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CAPITAL CONTROLS:  
MUD IN THE WHEELS OF MARKET DISCIPLINE

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### **ABSTRACT**

Widespread support for capital account liberalization in emerging markets has recently shifted to skepticism and even support for capital controls in certain circumstances. This sea-change in attitudes has been bolstered by the inconclusive macroeconomic evidence on the benefits of capital account liberalization. There are several compelling reasons why it is difficult to measure the aggregate impact of capital controls in very different countries. Instead, a new and more promising approach is more detailed microeconomic studies of how capital controls have generated specific distortions in individual countries. Several recent papers have used this approach and examined very different aspects of capital controls – from their impact on crony capitalism in Malaysia and on financing constraints in Chile, to their impact on US multinational behavior and the efficiency of stock market pricing. Each of these diverse studies finds a consistent result: capital controls have significant economic costs and lead to a misallocation of resources. This new microeconomic evidence suggests that capital controls are not just “sand”, but rather “mud in the wheels” of market discipline.

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## 1. Introduction

In the early and mid-1990's, most international economists and Washington-based policymakers supported rapid capital account liberalization for emerging markets. Liberalization was expected to have widespread benefits. For example, it was predicted to increase capital inflows, thereby financing investment and raising growth. It could facilitate the diversification of risk, thereby reducing volatility in consumption and income. Liberalization could also increase market discipline, thereby leading to a more efficient allocation of capital and higher productivity growth. Many countries followed this advice and removed their capital account restrictions.

The initial results were generally positive – increased capital inflows, investment booms, and impressive growth performance. In the last decade, however, this positive view of capital account liberalization has been widely questioned. Several countries that had recently removed capital account restrictions, such as Mexico, Thailand, Korea, Russia, and Argentina, experienced severe financial crises. These experiences, especially when combined with the recent backlash against globalization, caused many people to question the benefits of unrestricted capital flows in emerging markets. Does capital account liberalization lead to inefficient investment and asset market bubbles? Could controls on capital flows have prevented these crises, or at least reduced their virulence? Even the IMF, formerly the bastion of capital market liberalization, has cautiously begun to support certain capital controls, especially taxes on capital inflows.<sup>1</sup>

These concerns have been bolstered by the inconclusive macroeconomic evidence on the benefits of capital account liberalization and the costs of capital controls. Although there is an

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<sup>1</sup> For example, Fischer (2002), the former First Deputy Managing Director of the IMF, writes: “The IMF has cautiously supported the use of market-based capital inflow controls, Chilean style.” Eduardo Aninat, a Deputy Managing Director of the IMF, recently stated: “...in some circumstances, these controls on capital inflows can play a role in reducing vulnerability created by short-term flows...” (Druckerman, 2002)

extensive literature on this subject (discussed in more detail in Section 2), the lack of agreement across studies, methodologies, and data sources is remarkable. In a recent survey of capital account liberalization, Eichengreen (2002) summarizes his conclusions: “Capital account liberalization, it is fair to say, remains one of the most controversial and least understood policies of our day...empirical analysis has failed to yield conclusive results.” In a recent review of the empirical evidence on globalization, Prasad et al. (2003) conclude: “...if financial integration has a positive effect on growth, there is as yet no clear and robust empirical proof that the effect is quantitatively significant.”

Many skeptics interpret these inconclusive macroeconomic results as evidence that the theoretical benefits of capital account liberalization may be elusive, possibly due to a range of market imperfections. A closer look at individual countries that have removed their capital controls, however, suggests that capital account liberalization may actually have substantial benefits, but these benefits are extremely difficult to measure at the macroeconomic level (especially in a cross-country framework). Most countries that remove their capital controls simultaneously undertake a range of additional reforms and undergo widespread structural changes, so that it is extremely difficult to isolate the specific impact of removing the controls. Accurately measuring one of the most important benefits of capital account liberalization—increased competition and market discipline that leads to a more efficient allocation of capital and higher productivity growth—is extremely complicated. Moreover, the benefits of removing capital controls may vary substantially across countries based on factors such as: their institutional development, the strength and depth of their financial system, and the quality of their corporate governance.

Instead, a potentially more promising way to assess the effect of capital account liberalization may be to focus on more detailed microeconomic evidence on how capital controls have generated specific distortions in individual countries. Several recent studies have adopted this approach, with much more conclusive results than the macroeconomic, cross-country studies. Johnson and Mitton (2002) show that the Malaysian capital controls provided a shelter for government cronyism and reduced market discipline. Forbes (2003) shows that the Chilean capital controls made it more difficult for smaller firms to obtain financing for productive investment. Desai et al. (2002) show that capital controls reduced the amount of foreign direct investment by U.S. multinationals and created additional distortions as U.S. companies attempted to evade the controls. Li et al. (2004) show that capital controls reduced market discipline and lowered the efficiency of stock market prices.

