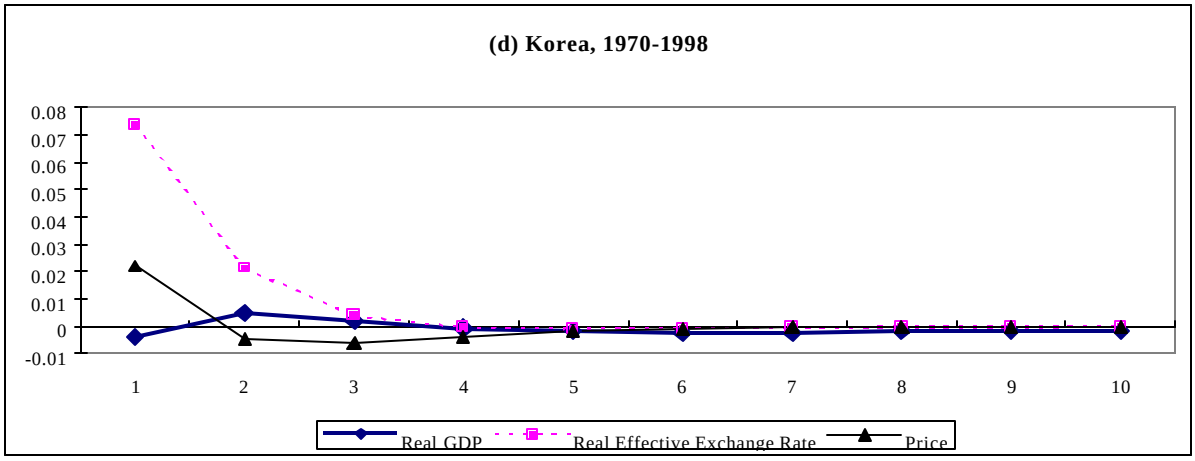
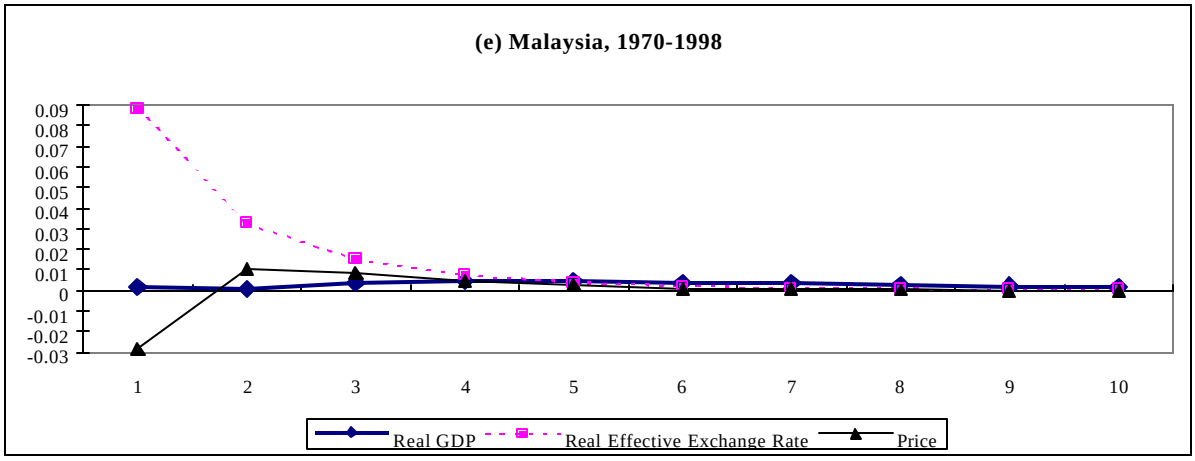


Figure 2. Impulse Responses to a Shock to Real Effective Exchange Rates: Full Sample (Continued)





