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Did the Malaysian Capital Controls Work?

Ethan Kaplan and Dani Rodrik

8.1 Introduction

The Asian financial crisis of 1997–98 wrought havoc with the economies of some of the world's most successful performers. Three of the worst-affected countries (Thailand, South Korea, and Indonesia) were forced to call in the International Monetary Fund (IMF) and to embark on IMF-supported—and IMF-designed—programs in order to cope with the financial crisis. In return for financial assistance from the IMF (and other multilateral and bilateral donors), these countries committed to float their exchange rates, raise interest rates, tighten fiscal policy (at least initially), open up their financial markets to foreigners, close troubled banks and financial institutions, and undertake a range of other structural reforms.

Malaysia took a different path. Instead of going to the IMF, the Malaysian authorities imposed sweeping controls on capital account transactions, fixed the exchange rate at MYR3.80 per U.S. dollar (a rate that represented a 10 percent appreciation relative to the level at which the ringgit had been trading immediately before the controls), cut interest rates, and embarked on a policy of reflation.

Did the Malaysian gamble pay off? Malaysia has recovered nicely since the crisis, but so have Korea and Thailand, two countries that took the orthodox path. It is clear that some of the more pessimistic prognostications

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about the consequences of capital controls have not been borne out, but can we say something more concrete about the relative merits of the capital controls option as a crisis resolution strategy, at least in this particular case?

There has been increasing acceptance in recent years of capital controls on inflows as a *prudential* measure aimed at preventing a buildup of short-term foreign liabilities, particularly in lower-income countries that do not have the capacity to put in place sophisticated financial supervisory regimes. In the words of Michael Mussa (2000), "[h]igh openness to international capital flows, especially short-term credit flows, can be dangerous for countries with weak or inconsistent macro-economic policies or inadequately capitalized and regulated financial systems.[1] However, the use of capital controls on outflows as a *crisis resolution* measure remains highly controversial, despite a clear-cut economic rationale. As emphasized in "second-generation" models of currency crises, a country can be faced with creditor panic and a run on reserves even when it has strong fundamentals. In these situations, a temporary suspension of capital account convertibility can halt the rush to the exits and provide time for policy makers to take corrective action—it can "rule out the bad equilibrium by *force majeure,*" in Krugman's (1999a) words. However, the risk is that capital controls can prove ineffective, undercut market confidence even further, and be used to delay needed adjustments.

In trying to determine the relative success of the Malaysian response to the Asian crisis, we must evaluate the Malaysian controls from four different yet complementary perspectives.

The first issue is narrowly *financial:* Were the controls effective in segmenting Malaysian financial markets from offshore and international capital markets? The increased sophistication of financial markets, and in particular the spread of derivatives (enabling speculators, for example, to disguise short-term flows as direct foreign investment), has led many observers to be skeptical of governments' ability to target specific types of balance-of-payments flows for restriction.[2] Indeed, one might have been doubtful ex ante that the Malaysian government's controls would have been effective in this sense.

Such doubts seem to have been misplaced. The government had no difficulty in sharply lowering domestic interest rates and making the fixed exchange rate stick without the appearance of a black-market premium for foreign currency. As an IMF report states, "there [were] only a few reports of efforts to evade controls, and no indications of circumvention through underinvoicing or overinvoicing of imports" (Kochhar et al. 1999, 8). Another IMF staff report concludes that the controls were effective in eliminating the

1. Mussa precedes this statement by writing: "[T]he experience in recent financial crises could cause reasonable people to question whether liberal policies toward international capital flows are wise for all countries in all circumstances. The answer, I believe, is probably not."

2. See Garber (1998) for a useful discussion of the issues.

offshore ringgit market and choking off speculative activity against the ringgit despite the easing of monetary and fiscal policies (Ariyoshi et al. 1999, 2:50–51). More systematic, comparative evidence is presented by Kaminsky and Schmukler (2000) and Edison and Reinhart (2001). These papers find that the September 1998 controls were successful in lowering interest rates, stabilizing the exchange rate, and reducing the comovement of Malaysian overnight interest rates with regional interest rates.[3]

The second perspective is medium-term *economic.* Did the controls (combined with fiscal and monetary reflation and a fixed exchange rate) allow a faster recovery from the economic crisis and a better economic performance than would have been possible in their absence? In other words, was the financial segmentation put to good use? This is where considerable controversy remains. The question is essentially whether Malaysia would have been better off in the immediate aftermath of the crisis following the orthodox, IMF-prescribed route that the other countries in the region followed. This is the question on which our paper focuses.

Third, we have to contend with a broader *political* question, having to do with the interaction of capital controls with political developments in Malaysia. Opponents of capital controls often argue that controls enlarge the scope for domestic political mischief. The possibility of corruption is mentioned frequently. In Malaysia's case, there is no indication of an increase in petty corruption—the controls were implemented transparently and with remarkable efficiency—but many knowledgeable observers have complained about the intensification of the regime's cronyism. Jomo, for example, argues that the controls served (in part) to bail out the regime's cronies:

> The window of opportunity offered by capital controls has been abused by certain powerfully-connected business interests, not only to secure publicly funded bail-outs at public expense, but even to consolidate and extend their corporate domination, especially in the crucial financial sector. Capital controls have been part of a package focused on saving friends of the regime, usually at the public's expense. (Jomo 2001, 215)[4]

It is also clear that the controls made it easier for Mahathir to get away with firing and humiliating his political rival Deputy Prime Minister Anwar Ibrahim. In fact, Anwar was fired just hours after the ringgit was pegged on 2 September. We shall not have much to say about this angle of the capital controls, but we recognize that a broader evaluation has to take into account their potentially quite negative implications for political governance.

3. Malaysia's controls were the only ones that had this result among all the cases that these authors studied. This may be attributed to the more comprehensive nature of the Malaysian capital controls.

4. See also Johnson and Mitton (2001), which provides some evidence that firms connected to Mahathir experienced a more significant rebound in their stock prices subsequent to the imposition of capital controls.

Finally, one needs also to maintain a *long-term* perspective. Even if controls are successful in the short run, it is possible that their long-term economic consequences will prove damaging. If this were to prove the case, Malaysia's medium-term benefits would have to be juxtaposed against longer-term costs before one could determine whether the policies were ultimately worthwhile. In Malaysia's case, one has to worry especially about the impact on foreign direct investment (FDI). Such investment has played an important role in the country's successful economic development to date, and a substantial drop in FDI would be likely to be bad news.[5] The Malaysian authorities were quite careful to target short-term speculative capital flows, insulating FDI, but there nevertheless remains the possibility that the controls will have a long-term deterrent effect on long-term investors. We will not have much to say on this issue, either. The controls are too recent to ascertain with any degree of certainty their long-term consequences.

With regard to the question that is our focus—did the controls help Malaysia recover faster?—the prevailing view is that the answer remains unclear (see, e.g., Dornbusch, chap. 9 in this volume). The imposition of capital controls in Malaysia coincided with a general improvement in the business climate in the region.[6] Most economic indicators for Thailand and, especially, South Korea sharply turned upward just as Malaysia was beginning its own recovery. By many measures, South Korea's rebound since late 1998 has been more impressive than Malaysia's.[7]

We shall argue that this type of comparison misses an important point. In early September 1998, neither Korea nor Thailand faced another imminent financial crisis. Both had gone through an IMF program (or series of programs), which, with some delay, had begun to restore market confidence in these economies. There was no reason to believe that their policy configurations on 1 September 1998 were fundamentally unsustainable. In fact, sizable improvements in key indicators of market sentiment had already taken place in the months preceding September. In both countries, interest rates had come down sharply, the currency had appreciated significantly, and—at least in Korea's case—there had been a large increase in foreign currency reserves.

Contrast that with Malaysia's situation. When the Malaysian authorities instituted capital controls on 1 September 1998, they did so under the belief

5. According to Athukorala (1998, 20), FDI contributed 73 percent of net capital inflows to Malaysia between 1990 and 1994.

6. However, in many ways, the environment in the world was not as good as it had been a year previously, when Thailand and Korea were implementing their IMF programs. Shortly after the imposition of controls in Malaysia, both Brazil and Russia experienced severe crises. Also, whereas Japanese imports had been rising in late 1997, they were in decline again by late 1998.

7. Malaysia suffered lower declines in real wages and manufacturing employment than Korea, however.

that their existing policies were unsustainable because of intense and continued speculative pressure against the ringgit. Indeed, a simple indicator of financial market pressure that we will discuss later in the paper shows that pressure on the ringgit reached its peak just before the Malaysian authorities decided to implement capital controls. The most concrete form that the speculation took was a large differential between onshore and offshore interest rates for ringgit deposits. Unlike in Korea and Thailand, where interest rates had fallen to single-digit levels by the end of the summer, offshore ringgit deposits were paying rates in the range of 20–40 percent. Although domestic interest rates remained stable due to an interest rate ceiling of 2.5 percentage points over the government-determined base lending rate (Kochar et al. 1999, 62), the large onshore/offshore interest rate differential initiated massive capital flight and a subsequent credit crunch. There was widespread speculation in the market that Malaysia would be the next country to go to the IMF.

Thus, when Malaysia altered its policies on 1 September, it did so because its existing policies were unsustainable and ineffectual. It is hard to believe that Malaysia would have experienced Thailand's or Korea's economic performance in subsequent months while *maintaining* its existing policy configuration. We shall suggest a different counterfactual, namely that the alternative to the capital control strategy was to go to the IMF for assistance—that is, to do what the other countries had done earlier. From this perspective, the appropriate counterfactual for Malaysia is the performance exhibited by the other countries subsequent to their resort to IMF assistance. Formally, this calls for a *time-shifted* difference-in-differences methodology to discern the economic consequences of the controls. In other words, we shall treat the timing of the before and after comparisons as country-specific, centering it on the date that each country called in the IMF or, as in Malaysia's case, imposed capital controls.

Later we discuss at length the identifying assumptions needed to make the time shifting valid and the efforts we have made to reduce possible biases. In particular, we try to control for the external environment (including the decline in U.S. interest rates and the resumption of flows to the region) to ensure that our results are not biased by differences in the overall business climate in the region at the time that each of the countries resorted to its crisis resolution policy. If one accepts the identifying assumptions and is persuaded by the robustness checks, the results are quite strong. We find that the Malaysian controls produced better results than the alternative in almost all dimensions. On the real side, the economic recovery was faster, and employment and real wages did not suffer as much. On the financial side, the stock market performed better, interest rates fell more, and inflation was lower. However, we will also present conventional difference-in-differences estimates for the skeptic, which take 1 September 1998 as the turning point for all the countries. These results are more mixed, but

Table 8.1 **Financial and Debt Indicators, 1996**

	Malaysia	South Korea	Thailand
External debt/GDP	0.39	0.32	0.55
External debt/exports of goods and services	0.41	0.98	1.32
Short-term debt/GDP	0.11	0.20	0.21
Short-term debt/reserves	0.42	2.84	1.03
M2/GDP	1.00	0.46	0.79
M2/reserves	3.64	6.21	3.86
Claims on private sector/GDP	1.45	0.66	1.42
Current account balance (% of GDP)	–4.9	–4.7	–7.9
Stock market capitalization (% of GDP)	310	29	54

Source: Institute of International Finance ([IIF] 1998), except for stock market capitalization, which comes from the World Bank's "Stock Market Capitalization as a Percent of GDP," at [http://wbln0018.worldbank.org/psd/compete.nsf/e376d12c87889e868525649000066l0ce?Open/View].

generally less favorable to Malaysia's policies than to policies pursued by Korea and Thailand.

The outline of the paper is as follows. In the next section we briefly review the nature of the Malaysian controls and summarize existing evaluations of their effectiveness. Section 8.3 is devoted to methodological issues and discusses the appropriateness of time-shifted versus conventional difference-in-differences. In section 8.4 we present evidence that the timing of the Malaysian financial crisis differed in significant details from the Korean and Thai crises. Section 8.5 presents the main empirical results. Section 8.6 discusses some alternative interpretations of the evidence. Finally, we offer concluding remarks in section 8.7.

8.2 Malaysia's Capital Controls and Previous Evaluations

Malaysia entered the Asian financial crisis with relatively strong fundamentals and (thanks to an earlier bout with restrictions on capital inflows in 1994) a much smaller share of short-term external debt in total.[8] Table 8.1 shows some key financial data. Malaysia's short-term debt stood well below its foreign exchange reserves, which made it less prone to a run by foreign creditors. At the same time, as a country with a very high level of indebtedness overall, Malaysia was quite vulnerable to turnarounds in general market sentiment that would be reflected in an increase in interest rates or reduction in credit availability.

Malaysia had the world's highest stock market capitalization ratio (310

8. In response to a surge of speculative inflows in late 1993 betting on an appreciation of the ringgit, the Malaysian government imposed restrictions on the sale of short-term securities to foreigners in January and February 1994. These restrictions resulted in a sharp reduction in short-term liabilities. See Rodrik and Velasco (forthcoming).

percent of gross domestic product [GDP], compared to 116 percent in the United States and 29 percent in Korea). The rise in equity prices had in turn contributed to a domestic lending boom, leaving Malaysia in mid-1997 with a domestic debt-GDP ratio (170 percent) that was among the highest in the world (Perkins and Woo 2000, 237). Private-sector indebtedness was higher than in Thailand and more than double the ratio in Korea. The stock of M2 was equal to GDP (much higher than corresponding ratios for Korea and Thailand). During periods of financial panic, *all* short-term liabilities, whether domestic or foreign, become potential claims against the government's liquid foreign assets. These high levels of debt suggest that Malaysia was not as well protected against financial turbulence as its external liquidity indicators would suggest.