Although this literature examining the microeconomic effects of capital controls is only its infancy, the combination of results is compelling. These papers use diverse methodologies to examine very different aspects of capital controls in a range of countries and time periods, yet each finds a consistent result; capital controls have significant economic costs and lead to a misallocation of resources. Even if it is difficult to capture these effects at the macroeconomic level during periods when countries undergo rapid structural reform, this misallocation of resources is bound to reduce productivity and potential growth rates. Tobin (1978) argued that a tax on currency transactions would act as “sand in the wheels” of international financial markets. In comparison, given this new microeconomic evidence that capital controls may lead to a misallocation of capital through a number of different channels, a more accurate rendition may be that capital controls are not just “sand”, but rather “mud in the wheels of market discipline.”

The remainder of this paper is as follows. Section 2 briefly reviews the inconclusive macroeconomic, empirical evidence on capital controls. Section 3 discusses, in more detail, several recent microeconomic studies showing how capital controls can cause “mud in the wheels of market discipline.” Section 4 weighs these costs of capital controls relative to the potential benefit of reduced vulnerability to crises. Section 5 concludes.

## **2. The Inconclusive Macroeconomic Evidence on Capital Controls**

The theoretical literature suggests that there are a number of potential benefits from capital account liberalization. Prasad et al. (2003) survey this literature and describe four direct benefits: the augmentation of domestic savings, a reduction in the cost of capital through better global allocation of risk, the transfer of technological and managerial know-how, and the stimulation of domestic financial sector development. It also describes three indirect benefits: the promotion of specialization, the commitment to better economic policies, and a signaling of friendlier policies for foreign investment in the future. Capital account liberalization, however, can also have important costs. For example, by increasing market discipline and integration with global financial markets, removing capital controls can increase a country’s vulnerability to banking and currency crises. As seen in the 1990’s, these crises can be severe and have substantial economic and social costs.

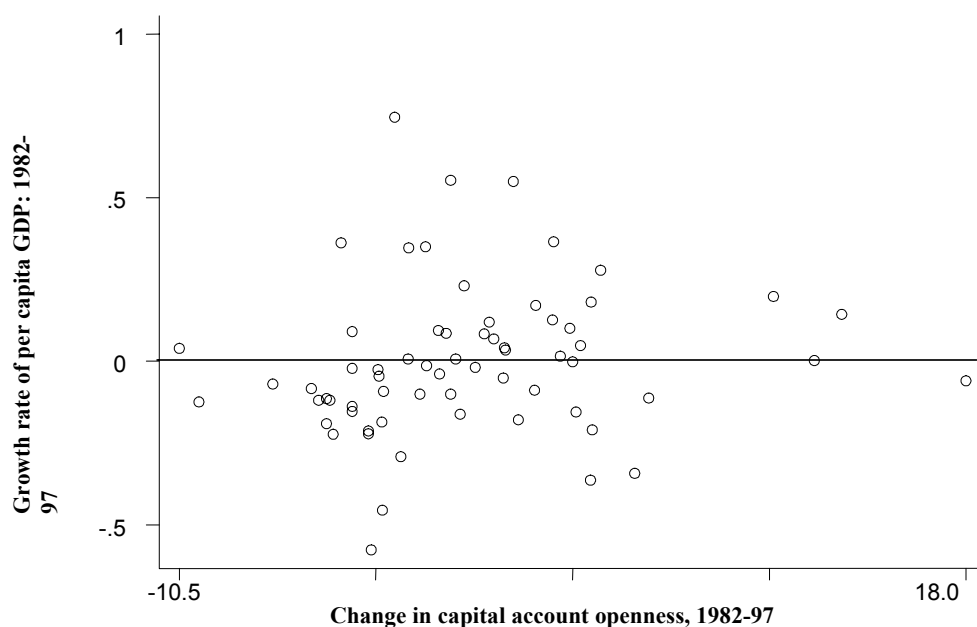
The macroeconomic literature, however, has had limited empirical success in consistently showing that capital account liberalization has any of these effects.<sup>2</sup> The most common testing approach has been to evaluate if reducing capital controls is correlated with higher economic growth. The contrasting results of the two most cited studies in this literature capture the general

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<sup>2</sup> For excellent surveys of this literature, see Eichengreen (2002) or Prasad et al. (2003).

inconsistency. Rodrik (1998) finds no significant relationship between capital account openness and growth, while Quinn (1997) uses a different measure of capital account openness and finds a significant positive relationship. A recent evaluation of this literature by Prasad et al. (2003) yields the same inconclusive results. Figure 1 replicates a key graph of the paper. It shows no significant relationship between financial openness and the growth in real per capita income across countries—even after controlling for a series of the standard variables in this literature.<sup>3</sup> In fact, of the 14 recent studies on this subject surveyed in Prasad et al. (2003), 3 find a positive effect of financial integration on growth, 4 find no effect, and 7 find mixed results.