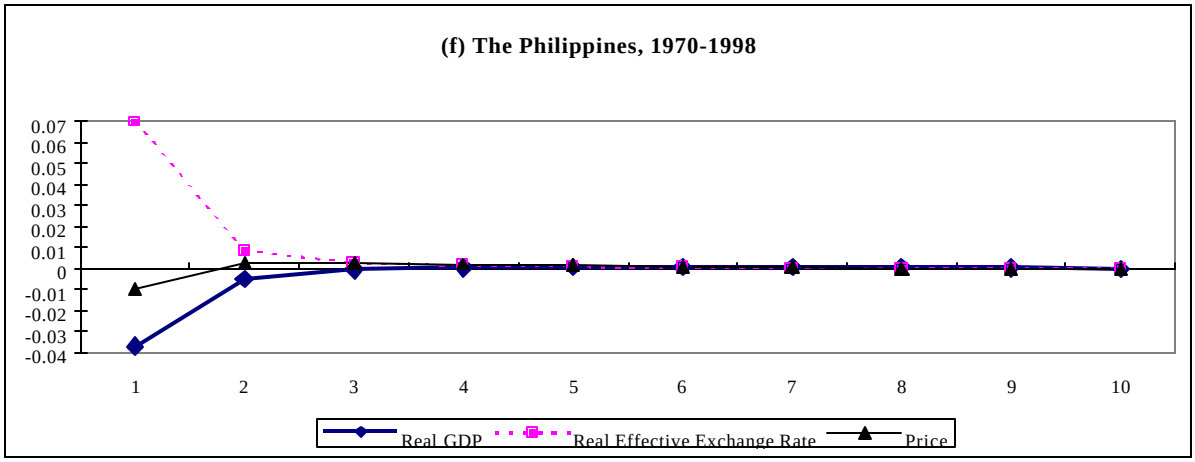
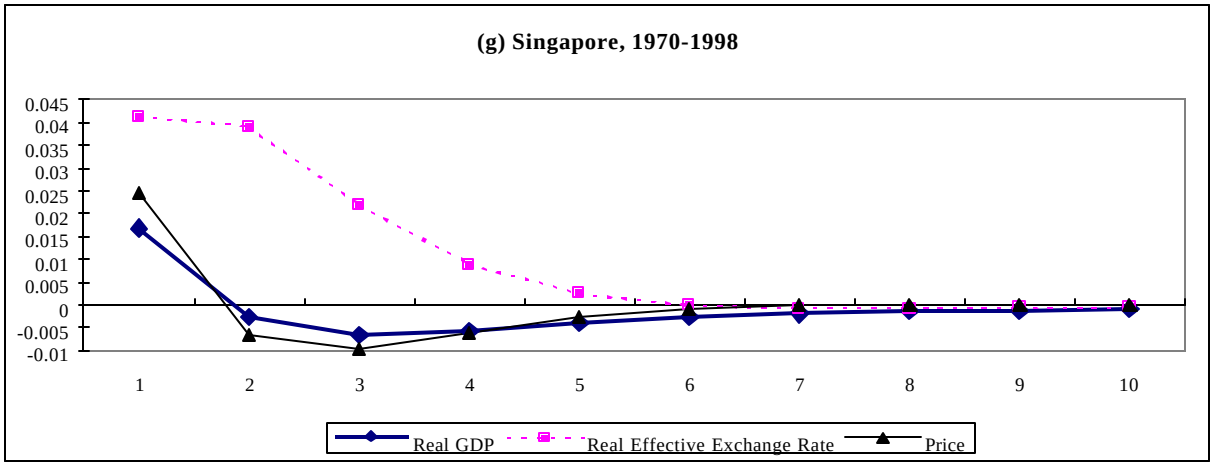
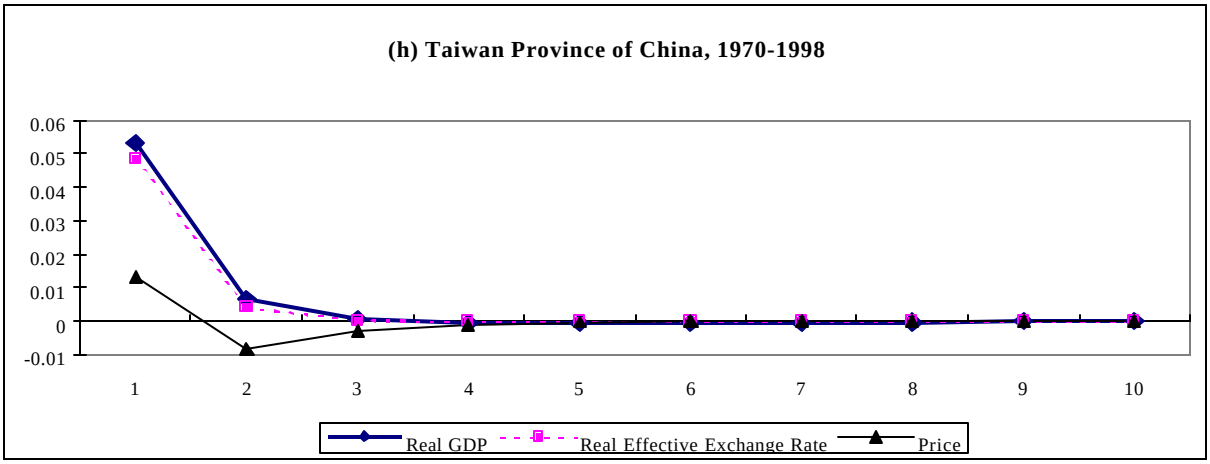


Figure 2. Impulse Responses to a Shock to Real Effective Exchange Rates: Full Sample (Continued)