In response to the Thai crisis and the reversal of capital flows to the region, Malaysian authorities at first implemented an orthodox adjustment policy.[9] Interest rates were raised to stem the decline of the ringgit, and in December 1997 a drastic cut (18 percent) in government spending was announced. This policy package mimicked IMF programs elsewhere and was pushed through by Deputy Prime Minister Anwar Ibrahim. Anwar also made clear that he was committed to exchange rate flexibility and that capital controls would not be implemented. Meanwhile, Prime Minister Dr. Mahathir bin Mohamad was blowing off steam against financial market "speculators" and sending very different signals.

The Malaysian economy failed to respond to the orthodox policies. Consumption and investment demand plunged as a result of capital outflows, high interest rates, and a pessimistic outlook. This gave the opponents of Anwar's policies the upper hand, and at the end of June 1998, Mahathir appointed Daim Zainuddin, a former finance minister, to be minister in charge of "tasks relating to economic development." Daim was told to formulate an alternative to Anwar's policies. Daim and Mahathir were intent on reflating the economy through cuts in interest rates and credit expansion, but there was little effective change in monetary policies over the ensuing months. The attempt to reduce domestic interest rates was undercut by growing speculation against the ringgit in offshore markets. Offshore institutions (mainly in Singapore) borrowed ringgit at premium rates (double or triple the prevailing interest rates in Malaysia) to purchase dollars and bet in favor of the ringgit's collapse. The economy's decline continued. This was the background against which the controls were instituted on 1 September.

The primary objective behind the capital controls was to end speculation against the ringgit. Most of that speculation was coming from short-selling of the ringgit in offshore (mainly Singaporean) markets. These markets were offering high interest rates to attract ringgit deposits, which in turn

9. This paragraph and the next are based on Haggard and Low (2000) and Perkins and Woo (2000).

served to fund the shorting of the currency. To shut down offshore trading, the government mandated that all sale of ringgit assets had to go through authorized domestic intermediaries, effectively making offshore trading illegal. All ringgit assets held abroad had to be repatriated. Worried that these measures would lead to an outflow of capital and further depreciation of the currency, the Malaysian government also banned for a period of one year all repatriation of investment held by foreigners. Simultaneously, in an attempt to revive aggregate demand, Malaysia lowered the three-month Bank Negara intervention rate from 9.5 percent to 8 percent, and on 16 September, the liquid asset ratio was reduced from 17 percent to 15 percent of total liabilities. On 15 February 1999, the Central Bank of Malaysia changed the regulations on capital restrictions, shifting from an outright ban to a graduated levy and replacing the levy on capital with a profits levy on future inflows. The controls are described more fully in the appendix.

The government was concerned about the impact of the controls on future capital inflows, particularly of FDI, on which the Malaysian economy is highly dependent. The authorities therefore took pains to ensure that the controls would not affect FDI or current account transactions. Repatriation of profits and dividends from (documented) FDI activities were freely allowed. Foreign currency transactions for current account purposes (including the provision of up to six months of trade credit for foreigners buying Malaysian goods) were also not restricted.

Early reactions to the controls ranged from cautious to hostile. The IMF did not openly condemn Malaysian policies, but it did not hide its views about their inappropriateness either. An IMF spokesman was quoted as saying, "the IMF believes that any restrictions imposed on the movement of capital [are] not conducive to building investor confidence" (quoted in "IMF suggests Malaysian move is a disincentive," *Asian Wall Street Journal,* 2 September 1998, 2). Other observers were less circumspect. Oxford Analytica's *Daily Brief* headline declared, "Exchange controls will undermine Malaysian growth" (15 September 1998). An article in *Forbes International* predicted, "Foreign investors in Malaysia have been expropriated, and the Malaysians will bear the cost of their distrust for years" (Roche 1998). Moody's downgraded Malaysian securities. Morgan Stanley dropped Malaysia from its international index, stating that Malaysia would permanently be excluded from it and that its previous inclusion had been a mistake in the first place.[10] Spreads rose more than 200 basis points for Malaysian bonds in September, while they declined for other East Asian countries (with the exception of Indonesia).

Early prognostications of impending doom were gradually replaced by

10. This is reported in Kochhar et al. (1999, 11). A year later, Morgan Stanley announced that it would reinstate Malaysia in its index, explaining that many investors had remained in the Malaysian market.

more upbeat projections, as it became clear that Malaysia was recovering rather than sinking deeper into crisis. It is instructive to follow the transformation in the pages of successive *World Economic Outlooks* of the IMF:

> [T]he introduction by Malaysia in early September of exchange and capital controls may also turn out to be an important setback not only to that country's recovery and potentially to its future development, but also to other emerging market economies that have suffered from heightened investor fears of similar actions elsewhere. (October 1998, 4)

> Despite stimulative monetary and fiscal policies introduced last year, however, domestic demand is expected to strengthen only gradually. (May 1999, 19)

> [A] strong economic recovery is also now underway in response to fiscal and monetary stimulus and the pegging of the exchange rate at a competitive level. (October 1999, 19)

In May 1999, Malaysia went back to the international market with a $1 billion bond issue, paying a premium of 330 points above the U.S. treasury rate. By June 1999, the *Wall Street Journal* would editorialize that "there never was any doubt that preventing money from fleeing Malaysia could provide short-lived relief" (25 June 1999, A18).

The *Wall Street Journal* notwithstanding, whether (and the extent to which) Malaysian controls contributed to economic recovery remains a highly debated matter. Some scholars, such as Merton Miller, continue to view the controls as an unmitigated disaster.[11] The mainstream view is that it is hard to attribute much success to the capital controls because Korea and Thailand also recovered around the same time without using capital controls. Lim's (1999) account is worth quoting at length, as it is representative:

> Following the imposition of capital controls, economic indicators in Malaysia did indeed start improving. But they also improved at the same time in the other crisis-hit countries which did not impose such controls but maintained open capital accounts. All the crisis-hit countries' currencies stabilized and strengthened, their inflation and interest rates fell, their current accounts moved from deficit into substantial surplus and private capital inflows increased, contributing to the replenishment of previously depleted foreign exchange reserves. Their stockmarkets started climbing, and the decline in their GDP growth rates moderated sharply and have now reversed with positive growth predicted for 1999 as a whole everywhere except Indonesia. Until very recently, the recovery in Malaysia actually lagged behind that of its neighbors who were IMF patients, particularly in inflows of foreign direct investment which fell in

11. Miller was quoted in the *Asian Wall Street Journal* as saying that "the experiment with controls was at best useless. . . . The bad news is that the episode was actually harmful to Malaysia and its citizens" (9 July 1999.)

> 1998 whereas they increased in the other countries (except Indonesia). My own opinion is that capital controls in Malaysia were neither necessary nor sufficient for economic recovery, just as they have obviously not been necessary in the equally if not more impressive recovery of the other crisis-hit Asian countries which followed the more conventional IMF policy prescriptions. Indeed, given Malaysia's much stronger macroeconomic fundamentals and financial institutions before the crisis, one would have expected its recovery to be faster and stronger than that of the other countries. That this has not happened suggests that capital controls—or the heightened political risk which accompanied their imposition—may be exerting a drag on recovery through the discouragement of some foreign capital inflow.

Even sympathizers of capital controls have taken a cool attitude toward the success of Malaysian policies (Krugman 1999b; Jomo 2001), on essentially the same grounds: There was a recovery even in the countries that did not impose controls. Krugman (1999b) writes, "the market panic of 1997–98 was, it turns out, coming to an end just about the time that Malaysia decided to make its big break with orthodoxy."

We shall challenge the view that the financial crisis in Malaysia was about to abate in September 1998 and that an economic recovery was around the corner. Financial market indicators suggest that pressure on the Malaysian currency remained high in Malaysia months after the Korean and Thai currencies had begun to appreciate. It is clear that the Malaysian authorities acted because they believed a sharp change in policies was "needed to avert an imminent financial panic" (Liu 2000, 284). The situation in which Malaysia found itself on 1 September 1998 was akin to that which had forced Thailand and Korea to call in the IMF quite a while back (in July and October 1997, respectively). Moreover, if it is the case that the timing of the financial crisis was different in Malaysia, the fact that Korea and Thailand began to recover at the same time that Malaysia did is not very informative about the relative effectiveness of the Malaysian controls.

8.3 Methodological Considerations

In evaluating the consequences of the Malaysian capital controls, it is natural to use as a counterfactual the experience of the other Asian countries affected by the crisis. This is in fact the strategy adopted by the authors cited above, albeit informally and often implicitly. A difference-in-differences specification is the appropriate framework for thinking about this question.[12] Let y_{it} denote some measure of economic performance of interest, where t stands for time and i stands for one of our four countries ($i =$

12. See Meyer (1995) for a good discussion of the methodological issues in difference-in-differences estimation.

*M*alaysia, *K*orea, *T*hailand, *I*ndonesia). Consider the following representation:

$$y_{it} = \sum_i \alpha_i d_i + \beta d_{t>\tau} + \gamma d_M d_{t>\tau} + u_{it}, \quad (1)$$

where d_t is a country-specific dummy variable ($d_M = 1$ when i = Malaysia and 0 otherwise, and so on); $d_{t>\tau}$ is a time-varying dummy variable that takes the value 1 during the twelve months (or four quarters) that follow $\tau = 1$ September 1998 (i.e., during the one-year period subsequent to the imposition of capital controls in Malaysia), and is 0 otherwise; and u_{it} is the error term. This specification allows y_{it} to have a country-specific, time-invariant intercept (captured by α_i). It also allows y_{it} to be influenced by a common underlying factor during the period that the capital controls were in use in Malaysia (i.e., while the "treatment" is in effect). This time-varying but common effect is captured by the coefficient β. The coefficient of greatest interest is the one on the interaction term $d_M d_{t>\tau}$, γ, which captures the differential effect of the capital controls in Malaysia. With this specification, the average post–September 1998 performance of the comparators (relative to their earlier performance) becomes the counterfactual used in estimating the effectiveness of the Malaysian policies.

Equation (1) represents the conventional application of the difference-in-differences approach to this case. It has the merit that it controls for ("differences out") the effects of both country-specific and time-varying influences that might otherwise be attributed to the use of capital controls. In particular, a common improvement across countries in fundamentals that coincides with the use of capital controls in Malaysia gets washed out by the term $\beta d_{t>\tau}$. We shall present empirical estimates using this approach later on.

However, there is a serious problem with conventional difference-in-differences. For γ to be an unbiased estimate of the effect of the capital controls, an essential identifying condition must hold—we must assume that Malaysia would have experienced the same economic recovery as the other countries in the months following September 1998 had capital controls *not* been imposed. This is implausible for three reasons that we shall elaborate at greater length later in the paper: (1) The timing of the financial crisis was somewhat different in Malaysia. During the summer of 1998, market pressure on Malaysia's currency remained very high, whereas the crisis had already abated in Korea and Thailand. Malaysia's policy configuration during the summer of 1998 looked fundamentally unsustainable. (2) Korea and Thailand had, by September 1998, already undergone nine and fifteen months of "treatment," respectively. In addition, they had both received large loans. It is difficult to believe that Malaysia would have been able to recover immediately to the level of these other countries. (3) Assuming that

Mahathir was intent on firing Anwar, his chief political rival, sometime toward the end of 1998, there were further financial repercussions ahead. Anwar was viewed as the guardian of economic orthodoxy in Malaysia, so his dismissal would likely have aggravated the financial panic.

We will discuss these issues further in the next section. For now, let us simply assume that the Malaysian crisis was deepening in late summer 1998 and that the prevailing policies were unsustainable. Consider the implications for our empirical methodology of the difference in the timing of the crisis and policy response. We would like to know what Malaysia's performance would have been in the absence of capital controls. The answer requires specifying a counterfactual policy response. Luckily, we have a natural counterfactual: going to the IMF for help. This is the course of action that the other countries took once they reached a point in the crisis that required emergency measures. This way of specifying the counterfactual provides us with an alternative identifying assumption: In the absence of capital controls, Malaysia would have had to request IMF assistance to shore up confidence, and its post–September 1998 economic performance would have exhibited the same change that the other economies experienced subsequent to *their* requests for IMF assistance.

This calls for a *time-shifted* difference-in-differences specification, of the following form:

$$y_{it} = \sum_i \alpha_i d_i + \beta d_{t>\tau_i} + \gamma d_M d_{t>\tau_i} + u_{it} \tag{2}$$

The main difference from before is that the time-varying post-treatment dummy is now country-specific (i.e., $d_{t>\tau_i}$ instead of $d_{t>\tau}$), which reflects the argument that the treatment was applied in different countries at different times. The dummy $d_{t>\tau_i}$ equals 1 during the twelve-month period following country *i*'s first appeal for IMF assistance (and, in the case of Malaysia, during the twelve-month period following the imposition of capital controls), and is 0 otherwise.