**Figure 1**  
**Conditional Relationship Between Financial Openness and Growth, 1982-97**



*Notes:* Growth is measured by growth in real per capita GDP. Conditioning variables are: initial income, initial schooling, average investment/GDP, political instability, and regional dummies

*Source:* Prasad et al. (2003)

<sup>3</sup> The control variables include: initial income, initial schooling, average investment/GDP, political instability, and regional dummies.

There are a number of possible explanations for these conflicting results and lack of consensus. First, it is extremely difficult to accurately measure capital account openness. Simple empirical statistics measuring policies and regulations can not accurately capture the complexity and effectiveness of liberalization. De facto measures of integration (such as capital flows or foreign asset holdings) are also problematic, since some countries with large capital inflows still maintain relatively strict capital controls (such as China), while other countries with relatively unrestricted capital accounts receive fairly little foreign capital (such as many African nations). Second, different types of capital flows and capital controls may have different effects. For example, recent work suggests that the benefits of foreign direct investment to growth may be greater than those of portfolio flows. Controls on capital inflows may be less harmful since they can be viewed as a form of prudential regulation, while controls on capital outflows may be interpreted as a lack of government commitment to sound policies and/or a lack of attractive domestic investment opportunities.

Third, the impact of removing capital controls could depend on a range of other, hard-to-measure factors. For example, recent work suggests that countries are more likely to benefit from capital account liberalization if they have stronger institutions, better corporate governance, and more effective prudential regulation. Fourth, the sequence in which different types of capital controls are removed may determine the aggregate impact. For example, lifting restrictions on offshore bank borrowing before freeing other sectors of the capital account may increase the vulnerability of a country's banking system (as seen in Korea in the mid-1990's). Finally, there may be "threshold effects" that are difficult to capture in linear regressions. More specifically, countries may need to attain a certain level of financial market integration or of overall economic development before attaining substantial benefits from lifting capital controls.

Despite these imposing challenges to measuring the cross-country impact of capital account liberalization, several papers have focused on narrower aspects of this issue and generated more conclusive and promising results. For example, recent work shows that stock market liberalizations in emerging markets lead to increased investment and a lower cost of capital.<sup>4</sup> Other recent work suggests that the impact of capital account liberalization is closely related to the quality of governance and institutions.<sup>5</sup> Given the numerous channels by which capital account liberalization could affect an economy, it is not surprising that focusing on particular aspects of this relationship can yield more conclusive results. Further narrowing the investigation to specific countries and experiences with capital controls may be even more productive.

### **3. Mud in the Wheels: Microeconomic Evidence of the Distortions from Capital Controls**

Given these myriad difficulties in assessing the impact of capital account liberalization, potentially even more promising than the approaches used in these cross-country studies is to focus on the microeconomic impact within specific countries. Although case studies inherently have the shortcoming that it is difficult to control for other events that occur simultaneously, this approach can avoid many of the problems (discussed above) with the macroeconomic, cross-country literature. Moreover, this approach can facilitate a much more detailed measurement of exactly how capital account liberalization affects the allocation of resources and creates specific market distortions. The next four subsections discuss recent studies that have used very different methodologies to examine specific microeconomic effects of capital controls. Despite the range

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<sup>4</sup> For example, see Henry (2000) and Bekaert and Harvey (2000).

<sup>5</sup> For example, see Klein (2003) and Gelos and Wei (2002).

of experiences and approaches, each clearly identifies a significant cost of capital controls. The accumulation of these costs and distortions suggests that capital controls may act as “mud in the wheels of market discipline.”

### **3. 1. Protection for Cronyism in Malaysia**

In September of 1998, soon after the peak of the Asian crisis, Malaysia imposed controls on capital outflows. Some predicted dire effects, such as scaring foreigners from investing and doing business in Malaysia for years. Others predicted that the capital controls would have the benefit of giving the Malaysian government “breathing room” to enact reforms that would facilitate recovery and raise long-run growth. A few years later, two papers (presented at the same conference) used macroeconomic data to assess the impact of these capital controls. Kaplan and Rodrik (2002) argued that the capital controls had positive macroeconomic effects, while Dornbusch (2002) argued that they had no significant effect. These contradictory views of one specific country experience with capital controls mirrors the disagreements in the broader macroeconomic literature.

Johnson and Mitton (2002), however, use a very different, microeconomic approach to analyze the impact of the Malaysian capital controls. It examines how the Asian crisis and the announcement of the capital controls affected stock returns for individual Malaysian companies. The analysis splits the sample of firms into those with political connections to senior government officials (such as Prime Minister Mahatir), and those without political connections. The paper finds that in the initial phase of the crisis, before the capital controls were enacted, politically-connected firms experienced a greater loss in market value than firms without political connections. When the controls were put into place, politically-connected firms experienced a

relatively greater increase in market value. These results suggest that the Asian crisis initially increased financial pressures on Malaysian firms, improving market discipline and reducing the ability of governments to provide subsidies for favored firms. When the capital controls were put into place, however, investors expected that the Malaysian government would have more freedom to help favored firms and engage in cronyism. In other words, the capital controls reduced market discipline and provided a shelter for government cronyism.