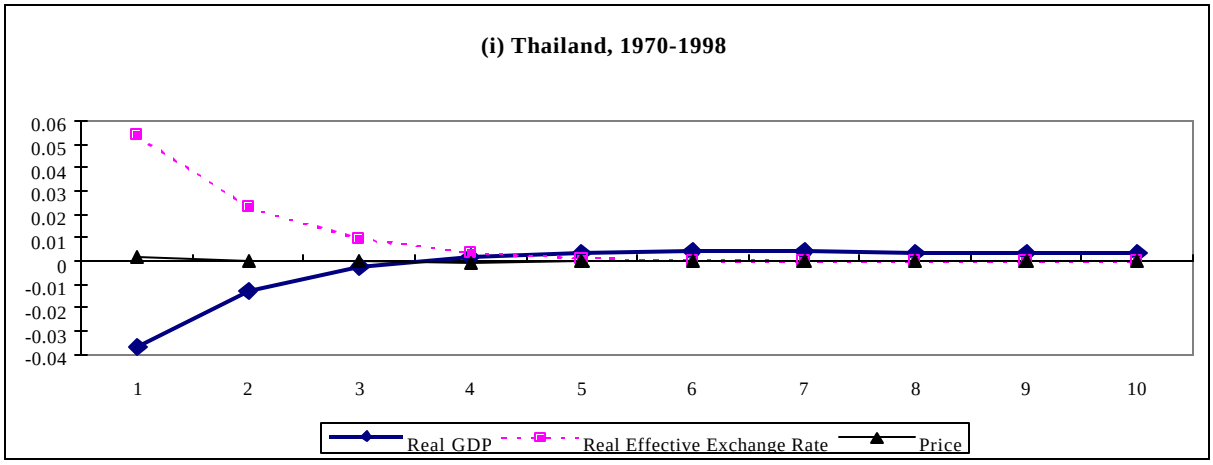
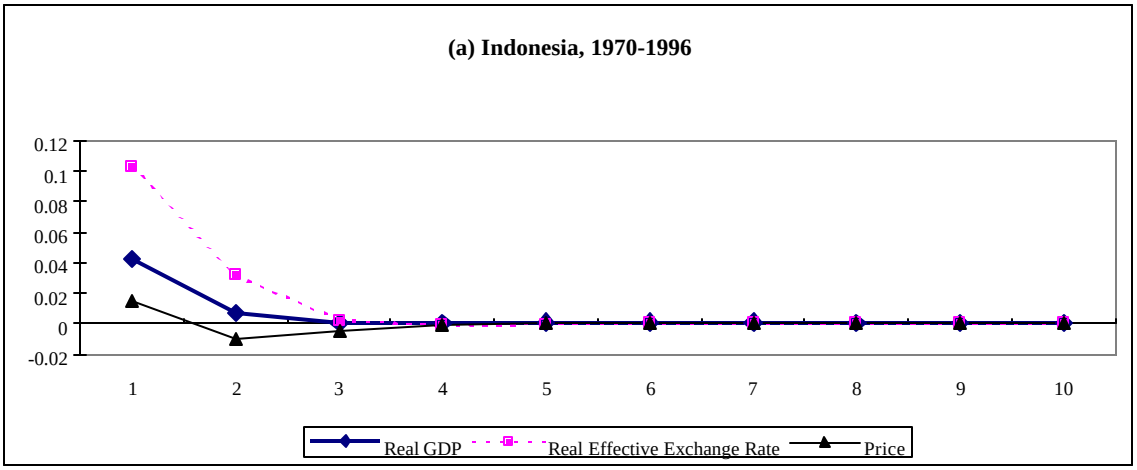
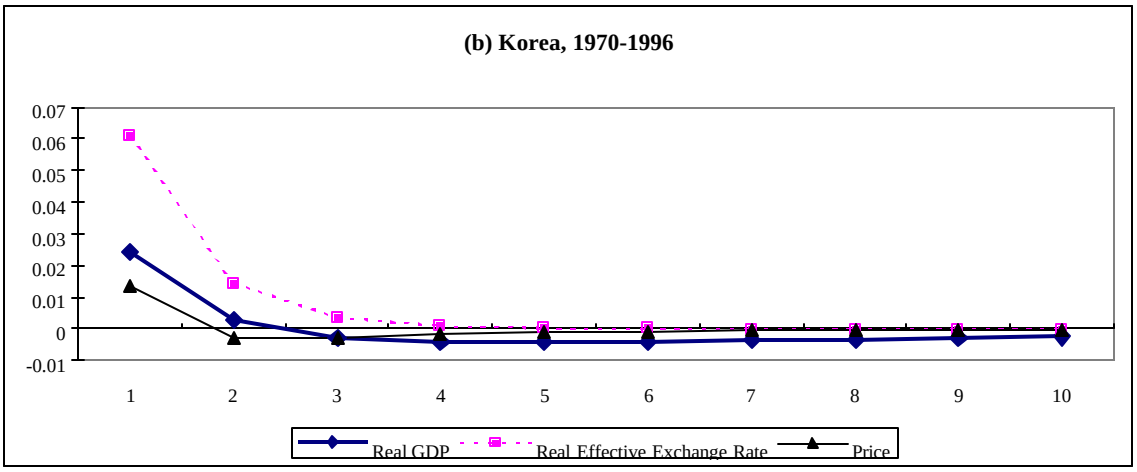


Figure 3. Impulse Responses to a Shock to Real Effective Exchange Rates: Pre-Crisis Sample





