Volume Title: Capital Controls and Capital Flows in Emerging Economies: Policies, Practices and Consequences

Volume Author/Editor: Sebastian Edwards, editor

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-18497-8

Volume URL: http://www.nber.org/books/edwa06-1

Conference Date: December 16-18, 2004

Publication Date: May 2007

Title: The Microeconomic Evidence on Capital Controls: No Free Lunch

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URL: http://www.nber.org/chapters/c0152

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The Microeconomic Evidence on Capital Controls
No Free Lunch

Kristin J. Forbes

4.1 Introduction

The free movement of capital can have widespread benefits. Capital inflows can provide financing for high-return investment, thereby raising growth rates. Capital inflows—especially in the form of direct investment—often bring improved technology, management techniques, and access to international networks, all of which further raise productivity and growth. Capital outflows can allow domestic citizens and companies to earn higher returns and better diversify risk, thereby reducing volatility in consumption and income. Capital inflows and outflows can increase market discipline, thereby leading to a more efficient allocation of resources and higher productivity growth. In order to obtain these widespread benefits of free capital flows, most developed countries and many developing countries have lifted most of their capital controls.

In the spring of 1997 there was such widespread support for free capital flows that the International Monetary Fund (IMF) Interim Committee suggested amending the IMF's Articles of Agreement to extend its jurisdiction to include capital movements and make capital account liberalization a purpose of the IMF.[1] Soon after this recommendation was announced, however, a series of financial crises spread across Asia and disproportionately affected countries that had recently liberalized their

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Thanks to Charles Calomiris and participants in the NBER conference for helpful comments and suggestions. Further thanks to Peter Kenen for inspiring the title of this paper.

1. The IMF's charter requires that member countries have convertible currencies for the purposes of current account transactions, but not capital account transactions.

capital accounts. In contrast, several Asian countries that had maintained more stringent capital controls—such as China and India—emerged from the crisis relatively unscathed. These experiences caused a reassessment of the desirability of capital controls, especially for emerging markets and developing economies.

In a sharp sea change, many policymakers and leading economists now support the use of capital controls, especially taxes on capital inflows, in some circumstances. For example, former U.S. Treasury Secretary Robert Rubin, who actively encouraged emerging markets to open their capital accounts in the mid-1990s, has expressed support for controls on capital inflows.[2] A series of reports by the Group of Twenty-Two (G22) in 1998 raised concerns about capital account liberalization and cautiously endorsed taxes on capital inflows.[3] Even the *Economist* magazine, traditionally a supporter of the free movement of goods and capital, wrote: "some kinds of restriction on inflows (not outflows) of capital will make sense for many developing countries. . . . Chile's well-known system . . . was a success worth emulating" (*Economist* 2003). Possibly even more surprising, senior officials from the IMF, formerly the bastion of capital market liberalization, have expressed support for taxes on capital inflows. For example, Stanley Fischer, former first deputy managing director of the IMF, stated: "The IMF has cautiously supported the use of market-based capital inflow controls, Chilean style" (Fischer 2001).

One of the most common justifications for this sea change in attitudes and the recent support for capital controls is the lack of empirical evidence on the benefits of capital account liberalization. If lifting capital controls does yield net benefits, then these benefits should be measurable and identifiable in empirical analysis. Although an extensive literature has attempted to measure the macroeconomic effects of capital account liberalization, this literature is generally interpreted as being inconclusive. For example, a recent survey of the empirical literature on capital controls by authors in the IMF research department concludes: "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" (Prasad et al. 2003). Similarly, Eichengreen (2001) writes: "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."

This interpretation that the empirical evidence on capital controls is inconclusive, however, overlooks a number of recent studies using microeconomic data. These studies provide persuasive evidence on the different

2. For example, see Rubin and Weisberg (2003, p. 257).

3. See the G22 reports released in 1988: *Report of the Working Group on Transparency and Accountability, Report of the Working Group on Strengthening Financial Systems,* and *Report of the Working Group on International Financial Crises.*

effects of capital controls and capital account liberalization. The studies cover a variety of countries and periods, use a range of approaches and methodologies, and build on several different literatures. By focusing on individual experiences and/or specific effects of capital controls, this microeconomic approach can yield more concrete and robust evidence than the cross-country macroeconomic studies that assume that capital controls have similar effects across countries and periods. Granted, this microeconomic approach has the disadvantage that it is difficult to generalize from individual countries' experiences. It also has the disadvantage that it is difficult to aggregate the different microeconomic results to capture the macroeconomic effects of capital controls. Nonetheless, this new series of microeconomic studies provides compelling and robust evidence of the pervasive effects of capital controls.

This paper surveys these diverse microeconomic studies and attempts to develop a more coherent picture of the microeconomic evidence on capital controls. Several key themes emerge. First, capital controls tend to reduce the supply of capital, raise the cost of financing, and increase financial constraints—especially for smaller firms and firms without access to international capital markets. Second, capital controls can reduce market discipline in financial markets and the government, leading to a more inefficient allocation of capital and resources. Third, capital controls significantly distort decision making by firms and individuals as they attempt to minimize the costs of the controls or even evade them outright. Fourth, the effects of capital controls can vary across different types of firms and countries, reflecting different preexisting economic distortions. Finally, capital controls can be difficult and costly to enforce, even in countries with sound institutions and low levels of corruption.