Moreover, the empirical estimates in Johnson and Mitton (2002) suggest that this cost of the Malaysian capital controls was substantial. In the initial phase of the crisis (from July 1997 to August 1998), politically-connected firms lost about \$5.7 billion in market value due to the fall in the expected value of their connections. When the controls were enacted in September 1998 (and market values were substantially lower), politically-connected firms gained about \$1.3 billion in market value due to the increased value of their connections. Another calculation indicates that at the end of September 1998, after the capital controls had reduced market discipline, political connections were worth about 17% of the total market value for connected firms.

### **3.2. Increased Financial Constraints for Smaller, Publicly-Traded Firms in Chile**

Another well-known example of capital controls is the encaje, a tax on capital inflows adopted by Chile from 1991 through 1998. An extensive literature has examined the macroeconomic effect of these capital controls, with a range of results.<sup>6</sup> For example, some papers argue that the controls reduced country vulnerability to external shocks, while others claim that they had no effect on vulnerability. There is somewhat more agreement (albeit not unanimous) that the controls lengthened the maturity of capital inflows, with no significant effect on their volume.

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<sup>6</sup> Simone and Sorsa (1999) is an excellent survey of the empirical literature on the Chilean capital controls.

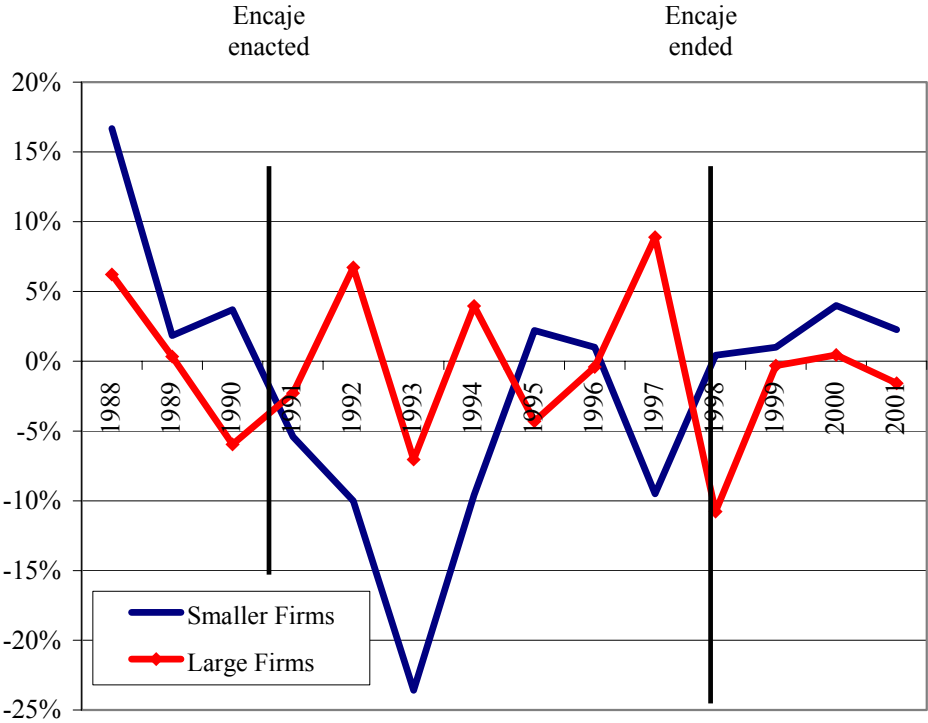
Assessing the macroeconomic impact of the capital controls is complicated by Chile's rapid growth, ambitious economic reforms, and sound policy environment during this period. Despite these difficulties, however, there is fairly widespread agreement that the encaje generated some small economic benefits for Chile, with minimal economic costs. This assessment has prompted a number of countries to consider enacting similar controls on capital inflows.

A closer look at the microeconomic evidence, and especially how these capital controls impacted different types of firms, however, suggests that this assessment is overly optimistic. Forbes (2003) examines how the encaje affected investment and financial constraints for different types of publicly-traded firms in Chile. The results show that the capital controls generated a number of distortions—such as an increase in companies listing abroad through American Depository Receipts (ADRs) in order to avoid the tax. Most important, an extensive empirical analysis indicates that the encaje significantly increased financial constraints for smaller, publicly-traded companies, but not for larger firms. In other words, the capital controls made it relatively more difficult and expensive for smaller companies to raise financing. Figure 2 (replicated from the paper) shows investment growth for publicly-traded Chilean firms around the time of the capital controls, without controlling for all the variables in the more formal empirical analysis. Investment growth was higher for smaller firms both before and after the encaje (which is a standard result in the finance literature). During the period that the capital controls were in place, however, investment growth plummeted for smaller companies and was generally lower than for large companies.