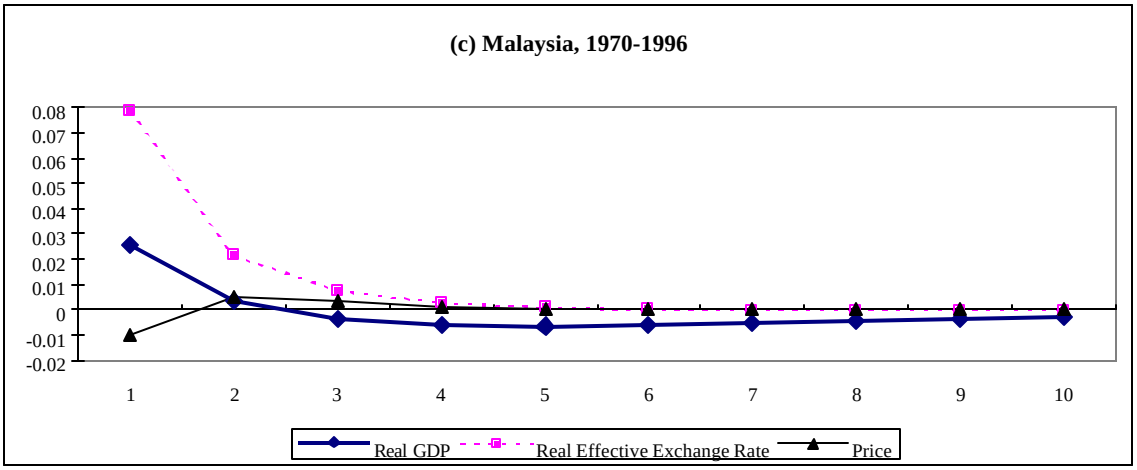
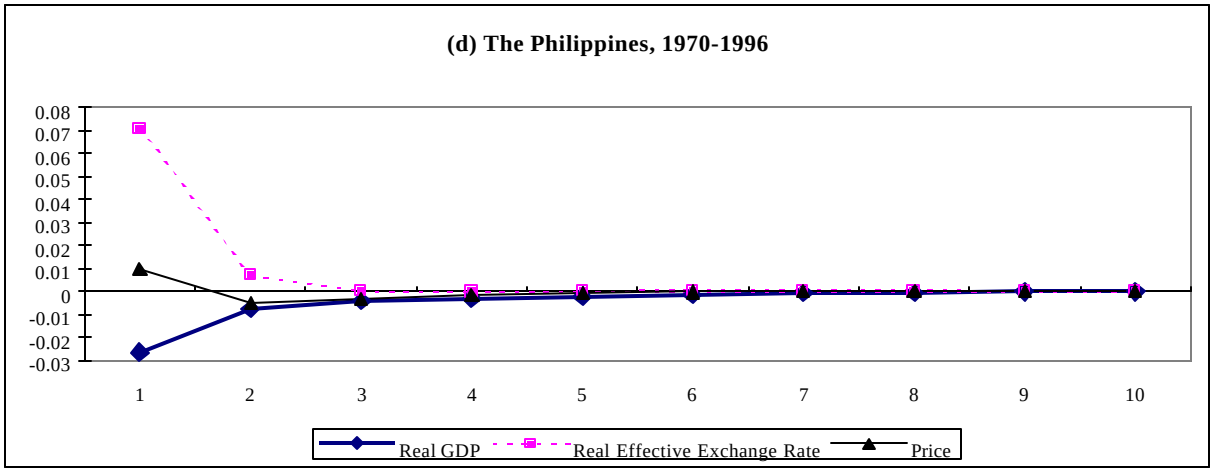


Figure 3. Impulse Responses to a Shock to Real Effective Exchange Rates: Pre-Crisis Sample (Continued)