Although this literature examining the microeconomic effects of capital controls is only in its infancy and much more careful analysis remains to be done, 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 most find a consistent result: capital controls have pervasive effects, yield many unexpected costs, and can distort the allocation of resources, all of which can hinder market efficiency. Granted, capital controls may also have some costs and benefits that are not addressed in these microeconomic papers—such as reducing a country's vulnerability to currency crises.[4] Moreover, in the presence of existing market distortions, capital controls can be a second-best policy.[5] Therefore, this survey is not, in any way, a full cost-benefit analysis of capital controls. Countries evaluating whether to impose capital controls or

4. See Block and Forbes (2004) for an evaluation of the various costs and benefits of capital controls.

5. For example, if capital market inefficiencies allow companies to overborrow, capital controls that limit the supply of loans may minimize the initial distortion.

liberalize their capital accounts need to consider factors other than this microeconomic evidence. The results in this paper do clearly suggest, however, that capital controls (including taxes on capital inflows) create substantial microeconomic distortions. The recent sea change in views supporting capital controls (bolstered by the inconclusive macroeconomic evidence) appears to be premature. The microeconomic evidence on capital controls presents a clear picture: capital controls have pervasive effects and can generate substantial, unexpected costs. Capital controls are no free lunch.

The remainder of this paper is organized as follows. Section 4.2 discusses reasons why the macroeconomic evidence on capital controls has been inconclusive to date. Section 4.3 surveys the microeconomic evidence on how capital controls affect the supply and cost of capital. Section 4.4 reviews the evidence on how controls affect market discipline and the allocation of capital. Section 4.5 describes how controls can affect the behavior and actions of firms and individuals. Section 4.6 briefly discusses the challenges to implementing and enforcing capital controls. Section 4.7 concludes.

4.2 Inconclusive Macroeconomic Evidence on Capital Controls

The macroeconomic literature has had limited empirical success to date in providing robust evidence on the benefits of capital account liberalization.[6] Most papers in this literature use a variant of the standard cross-country growth regression developed by Robert Barro to test if the presence of capital controls or capital account liberalization is correlated with higher economic growth. Prasad et al. (2003) provide a detailed survey of this literature and argue that the results are inconclusive. More specifically, of the fourteen recent papers they examine, three find a positive effect of financial integration on growth, four find no effect, and seven find mixed results. The only consistency in the papers surveyed is that none find evidence that capital account liberalization significantly reduces growth. Prasad et al. (2003) also perform their own analysis, whose key result is replicated in figure 4.1. They find no significant relationship between financial openness and growth in real per capita income across countries—even after controlling for standard variables in this literature.[7]

There are several possible explanations for these conflicting results and the lack of consensus in the macroeconomic literature.[8] First, it is ex-

6. For excellent surveys of this literature, see Edison et al. (2002), Eichengreen (2001), or Prasad et al. (2003).

7. The control variables include initial income, initial schooling, average investment/gross domestic product (GDP), political instability, and regional dummies.

8. For a more thorough discussion of these challenges, see Eichengreen (2003, chap. 3), Prasad et al. (2003), or Magud and Reinhart (2004).

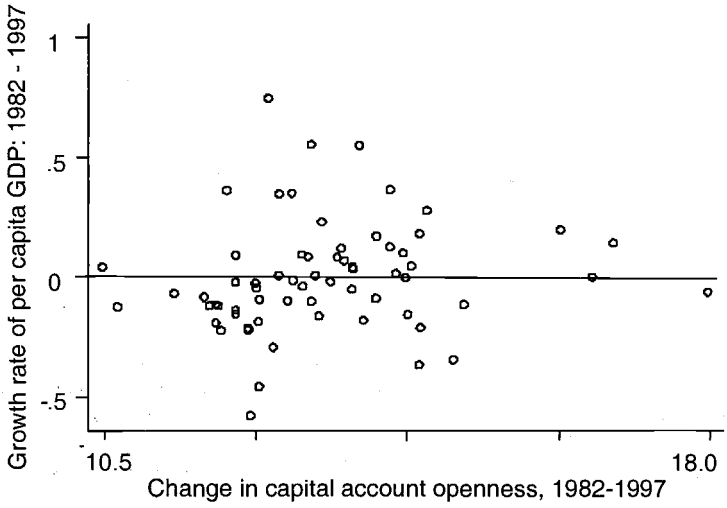

Fig. 4.1 Conditional relationship between financial openness and growth

Source: Prasad et al. (2003).