Therefore, the results in Forbes (2003) suggest that capital controls may have created a number of microeconomic distortions in Chile, such as making it more difficult for smaller

companies to obtain financing for productive investment.<sup>7</sup> This inefficient allocation of capital and resources undoubtedly reduced productivity and growth in Chile. These costs of capital controls could be particularly important for emerging markets in which small and new firms are often important sources of job creation and economic growth.

**Figure 2**  
**Growth in Investment/Capital Ratios for Chilean Firms**



*Source:* Forbes (2003).

<sup>7</sup> Recent work by Gallego and Hernández (2002) also shows that the Chilean capital controls affected a range of firm-level variables, with differential effects on small and large companies.

### **3.3. Reduced Investment and Distortionary Behavior by U.S. Multinationals**

While the previous two subsections discuss the microeconomic effects of capital controls on domestic firms, another potentially important impact of capital controls is on foreign investment. Theory suggests that foreign investment can bring numerous benefits to host countries, such as increasing the capital stock and transferring technology and skills, all of which would raise investment, productivity, and growth.

Desai et al. (2002) attempt to measure the effect of capital account liberalization on foreign direct investment by examining the behavior of U.S. multinational firms in countries with and without capital controls. It shows that capital controls distort the asset allocation, financing, transfer pricing, and dividend policies of U.S. multinationals. For example, capital controls in host countries reduce investment by multinationals by roughly 20 percent, and U.S. firms operating in countries with capital controls tend to overinvest in physical assets and underinvest (by as much as 40 percent) in financial assets. The paper also shows that when countries liberalize their capital accounts, these distortions tend to be reversed. For example, capital account liberalization is associated with large increases in multinational investment, particularly in local financial assets.

Moreover, Desai et al (2002) show that capital controls can cause U.S. multinational affiliates to distort prices in order to circumvent the controls. More specifically, foreign affiliates adjust prices by which they “trade” with their U.S. parents so that they run “trade deficits” about 4 to 6 percent larger than in countries without capital controls. The magnitude of this distortion is comparable to that which would occur if the foreign country raised taxes by about 20 to 50 percent. Therefore, this paper suggests that not only will capital controls distort the amount and

type of foreign direct investment available to host countries, but they can also generate additional distortions as companies attempt to evade the controls and extract profits.

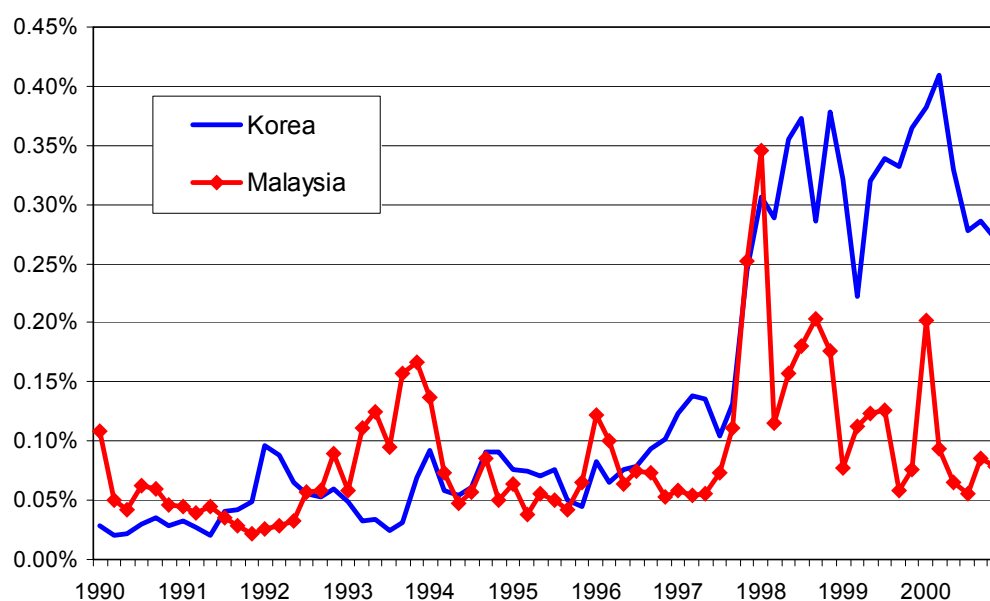
### **3.4. Reduced Efficiency in Stock Market Pricing**

Capital controls may not only distort the behavior of multinational affiliates and locally-owned companies, but can also affect the efficiency of domestic equity markets by reducing competitive pressure, market discipline, and the information content of stock prices. More specifically, by making it more difficult for foreigners to invest in domestic stock markets, capital controls could limit this valuable source of information and liquidity. As discussed above in the context of Malaysia, capital controls can insulate markets and reduce market discipline by providing a shelter for cronyism and other non-competitive activities. Capital controls might also limit the ability of potentially successful companies to raise additional financing, thereby restraining their ability to invest and grow.