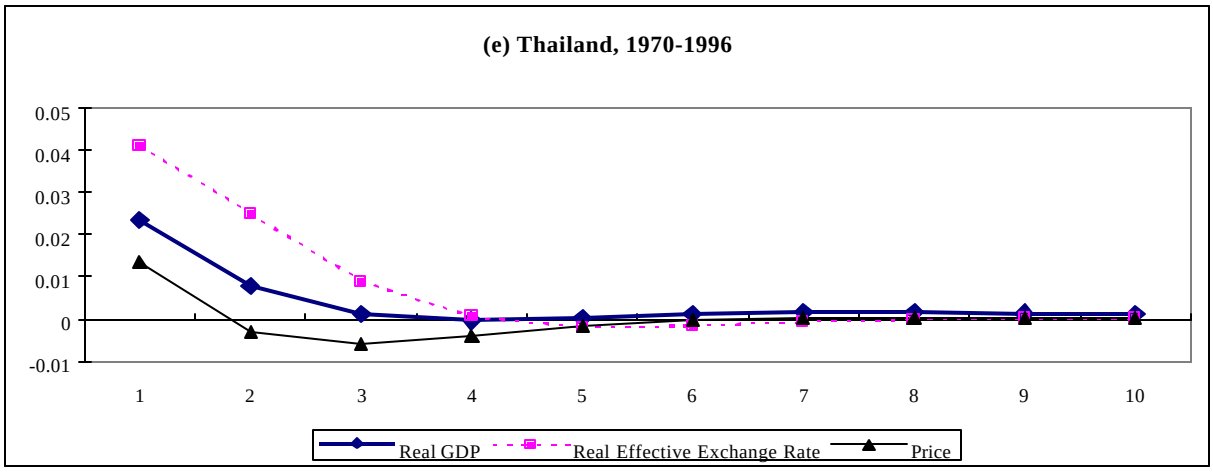
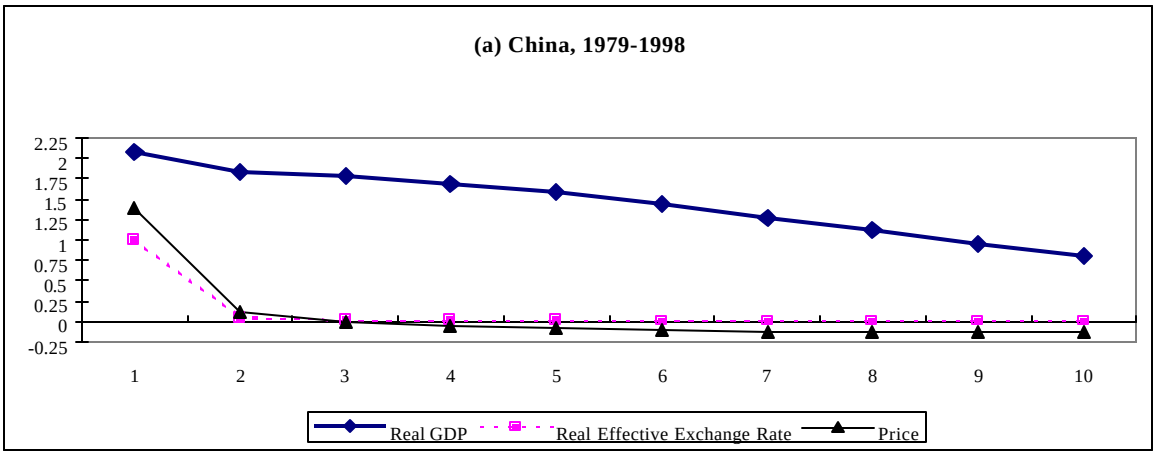
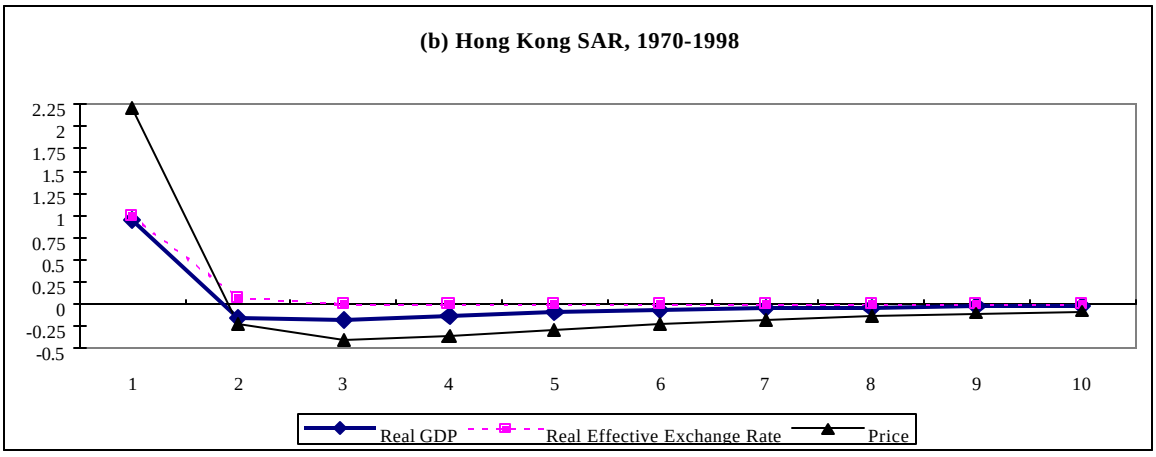


Figure 4. Normalized Impulse Responses to a Shock to Real Effective Exchange Rates: Full Sample