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.

tremely difficult to accurately measure capital account openness.[9] Many studies use rough numerical indexes of different policies and regulations, but even the more carefully constructed measures cannot capture the complexity and effectiveness of a country's liberalization. Due to these problems, other studies have used de facto measures of integration (such as capital flows or foreign asset holdings). These 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 little foreign capital (such as many African nations). Still other studies have examined market comovement to measure integration with international markets, but these studies face the challenge of controlling for other factors that could cause markets to comove—such as global shocks or similar asset structures. A final approach has been to study onshore-offshore interest rate differentials. This approach is also problematic since not only are these differentials only available for a limited set of countries, but also interest rate differentials could move due to a number of factors other than capital account liberalization.

Second, different types of capital flows and capital controls may have

9. See Edison et al. (2002) for an excellent discussion of different measures of capital account openness.

different effects on growth and other macroeconomic variables. For example, recent work suggests that the benefits of foreign direct investment (FDI) may be greater than those of other types of capital flows. Reisen and Soto (2001) examine the impact of six different types of capital flows on growth and find that only two—FDI and portfolio equity flows—are positively associated with growth. Henry and Lorentzen (2003) argue that equity market liberalizations are more likely to promote growth than debt market liberalizations. Other papers argue that controls on capital inflows may be less harmful than controls on capital outflows, because controls on inflows may be viewed as a form of prudential regulation, while controls on outflows may be viewed as a lack of government commitment to sound policies. For example, Rossi (1999) finds that controls on capital inflows reduce the risk of a currency crisis, while controls on capital outflows heighten the risk. Moreover, even 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-1990s).

Finally, the impact of removing capital controls could depend on a range of other, hard-to-measure factors that are difficult to capture in simple cross-country regressions, such as a country's institutions or corporate governance. For example, Chinn and Ito (2002) show that financial systems with a higher degree of legal and institutional development benefit more, on average, from liberalization.[10] Gelos and Wei (2002) show that countries with greater transparency are not only more likely to attract international equity investment but less vulnerable to herding and capital flight during crises. A closely related factor is that 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 overall economic development before attaining substantial benefits from lifting capital controls. For example, Klein and Olivei (1999) find that capital account openness only stimulates financial development in Organization for Economic Cooperation and Development (OECD) countries. Moreover, most countries that remove their capital controls simultaneously undertake a range of additional reforms and undergo widespread structural changes. Therefore, it can be extremely difficult to isolate the specific impact of removing capital controls during these transition periods.

Given all of these challenges to measuring the impact of capital controls, it is not surprising that the empirical literature has had difficulty documenting the effect of capital controls on growth at the macroeconomic

10. Aghion, Bacchetta, and Banerjee (2001) develop a theoretical model of why financial development is a key variable determining the impact of capital account liberalization.

level. Moreover, to put these challenges in perspective, the current status of this literature is similar to the earlier literature on how trade liberalization affects growth. Economists generally believe that trade openness raises economic growth, but most of the initial work on this topic (which used the same cross-country framework as these studies of capital account openness) also reached inconclusive results. In some cases trade liberalization appeared to have a positive correlation with economic growth, but in most cases these results were not robust to sensitivity testing. Stanley Fischer (2003) recently made this point: "With regard to empirical evidence on the benefits of capital account liberalization, I believe we are roughly now where we were in the 1980s on current account liberalization—that some evidence is coming in, but that it is at this stage weak and disputed" (p. 14). Since accurately measuring capital account liberalization and its interactions with other key variables may be even more difficult than for trade liberalization, it is not surprising that the initial work in this area has generated mixed results to date.

Although the macroeconomic empirical evidence on how trade openness affects growth took years to develop, at a much earlier date several papers using microeconomic data and case studies found compelling evidence that trade liberalization raises productivity and growth. Similarly, recent work using microeconomic and case study evidence has been much more successful than the macroeconomic literature in documenting the costs of capital controls. Although case studies have shortcomings, such as the difficulty of controlling for other simultaneous events and generalizing to different countries and experiences, this microeconomic approach can avoid many of the problems with the macroeconomic, cross-country literature. Moreover, this microeconomic approach can facilitate a much more detailed measurement of exactly how capital account liberalization affects the allocation of resources and market efficiency.

4.3 Capital Controls and the Supply and Cost of Capital

Lifting capital controls should allow capital to flow where it can earn the highest expected rate of return. Since capital is relatively scarce in low-income, labor-intensive economies, the return to capital would be expected to be higher, on average, than in capital-abundant, wealthy countries. Therefore, standard economic theory suggests that when emerging markets lift their capital controls, capital should tend to flow in from wealthier countries. Capital inflows could generate substantial benefits, such as providing capital for investment, making advanced technology available, and spurring competitiveness.