With this change, the parameters β and γ acquire somewhat different interpretations from those in the conventional difference-in-differences: β captures the effect of undergoing IMF treatment during an economic crisis (relative to outcomes in more normal times), whereas γ captures the differential effect of capital controls in Malaysia (compared to an IMF program). The specification does not allow us to gauge the effects of an IMF program per se, because we observe an IMF program only during a crisis. Thus, β picks up a mix of IMF and crisis effects. This is not a major concern because our main interest, once again, is in the parameter γ. Under the assumption that Malaysia implemented its capital controls at a stage in the financial crisis that is comparable to that at which the other countries called in the IMF, γ is an unbiased estimate of the effect of the Malaysian controls *relative* to the counterfactual of an IMF program. Note moreover that γ picks up the

effects not just of the capital controls, but of the entire post–September 1998 Malaysian package—including the fixed exchange rate, reflation via interest rate cuts, and so on.[13] In particular, it includes the impact of receiving many billions of dollars in loans from the IMF.

A simple analogy helps provide the basic intuition behind the time-shifted difference-in-differences approach we have just outlined. Suppose that two twin sisters, Corinne and May, both catch a virus that, left untreated, will simply continue. Assume that Corinne receives a standard treatment on Sunday. Assume further that May receives no treatment until Wednesday but then receives a special treatment. If we do a standard difference-in-difference analysis, ignoring the fact that the two sisters fell ill on different days, we might look at the difference in the fevers of the two sisters on, say, Friday versus Wednesday. We would then attribute the change in the difference between the sisters' fevers to the medicine that May received. However, such a calculation would be almost certain to lead to the conclusion that the special medicine made the patient worse off. By Wednesday, Corinne has started to recover, while the medicine that May took may not have worked fully.

In this particular case, the disease is the same across individuals, and the individuals are assumed to react to both the disease and any potential medication in an identical manner. Therefore, it is obvious that a more fruitful approach is to compare the time path of the disease after application of the conventional medicine with the time path of the disease following the application of the special treatment. In other words, we would want to time shift across sisters to match the application of the medicine. Replace Corinne with Korea, and May with Malaysia, and the logic of our approach becomes identical.

While time shifting corrects the type of bias just discussed, it creates the potential of another bias. The main risk that we run by using a time-shifted difference-in-differences approach is that there might be a correlation between the external economic environment and $d_{t>\tau_i}$. More concretely, Malaysia may have imposed its controls in a much more favorable environment than prevailed at the time that Korea (or Thailand or Indonesia) implemented its IMF program, and this in turn may account for a substantial part of the speedier recovery in the former country. We cannot entirely rule out this possibility, but we make the following points in our defense.

First, as we shall show below, it is not at all obvious that the external environment was improving for Malaysia during the second half of 1998 in the way that it had been for Thailand and Korea. Pressure on the ringgit remained very strong, even though the Korean won and Thai baht had already started to appreciate. Interest rates in both Korea and Thailand had

13. This is not cause for worry, because these additional policies were enabled in large part by the imposition of capital controls.

declined significantly, whereas offshore interest rates on ringgit deposits remained in double digits. The recession in Korea and Thailand had already bottomed out by September 1998, with Korea in particular exhibiting a healthy rebound, but there were no indications of a similar easing-up in Malaysia. Second, it is not obvious that an improvement in the external environment, to the extent that it did take place, would have produced much benefit for a country that actually cut itself off from international financial markets by implementing capital controls.[14] To the extent that the controls were effective, they would have insulated Malaysia from an improvement in market sentiment (which is in fact an argument that the opponents of capital controls have made). Finally, we try to reduce the scope for spurious correlation by introducing in our time-shifted difference-in-differences regressions several time-varying indicators related to the external context—namely, U.S. interest rates, U.S. inflation rates, U.S. economic activity, and (in the quarterly regressions) a measure of net financial flows to the region.

8.4 Timing and Magnitude of the Malaysian Financial Crisis

Financial indicators for the period suggest that the Malaysian economy was not as hard hit as Thailand, Korea, and Indonesia at the outset of the Asian financial crisis, but that things grew progressively worse for Malaysia even as the pressure eased in Korea and Thailand. We show this using a simple indicator of financial market "pressure" for the three countries.

The financial market pressure index is calculated as a weighted average of the (log) exchange rate, (log) foreign currency reserves (with declines in reserves contributing positively to the index), and the interest rate. This index is similar to the speculative pressure index constructed by Eichengreen, Rose, and Wyplosz (1995). The idea is that financial market pressure must be reflected in a decline in the value of the home currency, a decline in reserves, or an increase in interest rates. As weights, we use the inverse of the monthly standard deviations of each of the indicators, pooling the data for the three countries over the 1989–2000 period. This serves to underweight the more volatile components of the index. In Malaysia's case, we use the offshore interest rate rather than the onshore rate, as the former is the more relevant indicator of speculative pressure. Interest rate caps within Malaysia had made the domestic interest rate largely irrelevant.[15]

Figure 8.1 shows our financial market pressure index for the 1996–2000 period. It is clear from the figure that the speculative attacks differed in their timing. Thailand was hit first, with the peak of the crisis occurring in September 1997. Korea followed with a few months' lag, reaching a peak in

14. Indonesia, for one, did not benefit very much from the return of investor confidence to the region, for reasons that are specific to its own circumstances.

15. Offshore markets did not play as significant a role in the other two countries.

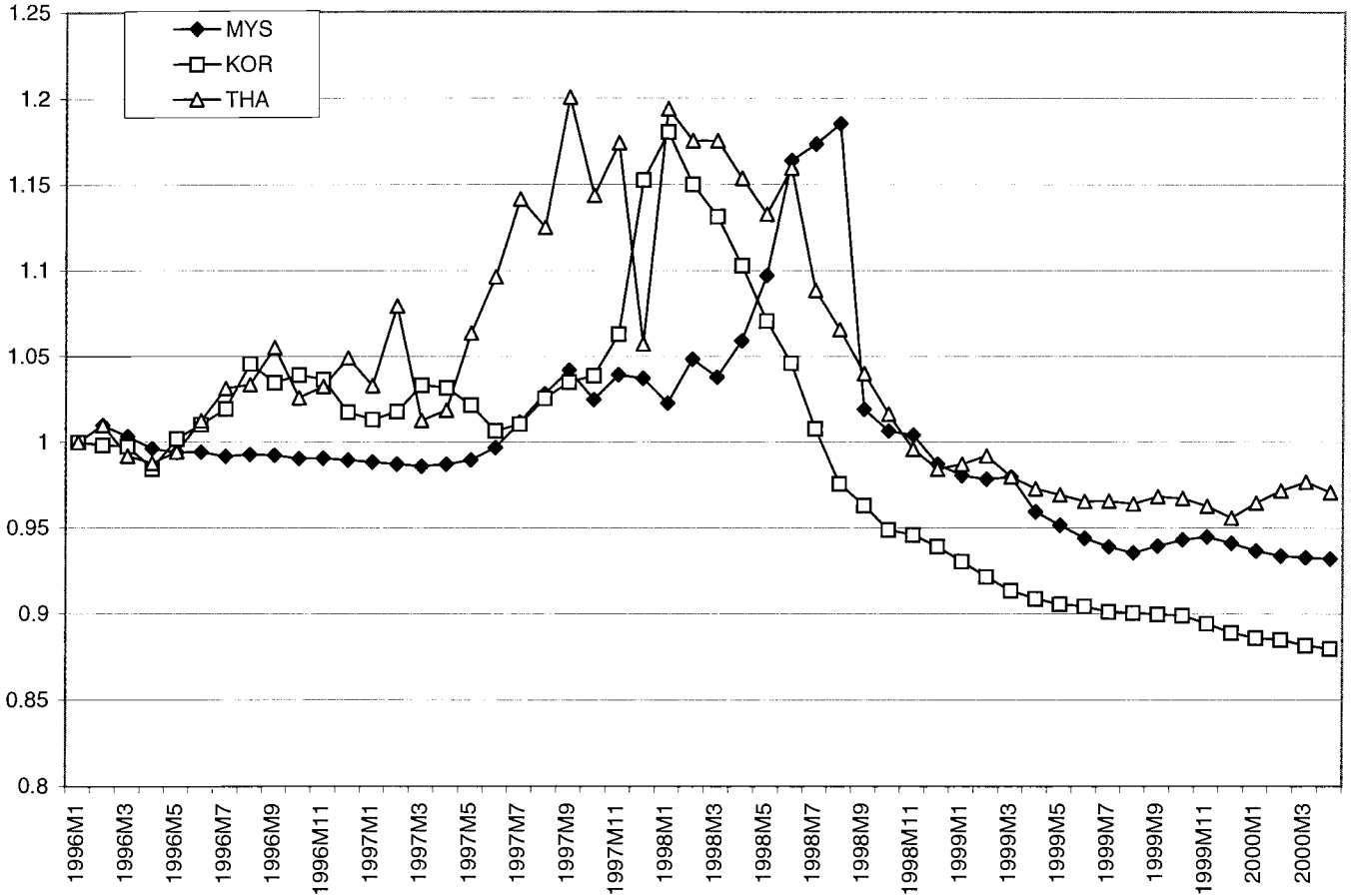

Fig. 8.1 Financial market pressure index (January 1996=1)

January 1998. Malaysia was behind both countries, and it began to experience a sustained increase in the index only during the early months of 1998. The peak value of the index for Malaysia was reached in August 1998, just before the imposition of the capital controls. (The sharp decline in the Malaysian index in September 1998 was due to the closing off of the offshore market and the fixing of the ringgit at an appreciated rate). Note that throughout 1998 the financial pressure index for Malaysia moves in the opposite direction from that for Thailand and Korea. This is a rather clear indication that speculative pressure continued to build up in Malaysia at a time when the other two countries were beginning to breathe more easily.

We can achieve some insight into the reason the indices that the three countries behave so differently by observing the trends in the components of the index. Figure 8.2 shows interest rates, with both onshore and offshore rates displayed for Malaysia. Note the very rapid rise in offshore rates for ringgit after May 1998, at a time when Korean and Thai interest rates were receding from the heights reached in late 1997 and early 1998. Just prior to September 1998, the offshore market was offering ringgit rates of between 20 and 40 percent to attract domestic ringgit (compared to the 11 percent offered by banks in Malaysia). These ringgit deposits were used to fund the short ringgit positions that offshore banks, hedge funds, and portfolio institutions held in expectation of a sharp depreciation.[16] The consequent leakage of ringgit abroad was a major reason that the desired credit expansion within Malaysia failed to take place and that the investment rate plummeted.

Figure 8.3 displays foreign currency reserves. Here the difference between Malaysia and South Korea is especially striking. Korean reserves sharply rebounded in early 1998, while Malaysia's reserves continued to fall. There is no increase in Malaysian reserves until after September 1998. This is also reflected in currency values, as the ringgit continued to depreciate from the end of March (after a rebound in the first quarter of the year) while the won steadily appreciated (fig. 8.4).

By the summer of 1998, Malaysia was viewed from the outside as a country in deep trouble. The media and financial markets were rife with speculation that Malaysia was next in line for an IMF program. The headline of an article in *Barron's* is representative: "Malaise-ia: While Kuala Lumpur Is in Denial, It May Be Next for IMF Aid" (6 July 1998, 28). The trouble was attributed variously to the sidelining of Anwar, the intemperate remarks of Mahathir about the international financial system, and the unsustainability of the reflation policies in view of the pressure on the currency. Far from being out of the woods, the Malaysian economy in late August 1998 was still mired in a financial quagmire. Whether this was partly its own doing is