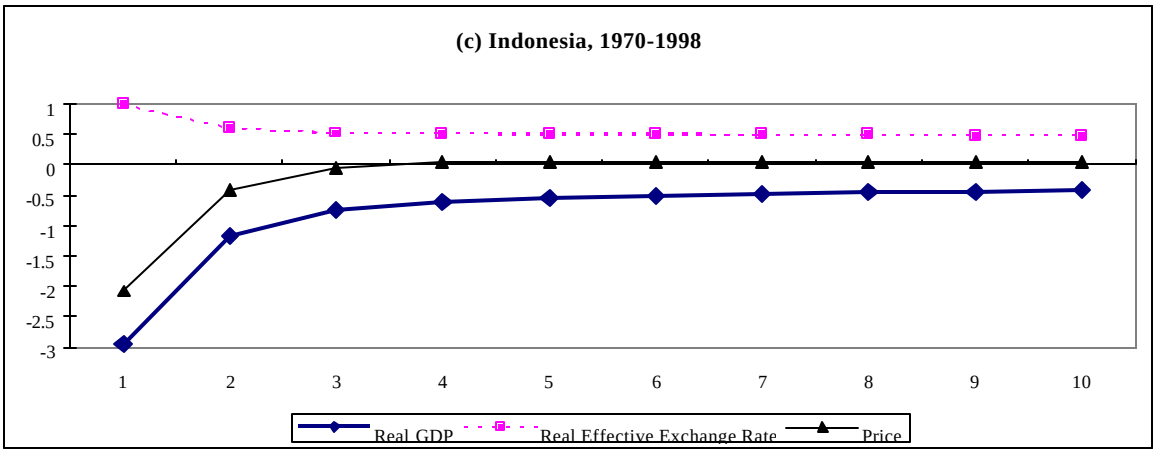
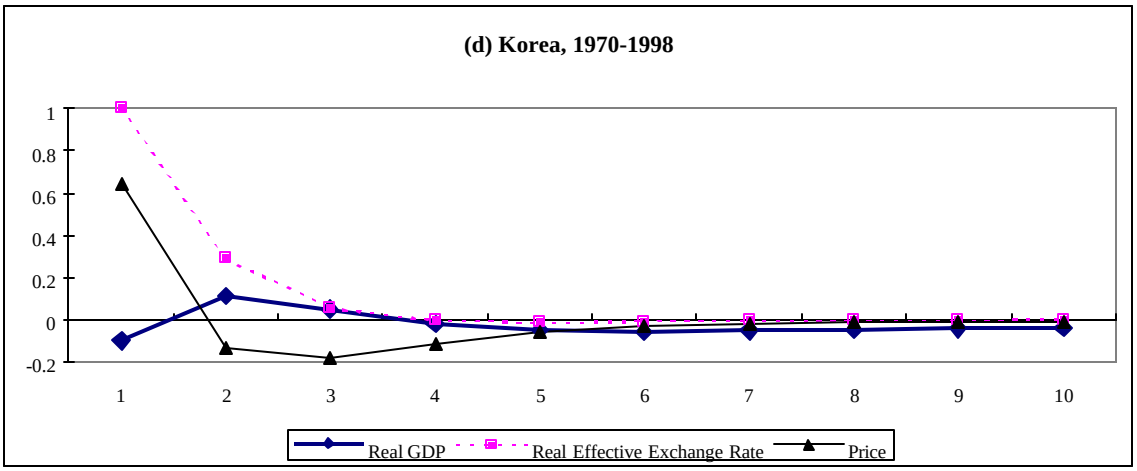
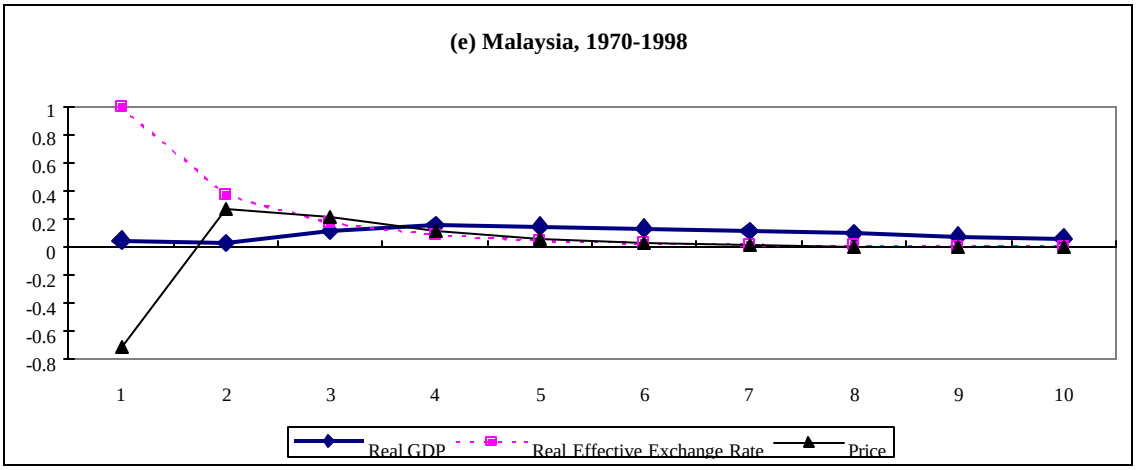


Figure 4. Normalized Impulse Responses to a Shock to Real Effective Exchange Rates: Full Sample (Continued)