Li et al. (2004) examine the extent to which individual stock prices move up and down together in specific countries—i.e., “synchronicity”—to attempt to measure some of these effects. High levels of comovement and low levels of firm-specific variation in prices suggest that stock prices are less efficient. In other words, when stock prices are driven more by aggregate, country-level news instead of by firm-specific variables and information, there is less market discipline. This paper uses several different measures to show that greater openness in capital markets (but not in goods markets) is correlated with greater firm-specific content in stock prices, and therefore with more market discipline and pricing efficiency. This relationship is magnified in countries with strong institutions and good governance.

One set of results, although not a focus of Li et al. (2004), is particularly relevant to this assessment of the relationship between capital controls and market discipline.<sup>8</sup> Around the time of the Asian crisis, the firm-specific variation in stock prices increased significantly in most Asian countries and remained high for an extended period. This pattern is graphed for Korea in Figure 3, and is typical for most open economies in the region. In Malaysia, the firm-specific component of stock prices also increased significantly after the Asian crisis, but then fell sharply after its capital controls were imposed (as also shown on Figure 3). Although not a definitive test, this indicates that the Asian crisis increased market discipline and the firm-specific content in stock prices, while the Malaysian capital controls appear to have suppressed market discipline and reduced the efficiency of stock market prices.

**Figure 3**  
**Firm-Specific Variation in Stock Prices**



*Note:* Higher levels of firm-specific variation in stock prices indicate greater pricing efficiency.  
*Source:* Based on data from Li et al (2004).

<sup>8</sup> These results were removed from the published version of the paper but are available in the working paper.

#### **4. But....Can Capital Controls Reduce Vulnerability to Crises?**

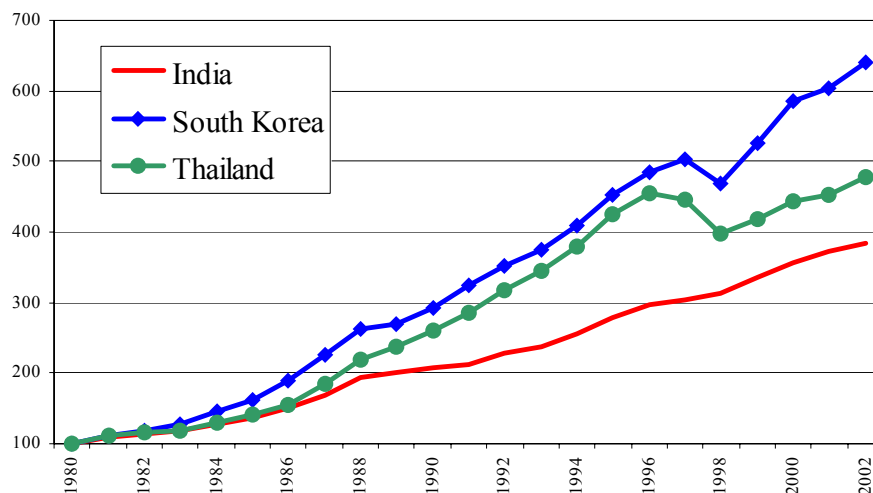
The four studies discussed above suggest that capital controls can create a number of microeconomic distortions and therefore reduce productivity and growth. Despite these potentially serious costs, supporters of capital controls argue that this policy can yield benefits that outweigh these costs. The most frequently cited benefit is that capital controls reduce country vulnerability to currency and banking crises. The series of emerging markets that liberalized their capital accounts, and subsequently experienced a crisis in the 1990's, is often cited to support this argument. Capital controls, by placing "mud in the wheels of market discipline" may render countries less vulnerable to external shocks and therefore reduce their susceptibility to crises.

This is not surprising since capital controls share many similarities to most standard regulations---such as labor market regulations that make it more difficult to fire workers. Regulations on both capital flows and labor markets can create safer, less volatile markets, whether in the form of more stable capital flows or workers less likely to lose their jobs. Both regulations also have a cost, however, whether in the form of lower levels of investment or lower aggregate employment, both of which reduce efficiency and economic growth. To evaluate the overall desirability of a specific regulation, it is necessary to weigh the costs against the benefits. Therefore, any accurate evaluation of capital controls needs to weigh the potential costs discussed throughout this paper against the potential benefit of reduced vulnerability to crises.