This simple prediction, however, does not hold for many countries. Most capital currently flows from developing to developed countries or between developed countries—not from developed to developing countries. Figure

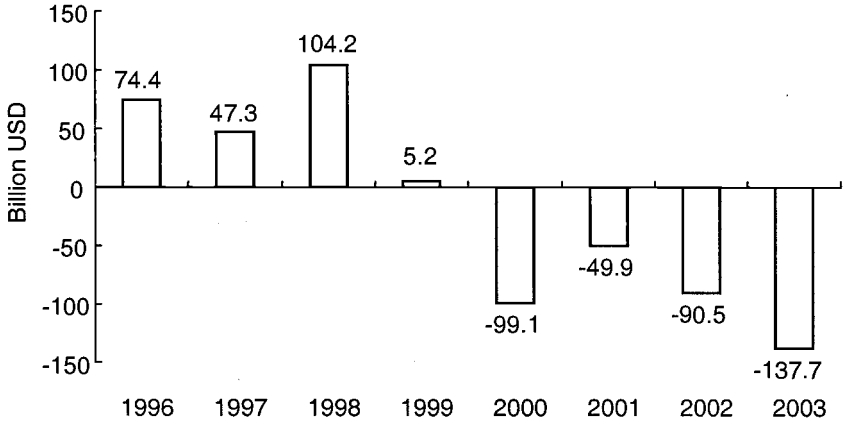

Fig. 4.2 Net capital flows to emerging markets

Source: IMF *Global Financial Stability Report.*

Note: Emerging market countries are those included in the EMBI and/or EMBI+.

4.2 shows that emerging markets have been net exporters of capital, instead of net importers, since 2000. Even before 2000 when emerging markets were net capital importers, their volume of capital inflows was much lower than might be expected given their relative scarcity of capital. One reason why capital inflows to developing countries may be so low is the greater prevalence of capital controls in these markets. Some low- and middle-income countries that have lifted their capital controls, however, still experience net capital outflows.

There are a number of reasons why capital might flow from capital-scarce to capital-rich countries, even in the absence of capital controls. First, the enforceability of property rights is weak in most developing countries. Second, informal administrative barriers (such as corruption, the absence of transparent rules for investment, and the scarcity of trained, professional civil servants) can discourage foreign investment in developing countries. Third, lower levels of human capital in developing countries can reduce productivity.[11] Finally, many developing countries have a history of default and substantially higher credit risk (Reinhart and Rogoff 2004). All of these factors can reduce the expected return to capital in developing countries, despite their relative scarcity of capital. For all of these reasons, if emerging markets lift their capital controls, capital could actually flow out of, instead of into, the country. As a result, it is difficult to predict, a priori, how lifting capital controls will affect the supply of capital in a country.

Moreover, lifting capital controls can affect the cost of capital not only

11. See Lucas (1990).

by affecting the supply of capital but also by allowing investors to expand their portfolio of asset holdings to better diversify risk. Since asset returns in an individual country are not perfectly correlated with global asset returns (or returns in any other individual country), removing capital controls can facilitate international risk sharing. A greater diversification of risk will reduce the volatility of expected portfolio returns, thereby reducing the cost of capital.[12]

4.3.1 The Cross-Country Evidence

Several microeconomic studies address these issues by assessing how lifting capital controls affects equity markets, the cost of capital, and financial constraints for different types of firms. Chari and Henry (2004b) examine the impact of removing controls on stock market investment on different types of firms in eleven emerging markets. They find that when publicly listed firms become eligible for foreign ownership, they experience an average stock price revaluation of 15.1 percent and a significant fall in their average cost of capital (with the risk-free rate of return falling between 5.9 percent and 9.1 percent, depending on the specification).[13] The impact on the expected returns of individual firms is directly proportional to the firm-specific changes in systematic risk resulting from the liberalization. These affects are also greater for stocks that become "investible" (i.e., that can be purchased by foreigners after liberalization) as compared to firms that are "noninvestible" (i.e., that remain off-limits for foreign investment). These results suggest that the supply of capital increases and the cost of capital decreases after capital controls on equity investment are removed, although the effects will vary across different types of firms.

A number of studies assess the impact of removing capital controls on the supply and cost of capital by using a different approach—measuring how capital controls affect the financing constraints of different types of companies. Financing constraints are generally measured as the sensitivity of investment to cash flow, while controlling for a number of firm-level variables (including investment opportunities). Harrison, Love, and McMillan (2004) follow this approach and use an extensive cross-country, time-series, firm-level data set.[14] Their study finds that restrictions on capital account transactions tend to increase firms' financing constraints. These financial

12. See Bekaert and Harvey (2003) for a formal model and more detailed discussion of this effect.

13. These results are supported by several macroeconomic studies of how liberalizations affect equity markets. For example, Henry (2000) shows that the mean growth rate of private investment increases by about 22 percentage points over the three years after liberalizations in emerging markets. Bekaert and Harvey (2000) show that the cost of capital decreases by between 5 and 75 basis points after liberalizations.

14. Capital controls are measured using different dummy variables for the five categories of capital controls in the IMF's *Trade and Exchange Restrictions.* This measure of capital controls is imprecise, and its problems are discussed in the literature surveyed in section 4.2.

constraints are greater for firms that are domestically owned (as compared to those with either foreign ownership or assets), which the authors interpret as being "consistent with the hypothesis that foreign investment is associated with a greater reduction in the credit constraints of firms which are less likely to have access to international capital markets" (Harrison, Love, and McMillan 2004, p. 272). Restrictions on capital flows other than capital account transactions—such as on import surcharges or surrender requirements for exporters—have no impact on firms' financial constraints. The study also finds that increased FDI is associated with reduced firm financing constraints—although a number of factors other than lifting controls on capital inflows will determine FDI flows.