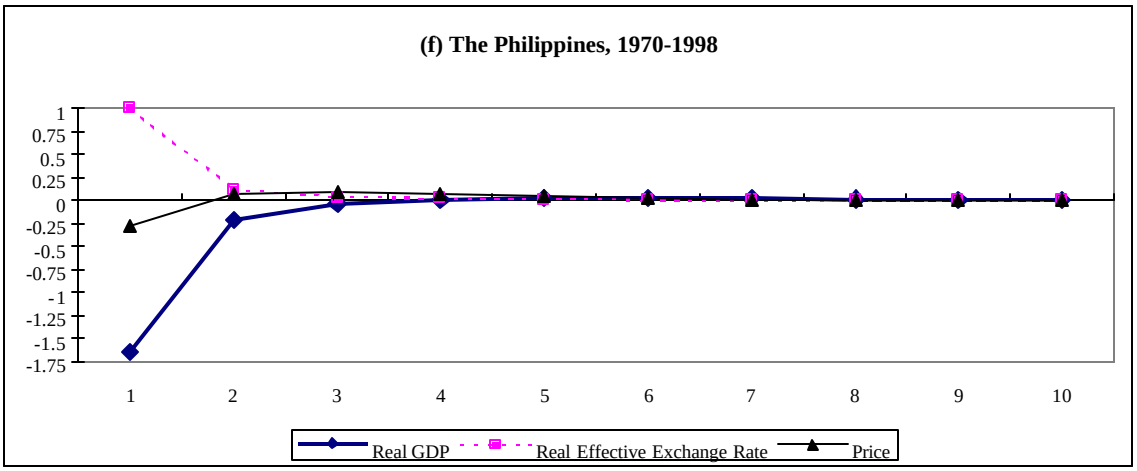
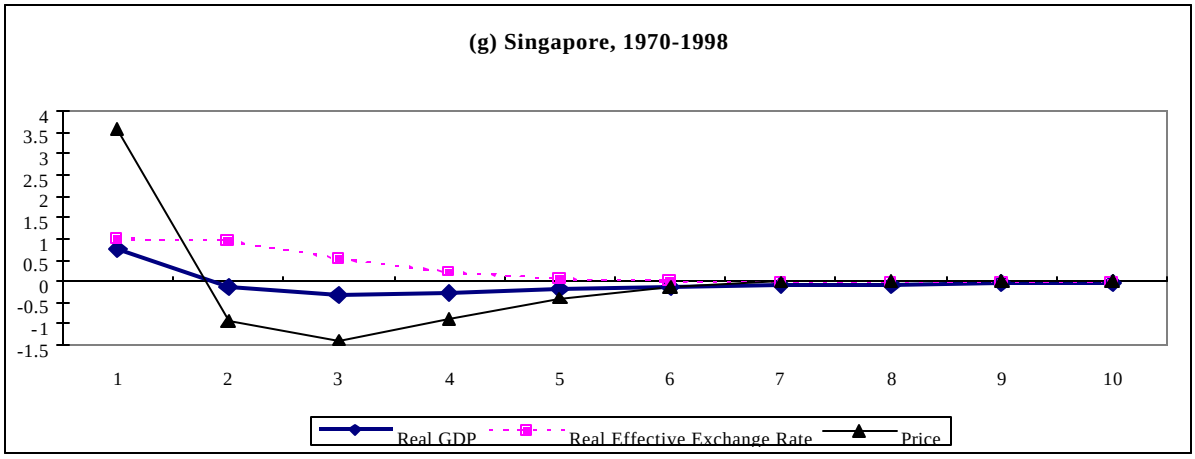
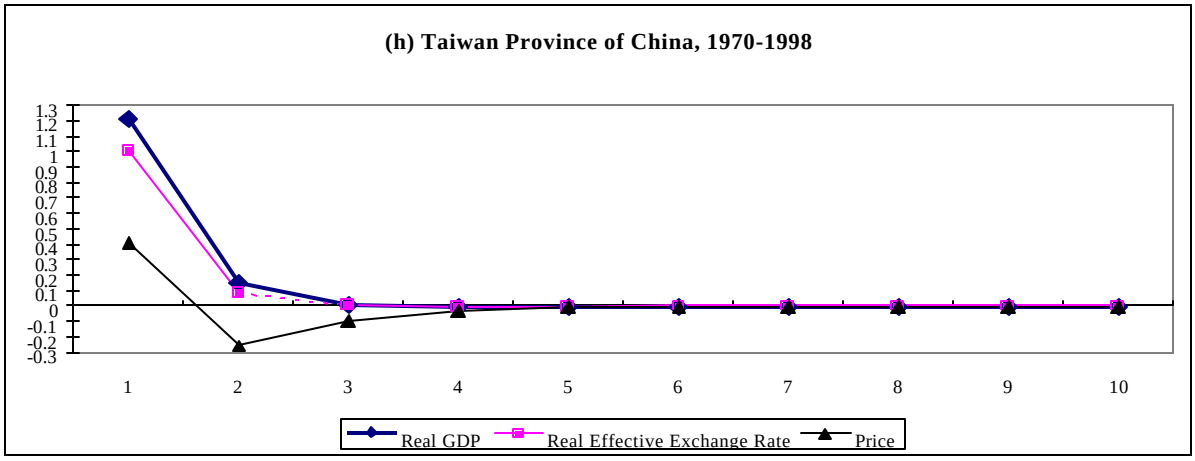


Figure 4. Normalized Impulse Responses to a Shock to Real Effective Exchange Rates: Full Sample (Continued)