16. See the description of the foreign exchange markets in Bank Negara Malaysia ([BNM] 1999, 572–77).

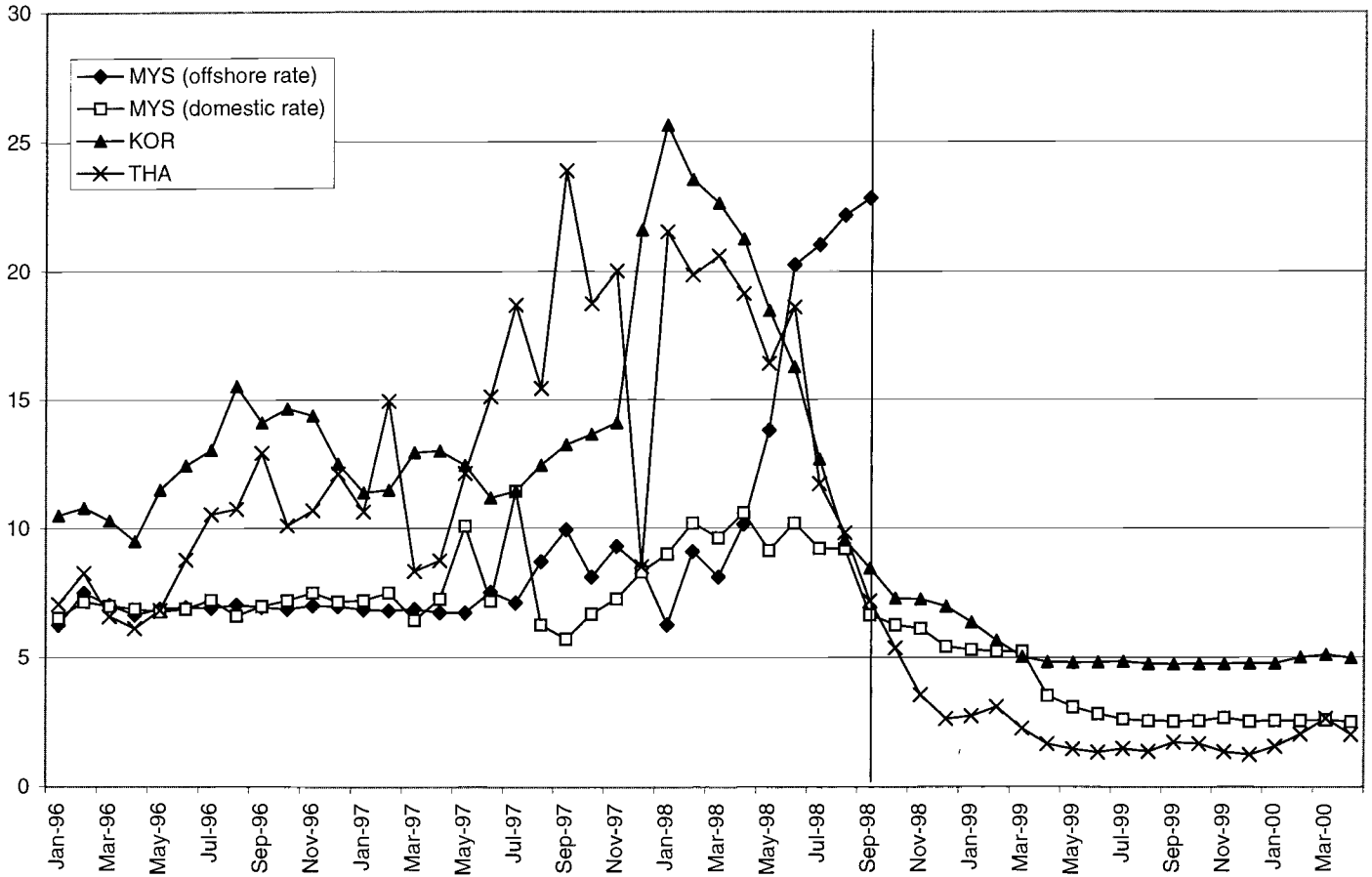

Fig. 8.2 Interest rates

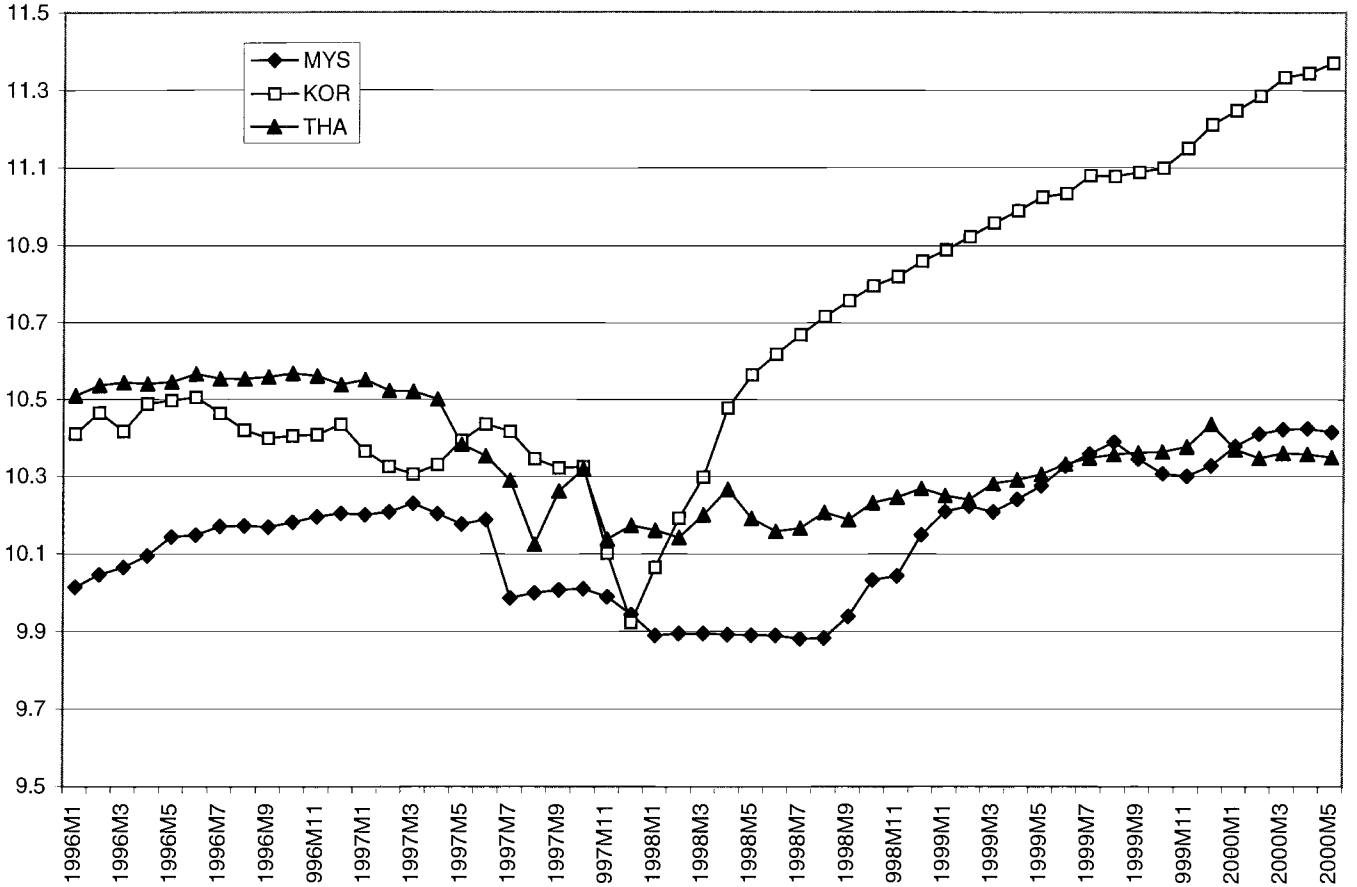

Fig. 8.3 Foreign exchange reserves (log scale)

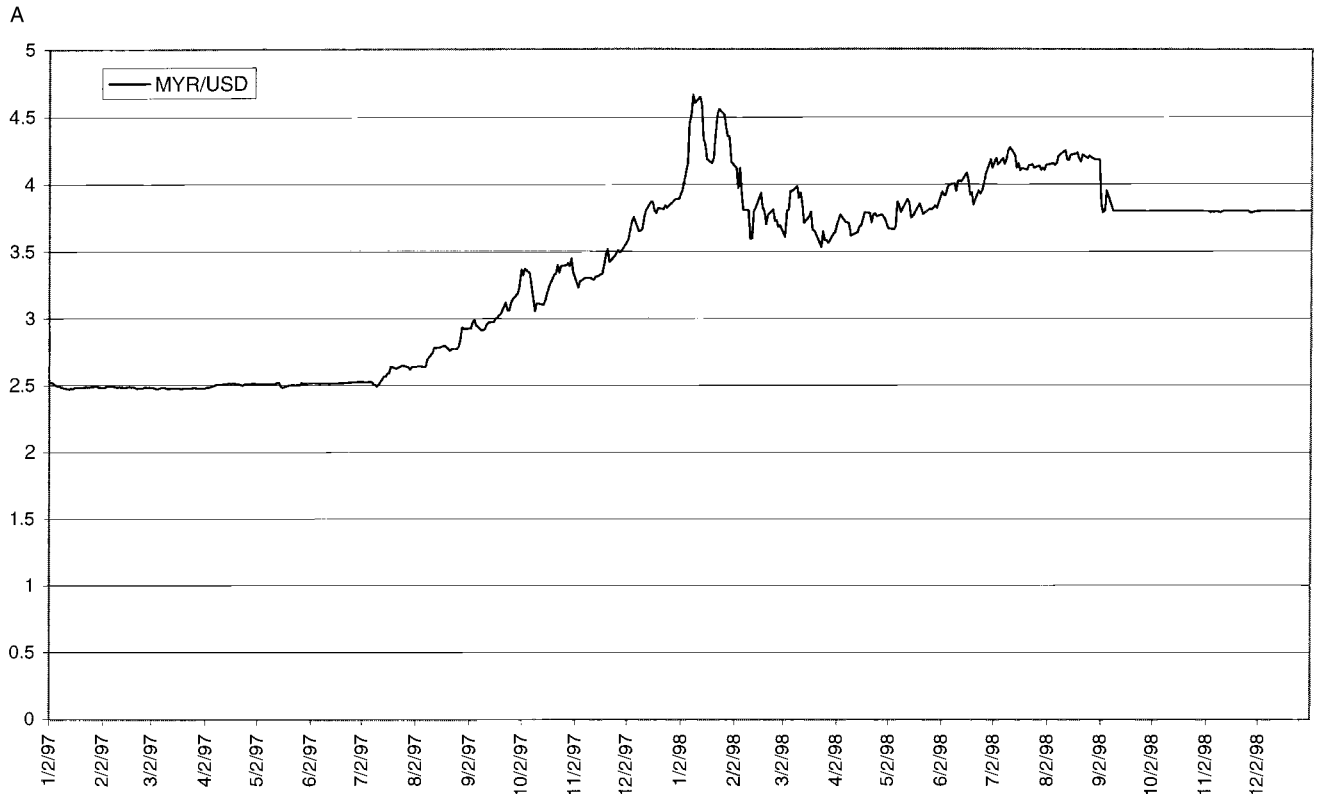

Fig. 8.4 Exchange rates: *A*, Malaysian ringgit; *B*, Korean won; *C*, Thai baht

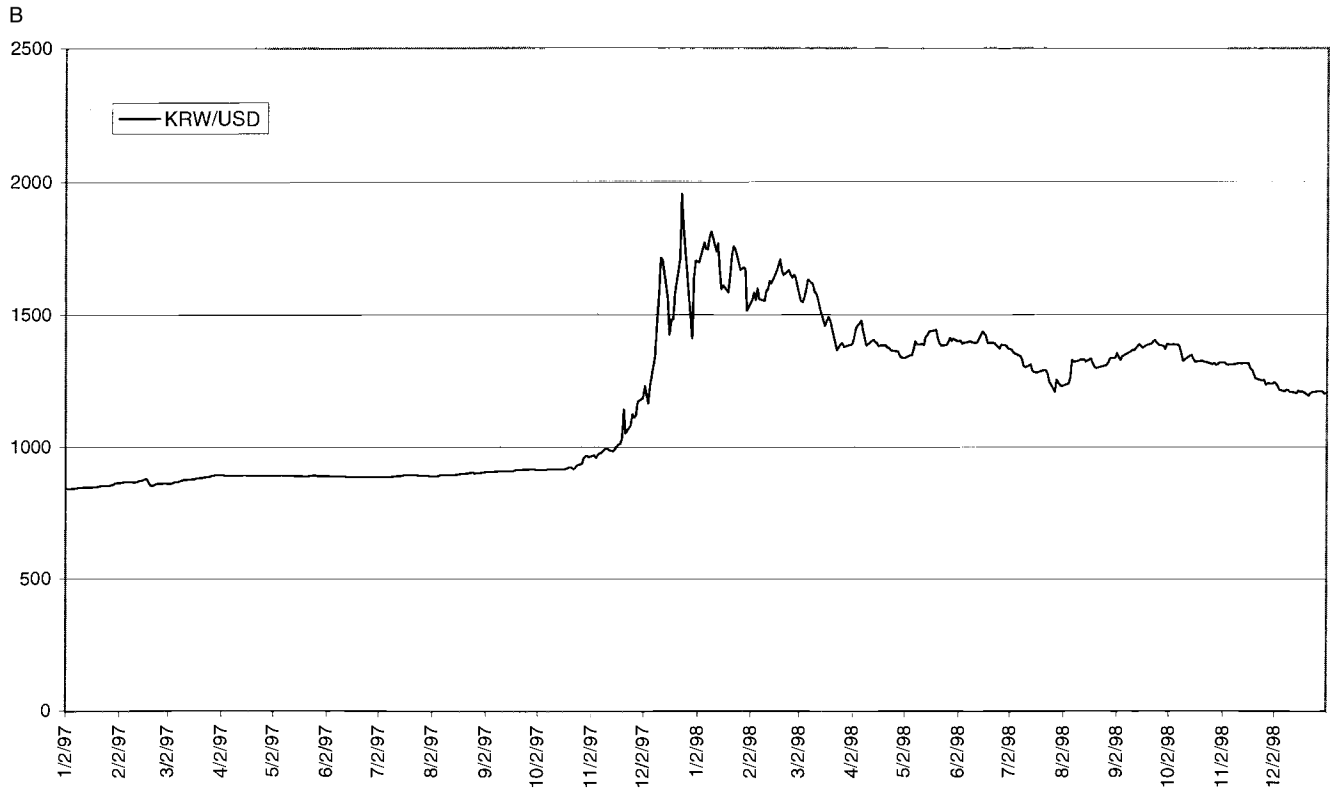
B
2500
2000
1500
1000
500
0
KRW/USD
1/2/97
2/2/97
3/2/97
4/2/97
5/2/97
6/2/97
7/2/97
8/2/97
9/2/97
10/2/97
11/2/97
12/2/97
1/2/98
2/2/98
3/2/98
4/2/98
5/2/98
6/2/98
7/2/98
8/2/98
9/2/98
10/2/98
11/2/98
12/2/98

Fig. 8.4 (cont.)

C
60
50
40
30
20
10
0
THB/USD
1/2/97
2/2/97
3/2/97
4/2/97
5/2/97
6/2/97
7/2/97
8/2/97
9/2/97
10/2/97
11/2/97
12/2/97
1/2/98
2/2/98
3/2/98
4/2/98
5/2/98
6/2/98
7/2/98
8/2/98
9/2/98
10/2/98
11/2/98
12/2/98

Fig. 8.4 (cont.)

irrelevant from our current perspective.[17] The crucial point is that Malaysia's policy framework in September 1998 looked as fragile as Thailand's had been in July 1997 or Korea's in November 1997.