A thorough evaluation of this tradeoff is beyond the scope of this paper, but Figure 4 provides some anecdotal evidence. The figure graphs an index of real income per capita

(adjusted for PPP) in India, South Korea, and Thailand from 1980 through 2002.<sup>9</sup> Income is normalized to 100 in 1980 in order to equalize income levels at the start of the period. All countries maintained fairly stringent capital controls in 1980, but then Korea and later Thailand began to liberalize their capital accounts in the late 1980's and early 1990's. Growth increased as capital flowed into Korea and Thailand and investment boomed. In 1997, however, both Korea and Thailand experienced severe financial crises. Between 1997 and 1998, income per capita fell by about 7 percent in Korea and 12 percent in Thailand. India, which maintained fairly stringent capital controls throughout this period, actually had a small increase in income per capita and emerged relatively unscathed from the Asian crisis.

**Figure 4**  
**Income per Capita in Select Asian Countries**  
**(normalized to 100 in 1980)**



**Note:** Income per capita is GDP per capita in international dollars, adjusted for PPP.  
**Source:** Original data from World Bank, World Development Indicators online.

<sup>9</sup> I do not include China on this graph, since it is not a clear case of an open or closed capital account over this period. Although China maintains some strict capital controls—such as on capital outflows—it has also substantially liberalized restrictions on other capital movements—such as on inflows of foreign investment.

Despite the crisis, however, Korea and Thailand still have substantially higher income levels than India on the graph—even after correcting for initial income levels in 1980. The figure suggests that in Korea, the Asian crisis was only a short-term deviation from a higher long-term growth rate. Despite the plunge in income during the crisis, the rapid recovery almost compensated for growth lost during the crisis. As a result, Korean income per capita is now close to where it would have been if growth had continued at trend and was not interrupted by the crisis. Granted, Thailand has been slower to recover from the Asian crisis, and income per capita did not recover to its pre-crisis levels until 2001. Despite this severe crisis and prolonged recovery, however, average income levels in Thailand are still substantially higher than in India—despite starting at the same normalized level in 1980. All in all, the graph indicates that although crises can have severe economic costs, the short-term impact on income levels may be small compared to the long-term benefits of higher growth rates.

Granted, even if countries with open capital accounts tend to grow faster, on average, than countries with capital controls, some individuals and governments may still chose to restrict capital flows and reduce the chance of disruptive crises. This is similar to some countries' preferences for more regulated labor markets and greater job stability, even at the cost of higher unemployment and lower economic growth. In the case of capital account liberalization, however, this tradeoff is less clear. Although recent experience suggests that emerging markets with liberalized capital accounts have recently been more vulnerable to crises, the empirical evidence is less definitive. In fact, Glick and Hutchinson (2000) find a positive—instead of negative—correlation between capital controls and the occurrence of currency crises in both a bivariate and multivariate analysis.

A closer look at the case study evidence suggests that this empirical evidence of a positive relationship between capital controls and crises is not surprising. Countries with macroeconomic imbalances (and which are therefore more vulnerable to crises), may choose to impose capital controls in order to avoid difficult economic reforms, or to avoid capital outflows that may trigger a crisis. Developed countries, or emerging markets with sound macroeconomic environments, are not only less likely to experience crises, but also less likely to enact capital controls and forego the benefits of free capital flows. Countries with closed capital accounts can still experience domestic financial crises and banking crises. Therefore, although capital account liberalization may increase country vulnerability to crises in some cases, the relationship between capital controls and financial crises is not straightforward.

## **5. Conclusions**

Although the theoretical literature suggests that there could be substantial benefits to emerging markets from capital account liberalization, the empirical macroeconomic literature has had limited success in consistently identifying these benefits. There are a series of compelling reasons why it may be difficult to measure the aggregate impact of capital controls in a range of very different countries that often undergo a variety of structural changes simultaneously with liberalization. A more useful approach may be to focus on more narrow empirical analyses that can measure the specific effects of capital account liberalization at the microeconomic level.

The series of papers surveyed above indicates that focusing on microeconomic data, and especially individual case studies of specific effects of capital controls, yields much stronger evidence of the resulting economic distortions and costs. The Malaysian capital controls

provided a shield for crony capitalism. The Chilean capital controls increased financial constraints and limited investment in smaller, publicly-traded companies. U.S. firms tend to reduce investment and adopt a range of distortionary practices in countries with capital controls. Stock market pricing tends to be less efficient in countries with capital controls. Even though none of these papers attempts to aggregate these microeconomic effects into estimates of an economy-wide cost of capital controls, they clearly suggest that capital controls can lead to a misallocation of resources through several different channels. The accumulation of these different costs of capital controls indicates that they may act as “mud in the wheels of market discipline” and significantly depress productivity and growth.

Potentially offsetting these costs, capital controls may have the benefit of reducing country vulnerability to currency and banking crises. Although the short-term impact of crises on income levels can be severe, this effect is generally small when compared to the long-term benefits of higher growth rates possible with liberalized capital accounts. Moreover, the benefits of capital account liberalization may be smaller, while the risk of severe crises may be greater, for countries with weak institutions and poor corporate governance.