Several studies use broader measures of liberalization and also find that greater liberalization decreases financial constraints in a panel of firms and countries. One of the most common measures of liberalization is financial liberalization—which generally includes lifting controls on foreign investment in the financial sector, as well as lifting controls on interest rates and reducing directed-credit programs. For example, Laeven (2003) constructs a new measure of banking-sector liberalization that includes several factors in addition to removing barriers to bank entry by foreign investors. Using this measure, Laeven's study finds that financial liberalization significantly reduces financing constraints for small firms, with an 80 percent average reduction in the sensitivity of investment to cash flow. Laeven (2003) also finds that large firms tend to be less financially constrained before liberalization and are less likely to experience a reduction in financial constraints afterward. There is even some evidence that large firms may experience an increase in financial constraints after bank liberalizations. The study suggests this may reflect that "in many developing countries, large firms had access to preferential (directed) credit during the period before financial liberalization. This form of favoritism is likely to decrease during financial liberalization" (Laeven 2003, p. 25).

Other papers expand beyond the banking sector and use even broader measures of financial liberalization to examine the microeconomic impact on firm financing constraints.[15] For example, Love (2003) uses an index of financial development that includes market capitalization, value traded, and the share of credit going to the private sector. Although this study does not explicitly test the relationship between this measure of financial development and capital account liberalization, other work shows that capital account liberalization tends to significantly increase financial market development.[16] Love (2003) finds a strong negative relationship between fi-

15. In a closely related study, Demirguc-Kunt and Maksimovic (1998) show that firms in countries with a more active stock market and large banking sector grow faster than they could using only internally generated funds.

16. For example, see Klein and Olivei (1999). Also see Bekaert and Harvey (2003) for an excellent survey of this literature.

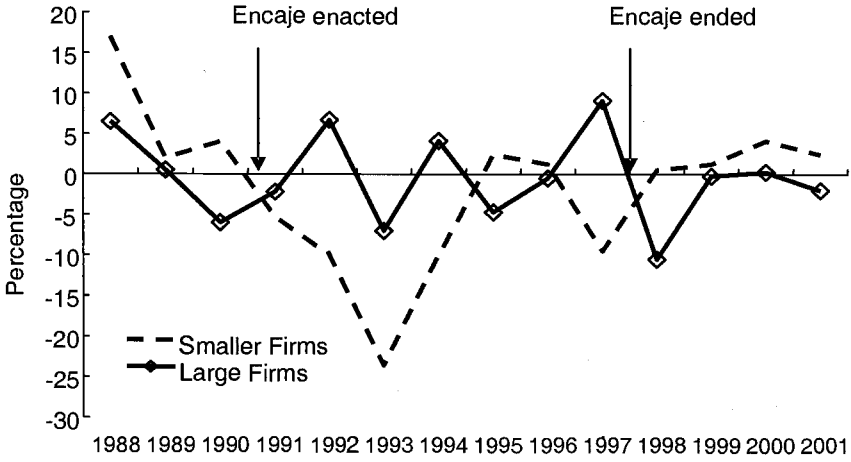

Fig. 4.3 Growth in investment-capital ratios for Chilean firms
Source: Forbes (2003).

nancial market development and financing constraints for all types of firms. Her study also finds that smaller firms have significantly greater financial constraints than larger firms in less financially developed countries.

4.3.2 Evidence from Individual Countries

This series of studies using a range of different statistics to measure capital account liberalization and its impact on firm financing constraints has utilized cross-country, firm-level data. Although cross-country data have the obvious advantage of being able to test for common relationships across different countries, they have the disadvantage of aggregating across very different liberalization experiences and relying on more limited data that are only available across countries. In order to avoid these problems, several studies have focused on individual countries' experiences with capital account liberalization and firm financing constraints.

One country that has received substantial attention is Chile. Chile enacted taxes on capital inflows (the *encaje*) from 1991 to 1998. This experience is useful for case studies not only because it is generally cited as one of the most successful examples of capital controls, but also since the enactment and then removal of the tax provides a useful time-series dimension to assess its impact.[17] Forbes (2003) examines how the *encaje* affected investment and financial constraints for different types of publicly traded firms in Chile. Figure 4.3, which is replicated from the paper, shows that in-

17. See Forbes (2003) for more information on the *encaje* and the literature assessing the impact of these capital controls.

vestment growth was higher for smaller, publicly traded firms than larger 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 larger companies. A more formal empirical analysis in the study that controls for a range of variables confirms these results and indicates that the *encaje* significantly increased financial constraints for smaller, publicly traded companies, but not for larger firms.