Moreover, the impending dismissal and jailing of Anwar—assuming Mahathir was intent on getting rid of his onetime ally regardless of economics—would surely have made the financial crisis significantly worse. As Perkins and Woo (2000, 230) note:

> Mahathir had foreseen that Anwar's expulsion would lead to violent street demonstrations that, in turn, would induce large capital outflow, given the extreme nervousness among investors in the midst of the financial crisis. . . . If the capital controls had not been in place when the street demonstrations began, the Malaysian ringgit (MR) and the Kuala Lumpur stock market would most likely have gone into a free fall in the manner that the Indonesian rupiah and the Jakarta stock market did in May 1998, just before Soeharto stepped down from the presidency.

As we pointed out above, financial markets viewed Anwar as the guardian of economic orthodoxy in Malaysia and an important counterweight to Mahathir. His removal—whether accompanied by riots or not—would have been an occasion for a run on the ringgit.

This is important insofar as it suggests that the relevant counterfactual for how the Malaysian economy would have evolved *absent* capital controls must include the consequences of Anwar's firing. Therefore, not only was Malaysia in dire financial straits on the eve of the imposition of capital controls, but there is also good reason to believe that the worst was yet to come.

8.5 Empirical Results

The basic regression we estimate is an augmented version of equation (2), discussed previously:

$$(3) \qquad y_{it} = \sum_i \alpha_i d_i + \beta d_{t>\tau_i} + \gamma d_M d_{t>\tau_i} + \sum_j \delta_j X_{it}^j + \sum_k \phi_k Z_t^k + u_{it},$$

where y_{it} is a measure of economic performance that is of interest (for example, growth); d_i is a set of country dummies; $d_{t>\tau_i}$ is the "treatment-period" dummy, which equals 1 during the twelve-month (or four-quarter) period following country *i*'s first appeal for IMF assistance or, in the case of Malaysia, during the twelve-month (four-quarter) period following the imposition of capital controls, and is 0 otherwise; $d_M d_{t>\tau_i}$ is the interaction term of the Malaysia dummy with $d_{t>\tau_i}$; X_{it}^j is a set of country-specific time-varying variables (country-specific monthly or quarterly dummies): Z_t^k is a

17. One ought to remember also that neither Thailand, with its explosive current account deficit and off-balance sheet sales of its reserves, nor Korea, with its huge and partly disguised short-term foreign liabilities, had been paragons of financial virtue.

set of time-varying variables capturing the external economic environment (U.S. interest rates, U.S. inflation, a measure of U.S. economic activity [monthly industrial production index or quarterly real GDP], a measure of net private financial flows to the region [in the quarterly regressions], and a time trend); and u_{it} is the error term. Note that the specification includes a time trend as well as country-specific monthly or quarterly dummies (to guard against possible spurious correlation arising from seasonality in the timing of treatment in different countries). The external economic environment is controlled for by the inclusion of Z_t^k. The parameter β establishes the baseline post-treatment response, while γ is our estimate of the difference that is attributable to capital controls in Malaysia.[18]

The data come mostly from the *International Financial Statistics* of the IMF. Stock market data are from the Emerging Markets Database, and Malaysian employment and wage data are from the *Monthly Manufacturing Statistics* of Malaysia. Where possible, we use monthly data, but because many indicators of real economic activity are available only on a quarterly basis, we supplement the monthly regressions with quarterly regressions as well. The regressions cover the period 1992–96 ("before") and the one year of treatment ("after"). In a few cases, data availability dictates a shorter time span for the "before" period.[19]

Table 8.2 shows the timing of the treatment windows for each country. Our focus is on the one-year period following the seeking of IMF assistance or the imposition of capital controls. This seems to us to be the relevant time span for answering our central question about the speed and vigor of the recovery. In the case of Malaysia, this corresponds to the September 1998–August 1999 period (1998:4–1999:3 in the quarterly regressions). For the other countries, we pick a starting point that follows as closely as possible the date at which the country first requested IMF assistance. We pick that date rather than the date of program announcement or IMF board approval (also shown in table 8.2) because the time lag between these dates, reflecting the bargaining and negotiation with the IMF, seems to us to be a relevant part of the counterfactual.[20] Note that the timing is somewhat more precise with the use of monthly data.

We shall focus on comparisons with Korea, in the first instance due to the more complete data availability in Korea (in comparison with Thailand and

18. Note that with the inclusion of other covariates on the left-hand side of our regression, the difference-in-differences coefficient is a difference that is *conditional* on the covariates.

19. When we include 1997 data in the regressions, the time-shifted results are even more favorable to the Malaysian controls.

20. Had Malaysia gone to the IMF, the implementation of policies would have been delayed, because a certain amount of time would have been lost in negotiations with the IMF on the design of the program. With capital controls, Malaysia was free to implement its policies instantaneously. However, as a robustness check we have also run the regressions taking as the starting point of treatment the date of signing of the letter of intent. This change makes no difference to the results.

Table 8.2 **Timing of Treatment Windows**

Country	Date of First Official Announcement That Country Will Seek IMF Assistance	Date of IMF Executive Board Approval of Program	Treatment Windows	
			Monthly Regressions	Quarterly Regressions
Thailand	28 July 1997	20 August 1997	August 1997–July 1998	1997:3–1998:2
Indonesia	8 October 1997	5 November 1997	October 1997–September 1998	1997:4–1998:3
South Korea	21 November 1997	4 December 1997	December 1997–November 1998	1998:1–1998:4
Malaysia	n.a.	n.a.	September 1998–August 1999	1998:4–1999:3

Sources: Dates are from "Chronology of the Asian Currency Crisis and its Global Contagion," on Nouriel Roubini's web site [http://www.stern.nyu.edu/~nroubini/asia/AsiaHomepage.html] and the IMF web site [http://www.imf.org].

Note: n.a. = not applicable.

Indonesia) on real indicators. However, Korea also has the advantage that it is considered to be the IMF's most successful patient in the region. Since our results indicate that Malaysian controls were also quite successful, it is useful to subject them to a particularly demanding test. Showing that Malaysia did better with its policies than Indonesia did with an IMF program would be hardly convincing, as one might credibly argue that Indonesia's failure arose from idiosyncratic reasons.

Table 8.3 shows the core results, using both time-shifted and conventional difference-in-differences approaches. We present only the coefficient estimates for β and γ and their standard errors for each version of the regression, suppressing other regression output for ease of readability. The way to read the table is as follows. Consider the first row, which shows the results for industrial production. The numbers indicate that in the twelve-month period subsequent to calling in the IMF, Korea witnessed a reduction in its industrial output growth relative to trend of 15.1 percentage points ($\beta = -0.151$). In Malaysia, the reduction in growth following the imposition of capital controls was 5.2 percentage points lower than in Korea ($\gamma = 0.052$), or 9.9 percentage points ($= 15.1 - 5.2$). Both numbers are estimated precisely and are statistically significant at conventional levels. Note that these estimates are conditional on the other controls in the regressions, namely country-specific monthly dummies and the time-varying external variables listed previously.

The last two columns show the corresponding estimates for the conventional difference-in-differences approach. These results are quite different and are less favorable to Malaysia. They suggest that Malaysia's post–September 1998 growth lagged significantly behind Korea's during the same period—a difference in fact of 16.7 percentage points.

The remaining rows repeat the exercise for other variables of interest. The time-shifted difference-in-differences yield consistently strong (and in all cases statistically significant) results in favor of capital controls. Compared to Korea, Malaysia suffered a smaller reduction in manufacturing employment (a difference of 19.1 percent), a smaller drop in real wages (a difference of 10.8 percent), a smaller drop in the stock market (a difference of 22.3 percent), a larger reduction in interest rates (a difference of 3.9 percentage points), less currency depreciation (a difference of 18.5 percent), and a smaller increase in inflation (a difference of 1.8 percent). All of these estimates are statistically significant.

Once again, the conventional difference-in-differences paint a different picture, although the general pattern is less uniform than in the time-shifted case. In some cases these agree with the previous estimates (in particular with regard to employment and real wages). The most striking discrepancies arise, aside from industrial output, for interest rates (a relative increase in Malaysia of 4.9 percent) and inflation (a relative increase in Malaysia of 2.4 percent).

Table 8.3 Estimates of the Effects of Malaysian Capital Controls (monthly data)

Variable	Comparators	Time-Shifted Difference-in-Differences Method		Conventional Difference-in-Differences Method	
		Baseline Effect (β)	Difference in Malaysia (γ)	Baseline Effect (β)	Difference in Malaysia (γ)
Industrial production index (log difference, annual)	Korea	–0.151***	0.052**	0.078**	–0.167***
		(0.030)	(0.022)	(0.037)	(0.025)
Manufacturing employment (log)	Korea	–0.151***	0.191***	–0.138***	0.184***
		(0.017)	(0.012)	(0.011)	(0.008)
Real wages (log)	Korea	–0.279***	0.108***	–0.228***	0.067**
		(0.035)	(0.025)	(0.042)	(0.028)
Stock market index (logs, deflated by CPI)	Korea	–1.018***	0.223***	–0.633***	–0.110
		(0.108)	(0.079)	(0.118)	(0.079)
Interest rates (money market, %)	Korea	3.247**	–3.944***	–5.986***	4.896***
		(1.511)	(1.106)	(0.879)	(0.590)
Exchange rate (HC/$) (logs)	Korea	0.534***	–0.185***	0.391***	–0.040***
		(0.021)	(0.015)	(0.015)	(0.010)
Foreign reserves (logs)	Korea	–0.195*	–0.446***	0.066	–0.696***
		(0.117)	(0.086)	(0.112)	(0.075)
Inflation rate (CPI, annual%)	Korea	0.027***	–0.018***	–0.016**	0.024***
		(0.005)	(0.004)	(0.007)	(0.005)
Industrial production index (log difference, annual)	Korea, Thailand	–0.184***	0.093***	0.218***	–0.164***
		(0.030)	(0.024)	(0.030)	(0.031)
Stock market index (logs, deflated by CPI)	Korea, Thailand, Indonesia	–0.999***	0.201**	–0.054	–0.060
		(0.098)	(0.087)	(0.102)	(0.116)

(*continued*)

Table 8.3 (continued)

Variable	Comparators	Time-Shifted Difference-in-Differences Method		Conventional Difference-in-Differences Method	
		Baseline Effect (β)	Difference in Malaysia (γ)	Baseline Effect (β)	Difference in Malaysia (γ)
Interest rates (money market, %)	Korea, Thailand, Indonesia	18.133***	–21.063***	–22.055***	0.066
		(3.467)	(3.107)	(3.132)	(3.564)
Exchange rate (HC/$) (logs)	Korea, Thailand, Indonesia	0.741***	–0.435**	–0.068	–0.202
		(0.242)	(0.217)	(0.219)	(0.249)
Foreign reserves (logs)	Korea, Thailand, Indonesia	–0.314***	–0.264***	0.426***	–0.691***
		(0.077)	(0.069)	(0.069)	(0.078)
Inflation rate (CPI, annual%)	Korea, Thailand, Indonesia	0.122***	–0.110***	–0.072***	–0.017
		(0.023)	(0.021)	(0.022)	(0.025)

Source: See text.

Note: Standard errors in parentheses. CPI = Consumer Price Index. HC = home currency.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

The bottom panel of table 8.3 recalculates the regressions using as comparators all three countries (Korea, Thailand, and Indonesia) wherever data are available. The coefficients β and γ now have to be interpreted as pertaining to averages for the comparators as a group. The general pattern of results is quite similar to those just reported. Malaysia comes out looking very good in the time-shifted regressions and not so good in the conventional ones. The presence of Indonesia in the comparator sample has a large influence on some of the outcomes—note, for example, the whopping interest rate and inflation results in the time-shifted regressions.[21]

In table 8.4, we present similar estimates with respect to performance measures that are available only on a quarterly basis. For comparison purposes, we also repeat the exercise using quarterly versions of some of the monthly series we discussed above (industrial production, manufacturing employment, real wages, and the stock market index). The time-shifted results are essentially unchanged. With regard to the new variables, we find very strong effects for real GDP growth (a difference in favor of Malaysia of 5.7 percentage points) and private consumption growth (a difference of 8.6 percentage points). We also find a larger reduction in the government surplus, although this is not statistically significant at conventional levels.

How do we interpret these results? Critics of the IMF have argued that the IMF programs in the region aggravated the crisis and exacerbated financial panic (at least during the initial months) by calling for excessively contractionary monetary and fiscal policies, by mandating bank closures, by overreaching in structural reforms, and by not putting enough pressure on creditors for an early standstill on debt repayment.[22] Our findings are consistent with this critique. Taken together, the time-shifted difference-in-differences estimates suggest that the Malaysian policy was more successful in immediately reducing interest rates, stabilizing the currency, and stemming financial panic. This success eased, for the short term at least, worries that the banking system would go under and that there would be a devaluation spiral. The turnaround in market confidence was correspondingly more rapid. In addition, fiscal policy was on balance more expansionary. All these in turn spurred consumption and economic activity.

We would therefore hypothesize that there were two channels through which the capital controls worked. One was the standard Keynesian policy of demand reflation, implemented through expansionary monetary and fiscal policies. The other, and perhaps more operative, channel was the

21. An alternative approach would be to add country-specific interaction terms for Thailand and Indonesia, in which case the same difference-in-differences coefficients can be recovered by subtracting the γs across countries. Because we are interested mainly in the outcomes for Malaysia vis-à-vis the rest of the countries, we do not report those results.