Mud in the wheels of a cart will slow down movement towards your destination. If mud in the wheels weighs down the cart, minimizing the chance of the cart being overturned, some people may chose the weighted-down, slower vehicle. Moreover, if the cart has a weak frame and the wheels are only held together by the dried mud, it may be prudent to strengthen the wheels and ensure that a minimum frame is in place before removing the mud and moving rapidly. Given a certain level of structural integrity in the cart, however, most people would probably chose to take the mud out of the wheels, even if it slightly increases the risk of a spill, in order to more quickly arrive at their destination. Similarly, capital controls act as “mud in the

wheels of market discipline.” They create a number of microeconomic distortions and inefficiencies that can substantially reduce long-term growth rates. Capital account liberalization may increase the risk of crises, especially for countries with weak institutions, but can also substantially raise productivity growth and overall standards of living.

## References

- Bekaert, Geert and Campbell Harvey**, 2000, "Foreign Speculators and Emerging Equity Markets," *Journal of Finance*, Vol. 55, April, pp. 565-614.
- Desai, Mihir, C. Fritz Foley, and James Hines**, 2002, "Capital Controls, Liberalizations, and Foreign Direct Investment," Harvard Business School and University of Michigan, working paper.
- Dornbusch, Rudiger**, 2002, "Malaysia's Crisis: Was it Different?," In Sebastian Edwards and Jeffrey Frankel, eds., *Preventing Currency Crises in Emerging Markets*, Chicago: University of Chicago Press.
- Druckerman, Pamela**, 2002, "Some Warm to Use of Capital Controls," *Wall Street Journal*, October 24.
- Eichengreen, Barry**, 2002, "Capital Account Liberalization: What Do Cross-Country Studies Tell Us?," *The World Bank Economic Review*, Vol. 15(3), pp. 341-365.
- Fischer, Stanley**, 2002, "Financial Crises and Reform of the International Financial System," National Bureau of Economic Research Working Paper #9267.
- Forbes, Kristin**, 2003, "One Cost of the Chilean Capital Controls: Increased Financial Constraints for Smaller Traded Firms," National Bureau of Economic Research Working Paper #9777.
- Gallego, Francisco, and Leonardo Hernández**, 2002, "Microeconomic Effects of Capital Controls: The Chilean Experience During the 1990s," Massachusetts Institute of Technology and Central Bank of Chile, working paper.
- Gelos, Gaston and Shang-Jin Wei**, 2002, "Transparency and International Investor Behavior," National Bureau of Economic Research Working Paper #9260.
- Glick, Reuven and Michael Hutchinson**, 2000, "Stopping 'Hot Money' or Signaling Bad Policy? Capital Controls and the Onset of Currency Crises," Federal Reserve Bank of San Francisco and University of California, Santa Cruz, working paper.
- Henry, Peter**, 2000, "Do Stock Market Liberalizations Cause Investment Booms?," *Journal of Financial Economics*, Vol. 58, October, pp. 301-334.
- Johnson, Simon and Todd Mitton**, 2002, "Cronyism and Capital Controls: Evidence From Malaysia," *Journal of Financial Economics*, Vol. 67, February, pp. 351-382.
- Kaplan, Ethan and Dani Rodrik**, 2002, "Did the Malaysian Capital Controls Work?," In Sebastian Edwards and Jeffrey Frankel, eds., *Preventing Currency Crises in Emerging Markets*, Chicago: University of Chicago Press.

**Klein, Michael**, 2003, "Capital Account Openness and the Varieties of Growth Experience," National Bureau of Economic Research Working Paper #9500.

**Li, Kan, Randall Morck, Fan Yang, and Bernard Yeung**, 2004, "Firm-Specific Variation and Openness in Emerging Markets," *Review of Economics and Statistics*, forthcoming.

**Quinn, Dennis**, 1997, "The Correlates of Changes in International Financial Regulation," *American Political Science Review*, Vol. 91, September, pp. 531-551.

**Prasad, Eswar, Kenneth Rogoff, Shang-Jin Wei, and M. Ayhan Kose**, 2003, "Effects of Financial Globalization on Developing Countries: Some Empirical Evidence," International Monetary Fund Occasional Paper #220.

**Rodrik, Dani**, 1998, "Who Needs Capital-Account Convertibility?," In Peter Kenen, ed., *Should the IMF Pursue Capital Account Convertibility?*, Essays in International Finance no. 207, Princeton: Princeton University Press.

**Simone, Francisco Nadal De and Piritta Sorsa**, 1999, "A Review of Capital Account Restrictions in Chile in the 1990s," International Monetary Fund Working Paper #99/52.

**Tobin, James**, 1978, "A Proposal for International Monetary Reform," *Eastern Economic Journal*, Vol. 4, July/October, pp. 153-159.