Gallego and Hernández (2003) use a different estimation technique to examine the impact of capital controls in Chile, but they find similar results. Their study shows that the *encaje* significantly increased the cost of external funding for Chilean firms, although the average effect was small in magnitude. These effects also vary substantially across different types of firms. For example, the impact of the *encaje* on financing costs for smaller firms was about 60 basis points higher than for firms that could issue securities abroad. Gallego and Hernández (2003) also examine the impact of lifting restrictions on capital outflows in Chile. In contrast to the effect of the *encaje,* lifting controls on capital outflows increases the cost of funding for all types of firms, although the magnitude of the effect is small. The paper states that controlling capital outflows by "keeping national savings 'captive' in the local market may have resulted in an artificially lower cost of borrowing for firms" (Gallego and Hernández 2003, p. 243).

Although most other countries do not provide as clear a natural experiment to test the impact of capital account liberalization as the Chilean *encaje,* other studies have focused on how broader measures of financial liberalization affect firm financing constraints. For example, Gelos and Werner (2001) examine the impact of widespread financial market liberalization in Mexico in the late 1980s on fixed investment in Mexican manufacturing firms.[18] Their study finds that after financial market liberalization, financial constraints were significantly eased for smaller companies, although not larger companies. Liberalization may not have reduced financial constraints for larger companies, for two reasons. First, larger companies had much lower financial constraints before liberalization. Second, larger companies were more likely to have stronger political connections that provided better access to directed credit at preferential rates before liberalization.

Other studies examine the impact of broader financial market liberalizations in other Latin American countries. Gallego and Loayza (2000) focus on Chilean firms between 1985 and 1995 and find that firms were financially constrained before liberalization (during the period from 1985 to 1990), and these constraints were significantly reduced after liberalization

18. This study uses an innovative approach to address a censoring problem in investment data by using real estate as collateral.

(from 1991 to 1996). The paper does not test for the impact of the *encaje* (which was enacted midway through the later period) or differentiate between large and small firms.[19] Jaramillo, Schiantarelli, and Weiss (1996) focus on Ecuadorian firms in the 1980s and find that capital market imperfections caused smaller and younger firms to be more financially constrained than older firms. Financial constraints do not fall significantly after liberalization (even for small firms), but the authors admit that since financial reform was an ongoing process, it is difficult to clearly identify the pre- and postreform episodes. They also admit that this time-series analysis is complicated by several macroeconomic events during this period, including severe inflation in 1988, a major earthquake, loose fiscal policy, and a sharp reduction in credit provided by the central bank.

A final country study of the impact of financial market liberalization on financial constraints is Harris, Schiantarelli, and Siregar (1994). This study examines Indonesian manufacturing establishments and suffers from similar time series identification problems as Jaramillo, Schiantarelli, and Weiss (1996). With this caveat, the study finds that liberalization improves access to financing for all types of firms, but may increase borrowing costs, especially for smaller firms. The study suggests that the movement from preferential credit to lending based on market mechanisms can increase the overall availability of financing, but it may simultaneously raise the cost of capital for individual firms that previously benefited from preferential access to credit.

4.3.3 Summary

This series of cross-country and individual case studies on the impact of capital controls, capital account liberalization, and broader financial market liberalization on the supply and cost of capital has several key themes. First, liberalization tends to reduce the cost of capital and ameliorate financial constraints, on average, two effects that are consistent with liberalization's increasing the supply of capital. Second, smaller firms and companies that did not previously have access to international capital markets are more likely to experience these benefits of liberalizations. Third, certain types of firms in several countries may have benefited from capital controls and more restricted financial markets, possibly through preferential lending agreements. These companies were less likely to benefit from reduced financial constraints after liberalizations, and may even face a higher cost of capital. This set of microeconomic results clearly suggests that capital controls can reduce the supply and increase the price of capital, making it

19. Gallego and Loayza (2000) find evidence, however, that firms eligible for investment in pension funds (pension fund management company [PFMC]–grade firms) were less financially constrained than non PFMC-grade firms before 1990. Since PFMC-grade firms tend to be larger than the average Chilean firm, this is consistent with the hypothesis that smaller firms were more financially constrained than larger firms during this period.

more difficult for many firms to obtain financing for productive investment. Although experiences vary across countries, these effects are generally greatest for smaller firms, firms in less distorted financial markets, and firms without access to international capital markets or preferential lending arrangements. This impact of capital controls on small firms could be particularly important for emerging markets in which small and new firms are often important sources of job creation and economic growth.

4.4 Capital Controls and Market Discipline

Capital controls can not only reduce the supply and increase the cost of capital, but they can insulate an economy from competitive forces, reducing market discipline and allowing capital to be allocated inefficiently. Some of the results discussed in the last section were consistent with this effect—although none of the studies tested it explicitly. An additional series of microeconomic papers, however, tests whether capital controls affect market discipline through three closely related channels: through the efficiency with which capital is allocated, through the government's ability to channel resources inefficiently, and through the information content in asset prices.