22. Critics differ in their weighting of these different factors. For a variety of critical views, see Krugman (1999a), Radelet and Sachs (2000), Feldstein (1998), Furman and Stiglitz (1998), and United Nations Conference on Trade and Development ([UNCTAD] 2000), among others.

Table 8.4 **Estimates of the Effects of Malaysian Capital Controls (Quarterly Data)**

		Time-Shifted Difference-in-Differences		Conventional Difference-in-Differences	
Variable	Comparators	Baseline Effect (β)	Difference in Malaysia (γ)	Baseline Effect (β)	Difference in Malaysia (γ)
Real GDP (log increase, annual)	Korea	–0.166***	0.057**	–0.047	–0.075***
		(0.048)	(0.024)	(0.062)	(0.025)
Industrial production index (log increase, annual)	Korea	–0.243***	0.080**	–0.022	–0.166***
		(0.074)	(0.037)	(0.089)	(0.036)
Manufacturing employment (log)	Korea	–0.180***	0.203***	–0.142***	0.184***
		(0.043)	(0.018)	(0.040)	(0.049)
Real wages (log)	Korea	–0.229***	0.092***	–0.164***	0.050***
		(0.049)	(0.021)	(0.045)	(0.008)
Stock market index (logs, deflated by CPI)	Korea	–1.656***	0.320**	–1.180***	–0.147
		(0.307)	(0.152)	(0.339)	(0.135)
Government surplus (% of GDP)	Korea	–0.092***	–0.022	–0.105***	–0.020
		(0.032)	(0.016)	(0.035)	(0.014)

Financial inflows (% of GDP)	Korea	0.097	–0.054	0.090	–0.068
		(0.113)	(0.054)	(0.120)	(0.046)
Real private consumption (log increase, annual)	Korea	–0.245***	0.086**	–0.130	–0.048
		(0.084)	(0.042)	(0.090)	(0.039)
Real investment (log increase, annual)	Korea	–0.479**	–0.032	–0.253	–0.317***
		(0.204)	(0.101)	(0.219)	(0.088)
Real government consumption (log increase, annual)	Korea	0.058	0.082	0.077	0.069
		(0.208)	(0.103)	(0.219)	(0.088)
Real imports (log increase, annual)	Korea	–0.400**	0.140	–0.332	–0.001
		(0.183)	(0.090)	(0.206)	(0.083)
Real exports (log increase, annual)	Korea	0.101	–0.134**	–0.144	0.110*
		(0.135)	(0.067)	(0.138)	(0.056)

Source: See text.

Note: Standard errors in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

removal of the substantial uncertainty about the financial system and the exchange rate, uncertainty that had previously depressed confidence and business activity. In other words, capital controls worked to revive demand not only because they allowed the government greater monetary and fiscal autonomy, but probably also because they enabled the return of a modicum of stability to financial markets.[23] However, we need further research before we can make a strong case for either of these channels.

Finally, we note that by choosing capital controls over the IMF, Malaysia missed out on the large capital injections that Thailand and Korea received. This makes it even more surprising, if the time-shifted estimates are to be believed, that Malaysian policy outperformed Korean and Thai policy. It would be interesting to know how Malaysian capital controls would have worked had they been accompanied by billions of dollars in loans. We have nothing to say about this counterfactual except to suggest that it would certainly have improved the performance of Malaysia relative to Korea and Thailand.

8.6 Some Alternative Interpretations

We have argued that the time-shifted difference-in-differences provide a more accurate estimate of the effects of Malaysia's capital controls because the most likely alternative to them was not to wait passively for recovery to take hold but to undergo an orthodox program similar to that implemented in the other countries some months earlier. We shall now review some alternative readings of the evidence that are less favorable to the controls.

Malaysia was not confronted with a serious economic crisis of the type faced by the other countries. This view essentially argues that the time-shifted difference-in-differences estimation is not valid because the crisis was much worse in Thailand and Korea than in Malaysia, so that the difference in average performance reflects a difference in the level of the crisis rather than a difference in the policy response. This argument usually takes one of two forms. The first version asserts that Malaysia's economic problems were largely due to the verbal antics of its prime minister. A second version is that the Malaysian crisis was mostly due to the political uncertainty surrounding the internal battle for power between Mahathir and Anwar. Both sources of uncertainty were reduced dramatically with the imposition of the controls and the firing of Anwar on 2 September 1998.

We do not take a position on whether Malaysian policy prior to September 1998, in combination with Prime Minister Mahathir's behavior, led to an unnecessarily large economic downturn. Nevertheless, it is clear that Malaysia was in the midst of a very severe real economic crisis, one compa-

23. With a precautionary motive for saving, reduced uncertainty should lead to increased consumption.

Table 8.5 **Measures of Economic Activity in Korea and Malaysia Before and After Policy Implementation: Growth Rates (%)**

	GDP		Exports		Consumption		Investment	
	Korea	Malaysia	Korea	Malaysia	Korea	Malaysia	Korea	Malaysia
–4Q	6.45	7.44	6.83	11.30	9.76	8.16	8.55	17.16
–3Q	4.83	5.49	7.18	17.45	8.12	–3.44	2.55	–3.43
–2Q	6.04	–3.19	20.04	21.42	7.38	–14.69	4.70	–26.40
–1Q	5.31	–5.36	21.40	17.92	7.32	–16.74	–1.23	–58.17
Policy	3.53	–11.54	32.15	8.94	0.36	–23.67	–4.48	–80.18
1Q	–4.75	–10.83	54.62	4.45	–11.43	–11.44	–21.50	–57.60
2Q	–8.29	–0.75	33.35	0.19	–9.15	1.50	–25.25	–34.42
3Q	–8.45	3.93	24.38	10.62	–7.29	5.28	–25.65	–19.18
4Q	–6.13	8.59	3.45	15.79	–0.22	10.40	–21.05	1.89
5Q	5.27	9.56	–26.97	18.40	10.99	6.65	–2.51	1.65

Source: IMF (various issues).

rable with the crises experienced by Thailand and Korea, by the time the controls were implemented. The crisis went considerably beyond the financial market pressure on the ringgit. Looking at table 8.5, we can see that Malaysia had a larger contraction in economic activity prior to the controls than Korea did at any time during its crisis. Also, in the quarter during which Malaysia implemented controls, the country experienced a larger reduction in output than Korea ever sustained.[24] Given the evidence on output contraction, we believe that it is not tenable to discount the Malaysian crisis as somehow a fiction and due mostly to capital controls.

Malaysia simply benefited from the improvement in the external environment. This represents the standard view of the Malaysian recovery, and we have already given some reasons to be skeptical of it. First, it is not at all clear that Malaysia was benefiting much from the return of investor confidence to the region, which was already under way in September. As we have seen, financial indicators in Malaysia were moving in the direction opposite to those in Korea and Thailand. Even setting aside Anwar's forthcoming political demise, there is no reason to presume that conditions would have improved for Malaysia any time soon. They certainly did not for Indonesia. Nor did they for Russia or Brazil, which were hit by financial panic some months later.

Second, even if one thinks that the pressure against the ringgit was about to ease up, it is not clear why Malaysia would have benefited from the improvement in investor sentiment after having imposed capital controls to insulate itself from financial market conditions. This is a problem, espe-

24. Malaysia implemented capital controls in the last month of the third quarter, so that most of the decline in third-quarter output occurred before the implementation of the controls.

cially if one is predisposed toward open capital accounts as a general rule. It is difficult to argue that capital controls isolate an economy from the benefits of financial markets while maintaining that one receives the same benefits regardless of whether one has capital controls or not.

Finally, as we have already pointed out, we do include in our regressions the salient features of the external environment. In particular, we include a measure of total net financial flows to four countries in the region (South Korea, the Philippines, Indonesia, and Thailand) in the quarterly regressions (table 8.4).[25] This measure is displayed in figure 8.5. The net outflow from these countries averaged $8.0 billion in the first four quarters after Korea went to the IMF, but only $1.7 billion in the first four quarters of the Malaysian controls.[26] We also control (in both our monthly and quarterly regressions) for U.S. interest rates, which fell significantly in October 1998. Since we control for these differences, our results must be interpreted as the effect of capital controls after netting out the impact of the external environment.

Malaysia's recovery was essentially due to the IMF-style policies it had put in place in 1997. A related argument is that the IMF-type policies that Malaysia followed while Anwar was still in charge of economic policy were bearing fruit and that the recovery is attributable to the delayed effect of these policies rather than the controls. As we mentioned above, there is in fact scarce evidence that the real economy was about to turn around in Malaysia. If anything, the economy was sinking deeper as time went on.

While it is impossible to be definitive on this score, it is instructive to compare Malaysia's performance prior to September 1998 with Korea's. Figure 8.6 shows a measure of the "output gap" in industry for the two economies, calculated as the residual from a regression of the industrial output index on a time trend and monthly dummies. The first thing that is clear from the picture is that the recessions in the two economies were not perfectly synchronized: Malaysia's recession lagged behind Korea's, which supports our argument that the timing of the crisis was different in these countries. More to the point in the current context, it is clear that Korea's turning point came in July of 1998, while Malaysia continued to deteriorate. (Malaysia was not the only country in the region for which this was true: Indonesia continued to experience severe decline throughout 1998 and into 1999.) The Malaysian economy bottomed out months later, in January

25. Since financial flows are available only on a quarterly basis, we could not include a similar measure in the monthly regressions. The latter do include other proxies for the external environment, however—namely, U.S. interest rates, inflation, and industrial production.

26. Flows to the region are obviously endogenous, but introducing this variable in the regressions biases the results *against* the Malaysian policies: If the large outflow while countries were under IMF programs is the result in part of the poor performance of those economies, "controlling" for these outflows makes the IMF programs look more successful. Removing flows from the quarterly regressions generally works to the advantage of the Malaysian controls.