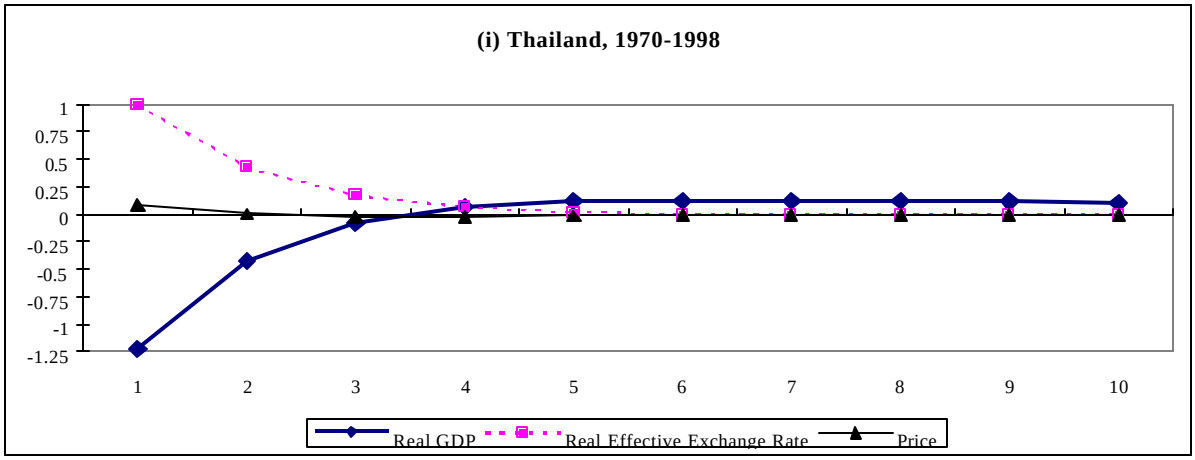
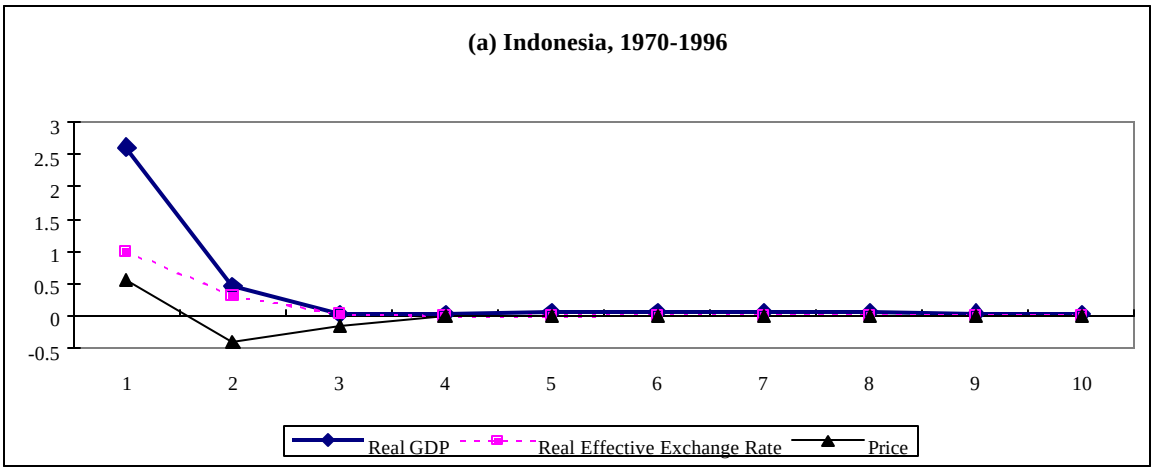
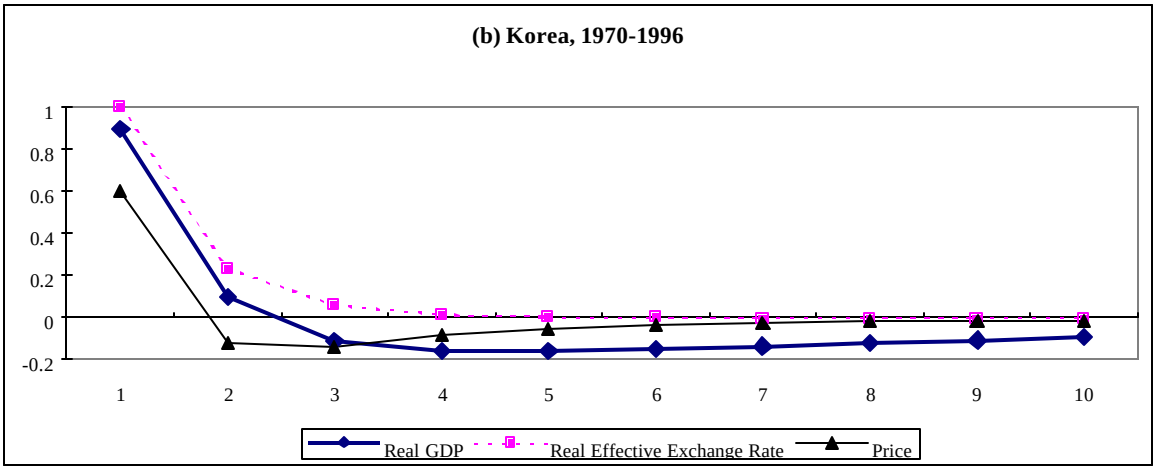


Figure 5. Normalized Impulse Responses to a Shock to Real Effective Exchange Rates: Pre-Crisis Sample





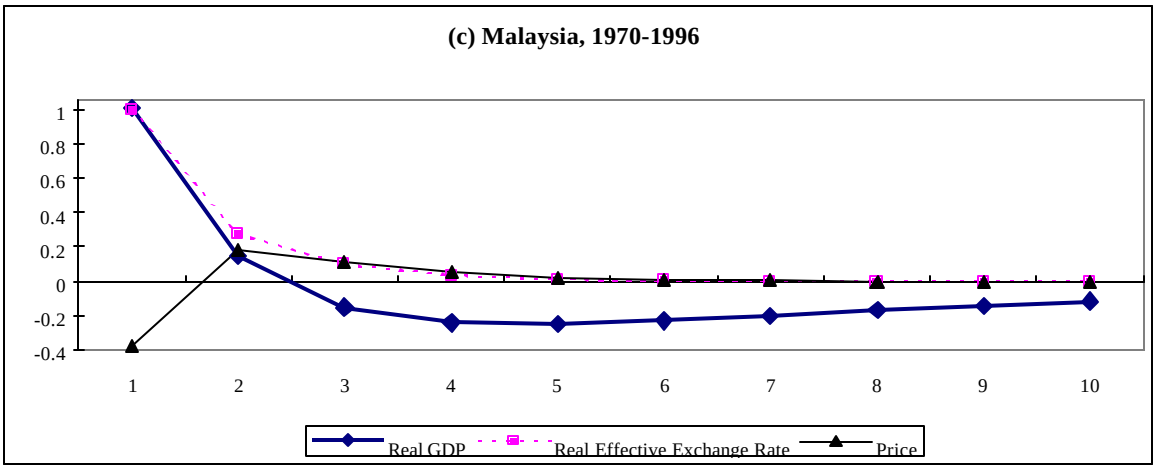


Figure 5. Normalized Impulse Responses to a Shock to Real Effective Exchange Rates: Pre-Crisis Sample (Continued)