4.4.1 Capital Controls and the Allocation of Capital

Chari and Henry's study (2004a) is the most careful study directly testing for the impact of capital controls on the allocation of capital. This study examines how stock market liberalizations in emerging markets affect investment and the return to capital for different types of firms. It finds that firms with better fundamentals before liberalization have a greater increase in capital investment after liberalization. Moreover, this effect of firm characteristics on the allocation of investment can outweigh the average effects on all equities from liberalization. For example, the paper's baseline estimates show that a 1 percentage point increase in a firm's expected future cash flow (indicating stronger fundamentals) predicts a 4.1 percentage point increase in its investment ratio after liberalization. In comparison, the country-specific impact of liberalization on the cost of capital predicts only a 2.3 percentage point increase in investment. The authors conclude that stock market liberalizations do "not constitute a wasteful binge" and that the "invisible hand" is "discerning" in its ability to allocate capital to firms with higher expected returns after liberalizations.

A number of studies focus on how liberalizations in areas other than equity markets affect the allocation of investment across firms. Galindo, Schiantarelli, and Weiss (2006) assess if banking-sector liberalizations (which include reducing barriers to foreign investment as well as other reforms) improve the efficiency with which investment is allocated in twelve

developing countries. The study measures the efficiency of the allocation of capital using an index measuring whether investment funds go to firms with a higher marginal return to capital. The return to capital is measured using panel estimates of a Cobb-Douglas production function. Results show that liberalizations increase the efficiency of the allocation of investment in the majority of emerging markets in their sample. Jaramillo, Schiantarelli, and Weiss (1992) focus on a broader definition of financial market liberalization (including the banking sector as well as other financial markets) and only include firms in Ecuador during its period of liberalization in the 1980s. They also find that liberalization increases credit flows to more "technically efficient" firms, although the time series framework in this study has several problems (as discussed in section 4.3.2).

Several microeconomic studies have also tested for a relationship between the allocation of capital and overall financial development, as measured by the size of a country's equity and credit markets relative to GDP. This measure has a positive relationship to capital controls, although an even weaker one than measures of financial market liberalizations (as discussed above). Nonetheless, the results from these studies are consistent with the results on how capital controls affect the allocation of capital. For example, Wurgler (2000) uses industry-level data to show that investment growth is more closely associated with the growth in value added (a measure of the return to capital) in countries with more developed financial systems. Rajan and Zingales (1998) show that industries that are more reliant on external financing grow faster in more financially developed countries, suggesting that financial development reduces firms' costs of external finance.[20] These results suggest that capital is allocated more efficiently in countries with more developed or deeper financial markets.

Abiad, Oomes, and Ueda (2004) also examine the relationship between financial markets and the allocation of capital, but they explicitly test for differences in the relative importance of financial liberalization (the focus of the papers at the beginning of this section) and of overall financial development (the focus of the papers in the previous paragraph). The Abiad et al. study also develops a new method for measuring the efficiency of the allocation of capital. More specifically, it uses the dispersion in Tobin's q in a given country and year (after controlling for other factors) to proxy for the variation in expected returns. A lower variation in returns is interpreted as indicating that capital is allocated more efficiently, because if a country removes its capital controls, then credit should be reallocated from firms with lower expected returns to firms with higher expected returns, thereby raising expected returns for the former group and reducing them for the latter. The study finds that financial liberalization (which includes entry

20. Reliance on external financing is measured by the industries' reliance on external financing in the United States.

barriers for banks, restrictions on international financial transactions, credit and interest rate controls, privatization, and other regulations) improves the allocation of credit across firms. In contrast, financial deepening (which is measured by the volume of credit being intermediated in financial markets) affects firms' access to finance but is a less important determinant of the allocation of capital.

4.4.2 Capital Controls and Government's Allocation of Resources

In developed countries, the allocation of capital and investment is largely determined by financial markets. In emerging markets and developing countries, however, the government often plays a more important role. Moreover, capital controls can insulate governments from market discipline, giving government agencies greater freedom to allocate capital based on factors other than the expected returns to investment. Therefore, instead of testing for the general impact of capital account liberalization on the allocation of a capital, an alternate approach is to test whether liberalization affects the government's ability to allocate capital to preferred companies.

One paper that uses this approach is Johnson and Mitton (2002). This study examines how the Asian crisis and the announcement of Malaysia's capital controls affected stock returns for individual Malaysian companies. It splits the sample into firms with political connections to senior government officials (such as Prime Minister Mahathir) 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 expected ability of the government 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, thereby reducing market discipline.

Moreover, the empirical estimates in Johnson and Mitton (2002) suggest that this effect of the Malaysian capital controls on expected market discipline 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 percent of the total market value for connected firms.