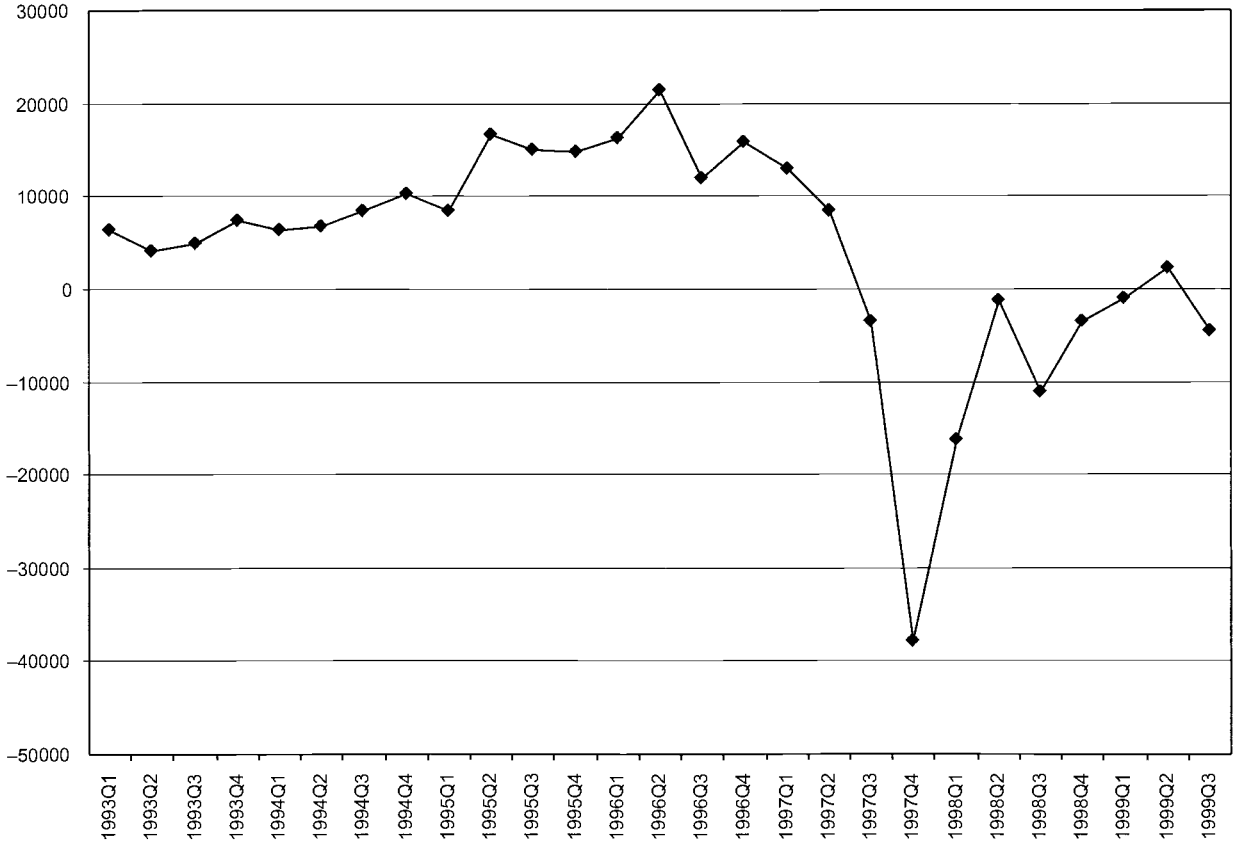

Fig. 8.5 Net financial flows to the region

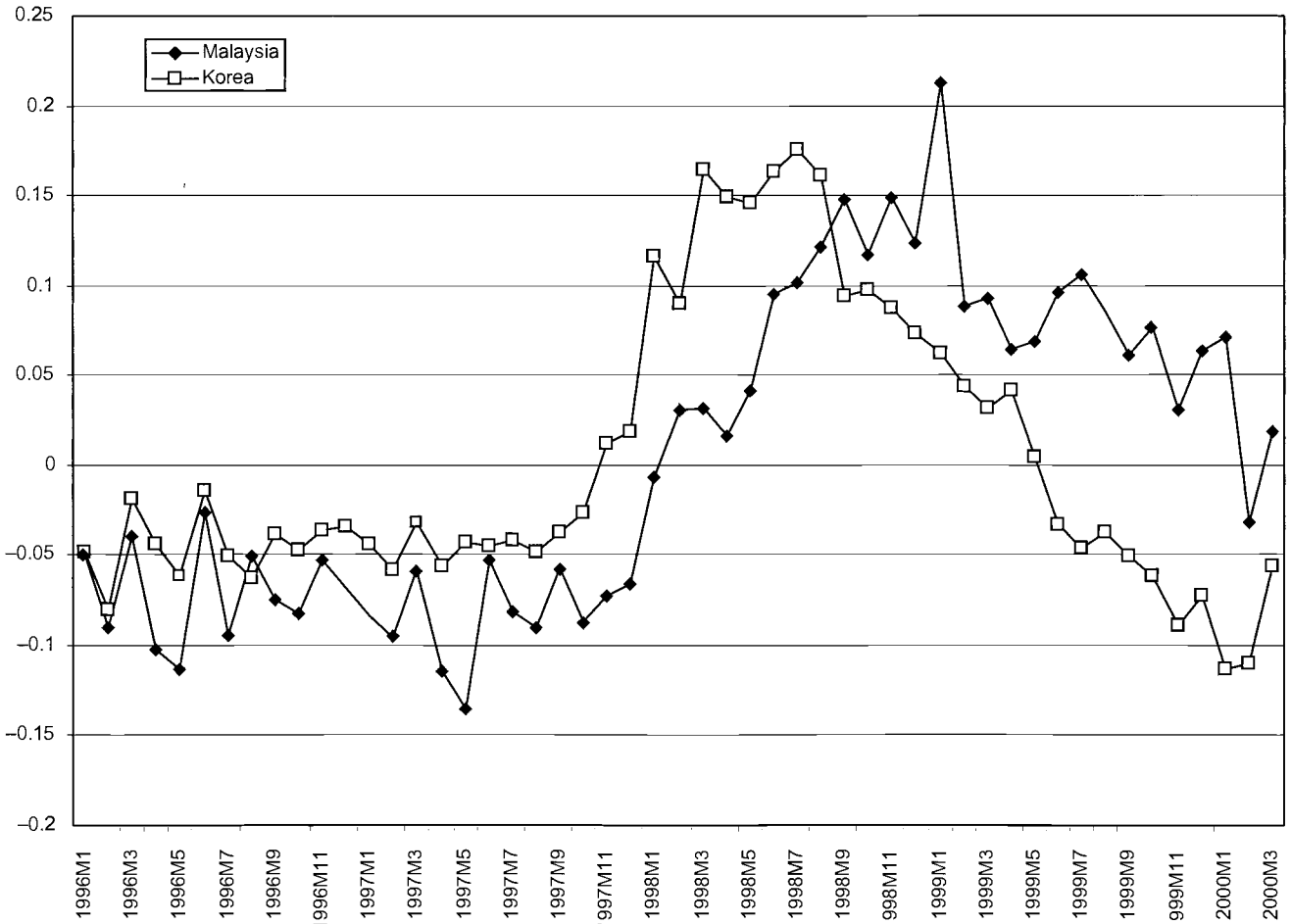

Fig. 8.6 Industrial "output gap"

1999. In other words, by September 1998 one could have been reasonably confident that the Korean recovery had begun. There were no such signs in Malaysia.

Malaysia made things worse for itself by delaying decisive policy action. We have little disagreement with the view that Malaysia would have been better off had it been able to resolve its difficulties before September 1998. However, this is largely irrelevant to the question at hand, and not simply because all the countries in the region experienced their share of self-inflicted harm.

Would Malaysia have been wiser to go to the IMF in late 1997 instead of waiting for another year and reacting as it did in late 1998? Perhaps. However, on the basis of the evidence presented here, one might also argue that Malaysia would have fared even better if it had imposed capital controls sooner—better than with an earlier IMF remedy, and better than it did subsequently. There is presumably less of a downside to capital controls when capital is leaving the region (as in 1998) than when it is coming back (as in 1999). Furthermore, to the extent that delay makes the eventual policy adjustments more costly, our results must underestimate the relative advantage of capital controls.

8.7 Concluding Remarks

We posed three questions at the outset about the near-term consequences of the Malaysian capital controls. Were the controls effective in segmenting financial markets and providing breathing room for monetary and financial policies? Did they allow a speedier recovery than would have been possible via the orthodox IMF route? Did they allow the leadership to do politically nasty things? We have given affirmative answers to all three questions. The longer-term question about the country's access to FDI and other forms of external finance is harder to answer with the available evidence, and we have not said much about it.[27]

This paper's main contribution has been to recast the comparison between Malaysia and the other countries in the region in a manner that, to our mind, makes more sense. Previous comparisons have asked how Malaysia performed relative to Korea or Thailand after September 1998. We have asked instead how Malaysia performed compared to Korea or Thailand when the latter were undergoing their IMF programs (although we made allowance for changes in the external environment). We have shown that the first approach yields answers that on balance make the

27. There are indications that FDI into Malaysia may have slowed down and that bond spreads have remained a bit higher in relation to other countries in the region (Liu 2000). On the other hand, Korea and Thailand are left with large debts to the IMF and other international lending institutions; Malaysia did not accumulate such debts.

capital controls look bad. The second approach yields answers that make the controls look very good.

Our preferred counterfactual is based on the view that Malaysian policies in the summer of 1998 were unsustainable, that the pressure against the ringgit was building up, that the economic decline was not about to be reversed on its own, and that the realistic alternative to the capital controls was an IMF program of the type that the other countries undertook. For our results to be credible, it must also be the case that we have adequately controlled for the external environment. On the other hand, the conventional counterfactual requires us to believe that the intense offshore speculation against the ringgit was about to stop of its own accord, that the Malaysian economy was about to turn the corner even without any fundamental change in policies, or that an IMF-style program would have produced an immediate recovery for Malaysia (even though Korea's and Thailand's IMF programs did not do so).

In closing, we simply invite the reader make up his or her mind about which of these counterfactuals makes more sense, and to form conclusions accordingly.

Appendix

Malaysian Controls on Capital and Exchange Controls, 1–2 September 1998

1. Malaysia fixed the exchange rate at MYR3.80 per U.S. dollar.
2. Prior approval was required for nonresidents to be able to buy or sell ringgit forward.
3. All sale of ringgit assets was required to be transacted through approved domestic intermediaries. This effectively shut down the operation of the offshore ringgit market.
4. Nonresidents were required to obtain BNM approval to convert ringgit held in external accounts into foreign currency, except for the purchase of ringgit assets in Malaysia or for the purposes of conversion and repatriation of sale proceeds of investment made by foreign direct investors.
5. Settlements of imports and exports were required to be settled in foreign currency. However, free exchange was maintained for all current account transactions in addition to supply of trade credit to nonresident exporters of Malaysian goods.
6. Credits to external accounts were limited to salaries, wages, rentals, commissions, interest, profits, dividends, or sale of foreign currency, ringgit instruments, securities, or other assets in Malaysia.
7. Debits to external accounts were restricted to settlement for purchase

of ringgit assets and placement of deposits; payment of administrative and statutory expenses in Malaysia; payment of goods and services for use in Malaysia; and granting of loans and advances to staff in Malaysia.

8. Domestic nationals were forbidden to export more than MYR10,000 during any travels abroad. Foreign nationals were forbidden to export more than MYR1,000 upon leaving Malaysia.

9. After 1 September 1998, nonresident sellers of Malaysian securities were required to hold on to their ringgit proceeds for at least twelve months before repatriation was to be allowed.

10. A ban was placed on the provision of domestic credit to nonresident correspondent banks and stockbroking companies.

1999 Changes in Controls

1. As of 15 February 1999, the year-long moratorium on repatriation of investments was replaced with a graduated tax. All capital having entered Malaysia before this date were subject to the following levies on the capital being removed: (a) 30 percent if repatriated within the first seven months after entering Malaysia, (b) 20 percent if repatriated between seven and nine months after entry, (c) 10 percent if repatriated between nine and twelve months of entering, and (d) no levy if repatriated after one year of entry.

2. For funds entering Malaysia after 15 February 1999, capital was free to enter and leave without taxation; however, profits were taxed at the rate of 30 percent if repatriated within one year of entry and 10 percent if repatriated after one year of entry.

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Comment

Liliana Rojas-Suarez

The paper by Kaplan and Rodrik is an important contribution to the well-known debate on capital controls. Views on the desirability and effectiveness of capital controls have changed quite significantly over the last three decades. As is often the case, consensuses are questioned and revised after a major international financial crisis, and those on capital controls have not been the exception. For example, although in the 1970s there were large numbers of supporters of capital controls, the debt crisis of the 1980s brought about a renewed emphasis on the benefits of capital account liberalization. Many perceived capital controls, especially to the outflows, as an incentive to perpetuate "bad" domestic policies and, therefore, to generate capital flight. To a large extent, multilateral organizations praised the benefits of capital account liberalization, while recognizing that appropriate stabilization policies and structural reforms were needed as preconditions for establishing capital account convertibility on a sustainable basis.[1] Albeit to very different degrees, a large number of emerging markets embarked on a process of freeing international capital transactions as part of their overall reform efforts.

This consensus was revised again after the severe banking crisis that accompanied the exchange rate crisis in Mexico in mid-1994. The crisis led a number of analysts to identify the benefits of capital controls to the inflows as a "prudential" device to avoid intermediation of large amounts of short-term capital inflows through weak banking systems. These controls have taken a variety of forms including taxes, quantitative restrictions, and reserve requirements discriminating against short-term deposits denominated in foreign currency. A policy response to large capital inflows that has gained increased acceptance with International Monetary Fund (IMF) officials is a combination of controls on short-term inflows and liberalization on all other kinds of flows (outflows and long-term inflows).

The East Asian crisis of the late 1990s brought about a renewed interest in the discussion of capital controls. This time around, the motivation was provided by the drastic controls to the *outflows* imposed by Malaysia on 1 September 1998. If capital controls to the *outflows* were assessed to be a malaise of such long-term consequences, why did Malaysia, which imposed controls in the midst of the crisis against the advice of markets and multilateral organizations, seem not to have paid a higher price in terms of economic recovery than the rest of the Asian countries, which abstained from impos-

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1. As is well known, important contributions to the literature by Frenkel (1982) and Edwards (1989) concluded that the opening of the capital account should occur late in the sequencing of stabilization and structural reform programs in emerging markets in order to avoid capital flows that would make the reforms unsustainable.

ing controls? Moreover, could it have been the case that the imposition of controls actually benefited Malaysia by accelerating the recovery process?

Kaplan and Rodrik deal with this issue by posing two fundamental questions: (a) were capital controls in Malaysia effective in segmenting Malaysian financial markets from offshore and international capital markets, and (b) did the capital controls allow a faster economic recovery than what could have been achieved under an IMF program? In both cases, their answer is yes. The evidence presented in response to the first question is that the controls resulted in the death of the offshore ringgit market and allowed domestic interest rates to decrease. To respond to the second question, the authors used a time-shifted difference-in-differences methodology (rather than the conventional difference-in-differences) to identify the economic outcomes resulting from the controls. Although the authors are very careful in pointing out the limitations of the chosen methodology as well as the issues that require further research, the clear policy conclusion that readers of this paper derive is that capital controls to the outflows can be a desirable policy tool with which to confront severe external pressures against the exchange rate.

In commenting on this paper, one can follow different paths. It is tempting to stress the limitations of the methodology and the restrictive assumptions needed and, in general, to question the real value of a counterfactual approach in an environment where so many other things are changing. I will, however, resist the temptation to follow that route and instead offer a quite different interpretation of the events.

Let me start by pointing out that I strongly believe that a serious analysis on capital controls in Malaysia needs to go beyond the sole focus on the controls to the *outflows* in September 1998 to incorporate the effects that the history of temporary capital controls on *inflows* had on the economy. Throughout the 1990s Malaysia imposed a series of temporary capital controls. Starting with limits on non–trade-related swap transactions on commercial banks in June 1992 and following with a long list of controls to inflows that lasted for most of 1994 (combined with the outspoken "antispeculators" statements of Prime Minister Dr. Mahathir bin Mohamad), agents dealing with Malaysian securities became aware that sudden changes in the rules governing transactions of cross-border financial flows were not only possible but likely.[2] This, together with limits on interest rates set by the central bank (Bank Negara Malaysia), gave a strong impetus to the growth of the offshore ringgit market, which was free of regulations and controls.[3]

2. For a summary of controls imposed in Malaysia during the 1990s, see Reinhart and Smith (1997).

3. The Central Bank sets the base lending rate (BLR). In addition, it enforces a ceiling over the BLR as the maximum that banks can charge borrowers for most type of loans. See Kochhar et al. (1999).

The motivation for imposing controls during the mid-1990s was to prevent speculative inflows that could lead to an excessive appreciation of the real exchange rate. As is usually the case, the policy intention of containing the inflows was twofold: to maintain monetary policy independence and to avoid a possible sudden reversal of the inflows and the concomitant adverse effects to economic and financial stability. While the controls were successful in the short run in containing the real appreciation of the ringgit, my overall assessment of the experience is that the long-run outcome was negative, as the controls contributed to the exacerbation rather than the amelioration, of the large outflows of 1997–98. I explain this contention in the following paragraphs.

Subsequent to the imposition of controls on inflows, a typical pattern emerged: In the face of profitable opportunities, controlling a market creates incentives to "shift" the market somewhere else, either abroad or to the informal sector (as with Latin America in the 1980s). This is exactly what happened in Malaysia, as evidenced by the growth and deepening of the offshore ringgit market. As often happens, during good times (1995–96) developments in the offshore market did not conflict with the conduct of domestic monetary policy, because the behavior of offshore interest rates was consistent with domestic monetary policy. However, as experience also shows, attempts to segment markets prove extremely difficult in bad times (1997–98). Aware that Mahathir would resist sharp increases in domestic interest rates in the presence of the overall economic slowdown that followed the Thai crisis and weaknesses in domestic financial markets, speculators perceived an opportunity to short the currency.[4] They did so in the "efficient" offshore market, raising interest rates to more than 40 percent when domestic rates were kept at only 10 percent. The resulting massive capital outflows to finance the speculation were inevitable. In other words, by creating the market conditions to allow for large and quick building of positions against the currency, the temporary capital controls imposed *before* September 1998 had long-run adverse consequences. Indeed, contrary to the argument that the temporary controls to the inflows in the mid-1990s limited the extent of the outflows in 1997–98, I would argue that the mechanisms and instruments developed in the offshore market after the inflow controls allowed for a very rapid transfer of large amounts of resources abroad.

It is in this context that Malaysia imposed drastic capital controls on *outflows* on 1 September 1998. How one interprets their effectiveness largely depends on what side of the debate one is on. If one is a defender of capital controls, one will argue, like Kaplan and Rodrik, that the controls worked

4. The extremely high ratio of stock market capitalization to GDP reflected the large amounts of bank credit dedicated to the purchase of stock (see Dornbusch, chap. 9 in this volume). In this environment, it was easily perceived by speculators that sharp increases in domestic interest rates would have severe adverse consequences to domestic financial markets.

because they killed the offshore ringgit market and, therefore, stopped the speculation. However, even assuming that the authors are right and that the speculation was not dying at the time controls were imposed (as argued by International Monetary Fund [IMF] reports; see, e.g., IMF 1999), the critical issue to me is that the attack did not have to start in the first place—at least, not with the severity it did. The combination of a "relative" low domestic interest rate policy, domestic financial fragilities, and a free offshore market that had grown enormously because of the history of controls in Malaysia was deadly. The offshore ringgit market attracted large amounts of capital outflows, and that capital was gone at the time the controls were imposed on 1 September 1998. True, the controls killed the ringgit market, but to call that "effective" is, from my point of view, a somewhat nearsighted account of events. My view is that although temporary drastic capital controls can work in the short run, they also have permanent adverse effects in the long run and tend to reduce the effectiveness of intended policies.

However, Malaysia recovered after the imposition of capital controls to the outflows, and if this recovery can be attributed even partly to the imposition of drastic controls to the outflows, many would find the controls justifiable. Once again, however, there is no consensus about the causes of the recovery. While Kaplan and Rodrik find evidence that Malaysia's output performance was better off with the controls than with the counterfactual of an IMF program, others argue that external events such as the sharp cut in U.S. Federal Reserve rates were at the core of the recovery of the Asian economies, including Malaysia. Given the multiplicity of fast-moving events taking place in the international capital markets, I think the relationship between economic recovery and outflow controls in Malaysia will remain an unresolved issue.

Kaplan and Rodrik support their empirical exercise by arguing that the relevant and realistic alternative to the capital controls in Malaysia was an IMF program, similar to the ones in Korea and Thailand, rather than the continuation of existing policies. Although I can see the merits of analyzing the alternative "counterfactuals," the truly interesting question from my point of view is why capital controls to the outflows were indeed an option open to the Malaysian authorities. Isn't the fear of a potential lack of access to international capital markets a powerful deterrent for countries to follow this policy? We did not see other countries in the Asian region or elsewhere reacting to the crisis with the imposition of drastic controls. Why was Malaysia different? I believe that the best answer to this question can be found in Haggard and Low's (2000) interpretation of events. Mahathir did not fear exclusion from international capital markets because Malaysia had secured funds from Japan through his outspoken support to Japanese foreign policy initiatives, the most prominent one being a Japanese-centered Asian Monetary Fund. Indeed, as shown by Haggard and Low, Japan be-

came a major source of external finance to Malaysia during the period 1998–2000, including funds from the Miyazawa Initiative.

Thus, to me, the lessons are quite different from those than can be derived from Kaplan and Rodrik's paper. First, examining the entire recent history of capital controls in Malaysia leads me to conclude that controls were part of the problem and not part of the solution. It was because of the problems generated by temporary controls on *inflows* in the mid-1990s that radical measures against the *outflows* became a policy choice.

Second, an emerging market does not have to fear loss of access to international capital markets if it can negotiate financial resources on a political basis. Will we see the emergence of a Japan-dominated Asian Monetary Fund as the result of political agreements between countries in the region? Could such an institution be effective in helping to prevent crises, or would the political arrangements exacerbate the moral hazard problem and, instead, contribute to unsustainable policies? Of course, it is now too early to attempt to provide answers to these questions.

Understanding the Malaysian events fully also allows us to explain why other regions of the emerging-market world, such as Latin America, could not be in a position to deal with the international financial crisis and avoid contagion through capital controls. The straightforward reason is that Latin America was not in a position to secure access to international sources of funds beyond those available in the international capital markets or through multilateral organizations.

In 1993, I wrote a paper with Don Mathieson on the issue of capital controls ("Liberalization of the Capital Account"). Our conclusion was that the effectiveness of capital controls could at best be only temporary and that it depended on initial conditions (the degree of economic and financial imbalances). I believe that our basic conclusion remains as valid now as it was then, but the Malaysian experience has added an interesting new dimension to the analysis. Among initial conditions, the off-market political capacity to arrange for external (or internal) sources of funds needs to be taken into account.

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Discussion Summary

Nouriel Roubini disputed the view that the Malaysian capital controls were effective. According to him, in the summer of 1998 when the controls were imposed, the speculative pressure from the hedge funds was already relieved as a result of the hedge funds' huge losses following the Russian default, the intervention in Hong Kong, and the reversal of the yen. He said that hedge funds had already begun to reduce their positions in these countries at that time, which led to a major appreciation of the currencies of Australia, New Zealand, Singapore, and South Africa.

Roubini also noted that the overall market conditions in Malaysia before the crisis were better than in other crisis countries: The current account deficit was mostly financed by foreign direct investment, and the real depreciation of the ringgit was not as large as in other countries. Despite this, he said, the recession in Malaysia during the crisis was as deep as in other countries, and this implied that there was a lot of political rhetoric against speculators in Malaysia.

Finally, Roubini said the data suggested that Malaysia had similar experiences as other countries. It was growing at a speed similar to that of other countries until 1997, was struck by as big a recession as the others in 1998, and recovered similarly afterward. For example, the fall of nominal interest rates in Korea and Thailand (where no capital control was imposed) between September and December 1998 was as sharp as in Malaysia. In addition, Malaysia was effectively following an IMF program during the crisis period. He concluded that all the evidence suggests that there is no difference effectively across crisis countries and no evidence to support the claim of the effectiveness of capital control policies in Malaysia (relative to the IMF programs followed by other countries).

Shang-Jin Wei pointed out that some of the largest negative effects of capital controls are potentially the loss of confidence and foreign invest-

ment and the difficulty for the country to access foreign capital markets. Therefore, it is striking that the paper found that foreign direct investments in Malaysia were not affected. Wei also suggested studying the possible differential effects of capital controls on different forms of capital flows in addition to those on the total amount of capital flows.

Martin Feldstein commented that the wealthy Chinese minority in Indonesia, which used to be protected by the Suharto regime, pulled out its capital at the fall of Suharto. He asked if the Chinese minority played a comparable role in Malaysia and if this posed a considerable risk for the Mahathir regime. Feldstein also asked how the authorities in other Asian countries think of the Malaysian capital control policies as a way to deal with currency crises.

Eduardo Borensztein emphasized international trade as an important part of the external environment. He said that the reason Korea and Thailand did not experience much export expansion after their large devaluation was regional; that is, exports to Asia dropped dramatically. He said that the recovery of the region was very important and explained why the recovery of Malaysia was synchronized with other countries in the region.

On whether the controls were effective, Borensztein added that foreign direct investors could circumvent the control policies through big loopholes, as their remittance and dividend payments were not constrained. Had there been a large differential in interest rates, multinational companies could easily have circumvented the controls. He said that the fact that we did not see these evasive actions on the part of multinationals suggests that the controls were probably not binding.

Robert Dekle noted that the capital controls of Malaysia imposed in 1994 reduced its capital inflow relative to the GDP dramatically (from 2.00 percent to 0.02 percent). He said that this was why Malaysia had much less capital inflow than other countries in 1997 and that it also played a key role in saving Malaysia from the contagion of the crises.

Roberto Rigobon made the remark that the results of the paper were partly driven by the data on interest rates, which were affected by the offshore interest rates. He pointed out that the financial indices constructed with overnight interest rates on stock markets or exchange rates would date the Malaysian crisis much before December 1998 because the devaluation of the ringgit was much greater and overnight interest rates were much higher in 1997. He asked if the finding on the effectiveness of capital controls would be robust to these indices. Rigobon also commented that the finding that capital controls were not, at least, damaging, is a point worth emphasizing, given that most priors about the capital control policies are that they are costly.

Charles W. Calomiris noted that the external environment controls mainly had to do with the United States, which is a major source of the im-

port demand for Malaysia. He suggested including trade-weighted real exchange rate changes of Malaysia's export rivals in the regression.

John McHale asked why Malaysia was under such a great financial pressure in the middle of 1998. He suggested that one possible explanation could be that Malaysia was perceived as a country that would contemplate imposing capital controls and the investors had an incentive to get their money out of the country. The option of imposing capital controls in difficult circumstances can therefore create a situation in which it is actually needed, remarked McHale.

Sebastian Edwards emphasized that when evaluating the control policies, it is important to note that Malaysian capital controls were temporary. He said this is a different situation from the earlier controls reported in his book on exchange rate crises (1999), in which he looked at forty major crises in the 1960s and 1970s and found that capital controls were imposed mostly after the crises and were not lifted after a long period (three years).

Ethan Kaplan first said that he agreed with the comments that the long-run consequences of the capital control policies are not clear. He said that the paper addressed a more modest question, namely, whether capital controls were effective in terms of increasing various measures of real and financial performance, such as growth rates, consumption, investments, and trade.

To the criticism that one cannot compare the experience of Malaysia to that of Korea and Thailand to identify the effects of capital controls because the controls were imposed during a big political change, Kaplan answered the following. He said that this is a general problem with cross-sectional analysis, especially when there are so few observations (countries) and so many characteristics that vary. One has to make a judgement regarding which variables to include, which cannot be done without a prior on what matters and what does not. In the paper, he and *Dani Rodrik* looked for the main difference between the effect of the imposition of control policies in Malaysia versus the effect of the IMF program in other countries, and the results were in favor of Malaysia. He said that one can offer several alternative explanations that are consistent with the findings, such as political changes in Malaysia or external regional effects. Nevertheless, Kaplan said that he believed that capital controls had a decent impact.

On the nature of the different experiences of Malaysia and other crisis countries, Kaplan said that their preliminary study suggested that, among the components of GDP, the differences on the impact for GDP lie in consumption and imports.

Rodrik said that although one could argue about the exact reason for Malaysia's recovery after September 1998, it was not obvious that this recovery would have automatically occurred at that time. Although Korea had clearly begun to recover in September 1998, there was nothing similar going on in Malaysia at that point.

One concern of the Malaysian authorities was social stability and the interethnic balance between the Chinese and Malay communities, which was extremely important for the political leadership. After seeing the experience of Indonesia after the IMF program, which intensified tension and led to interethnic strike, Malaysian authorities were determined to avoid such an outcome. Rodrik said that capital control policies had social benefits if one thought of their role in maintaining the interethnic balance in the face of the potentially explosive situation in Malaysia.

Finally, Rodrik emphasized that the capital control policies were not the same as the IMF programs implemented in other crisis countries. For example, when the IMF came the interest rates went up and banks were closed, whereas with capital controls the interest rates were reduced and there were no bank closures. The fiscal policy proposed by the capital controls was expansionary from the outset as opposed to starting from a contraction and changes over time in the IMF program. Moreover, the exchange rate was fixed under capital controls rather than being allowed to float and therefore suffering a much greater depreciation subsequent to having an IMF program. Finally, the issue of the resolution of the uncertainty was also very different. Once it was clear that the controls were going to be effective, they resolved the uncertainty in the system effectively, which played an important role in the recovery. On the other hand, Rodrik recognized that capital control policies did have distributional consequence; some of the benefits of the stability were reaped by the cronies of Mahathir.

Rodrik concluded by saying that even though it was true that Malaysia looked no different from an average crisis country in terms of real performance, this does not necessarily mean much. Malaysia could have gone the Indonesian way and done much worse, or imposed capital controls sooner and—on the evidence in the paper—done better.