4.4.3 Capital Controls and Asset Market Pricing

Capital controls can also impact the allocation of capital by affecting the liquidity of asset markets and the efficiency of asset market pricing. Controls on capital inflows can make it more difficult for foreigners to invest in domestic financial markets, therefore reducing a valuable source of investment and liquidity. On the other hand, controls on capital outflows could increase liquidity by keeping funds inside the country. Similarly, restrictions on domestic companies' ability to raise financing abroad could foster the development and liquidity of domestic financial markets. Controls on either capital inflows or outflows, however, could reduce competitive pressure and market discipline, thereby reducing the information content of asset prices. This effect could be particularly important in less developed financial markets, where foreign investors can have greater experience valuing assets and therefore provide more reliable pricing information. Therefore, the impact of capital account liberalization on asset market liquidity and pricing efficiency must be resolved empirically. This is an important issue not only in and of itself but also because stock market mispricing can affect a number of firm-level variables, such as the cost of debt, total investment, FDI, and merger and acquisition activity.[21]

Li et al.'s (2004) study provides evidence on how capital account liberalization could affect the efficiency of asset pricing. This study examines the extent to which individual stock prices move up and down together in specific countries—what is also called "synchronicity." 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. The Li et al. 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. Therefore, greater openness in capital markets is associated with more market discipline and more efficient stock market pricing. This relationship is magnified in countries with strong institutions and good governance.

One set of results in the working-paper version of the study by Li et al. (2004) is particularly relevant to the previous discussion of the impact of the Asian crisis and Malaysian capital controls on stock market prices.[22] Around the time of the Asian crisis, the firm-specific variation in stock

21. Different studies in this literature find different effects. See Baker, Foley, and Wurgler (2004) for an overview.

22. These results were removed from the published version of the paper but are included in the working-paper version prepared for the conference on Global Linkages held at the IMF on January 30–31, 2003. The paper is available at http://web.mit.edu/kjforbes/www/GL-Website/GL-Conference.htm.

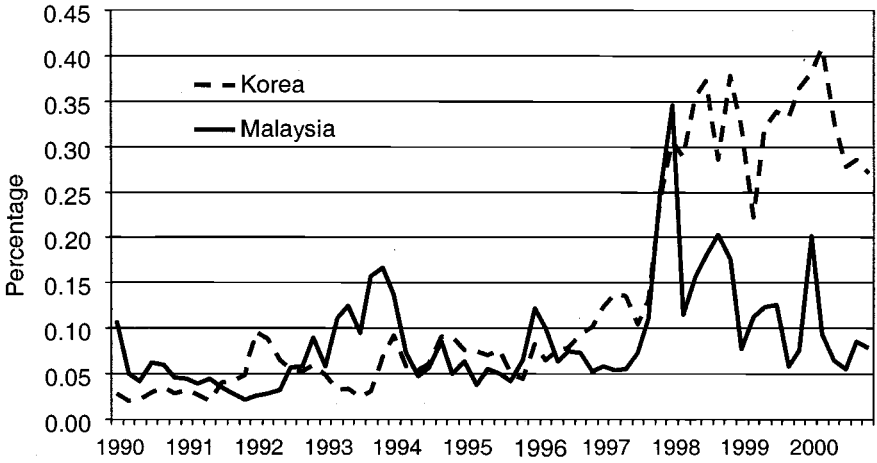

Fig. 4.4 Firm-specific variation in stock prices

Source: Based on data from Li et al. (2004).

Notes: Higher levels of firm-specific variation in stock prices indicate greater pricing efficiency.

prices increased significantly in most Asian countries and remained high for an extended period. This pattern is graphed for Korea in figure 4.4, and it is typical of most open economies in the region. In Malaysia, the firm-specific component of stock prices also increased significantly after the Asian crisis, but it then fell sharply after capital controls were imposed (as also shown in fig. 4.4). Although not a definitive test, this comparison supports the claim that the Asian crisis increased market discipline and the firm-specific content in stock prices, while the Malaysian capital controls suppressed market discipline and reduced the efficiency of stock market prices.

Several studies have focused on an even narrower aspect of the relationship between capital controls and asset pricing by examining the impact of firms' "migrating" abroad (i.e., of cross-listing on foreign stock markets, issuing depositary receipts, or raising capital directly in international markets). Capital controls can limit—or even restrict entirely—the ability of firms to access international capital markets through these channels. An extensive literature evaluates the impact of migration on firms that access international markets, as well as the corresponding impact on domestic firms that do not migrate. Bekaert and Harvey (2003) include a summary of this literature. Firms that access international capital markets generally attain a lower cost of capital and greater trading liquidity. Levine and Schmukler (2006), however, show that migration reduces the trading activity and liquidity of domestic firms that do not raise capital internationally. Migration not only shifts some trading activity abroad; it also shifts trad-

ing activity within the domestic market away from purely domestic firms to the "migrated" firms.

4.4.4 Summary

This series of cross-country and case studies on the impact of capital controls, capital account liberalization, and broader financial market development on market discipline and the allocation of capital provides several insights. First, capital controls can reduce market discipline and insulate the economy from competitive forces. Second and closely related, financial development, and especially capital market liberalization, leads to a more efficient allocation of capital across firms. Third, these effects of capital controls work through a number of different channels—including effects on stock market valuations, access to financing, the government's ability to channel resources inefficiently, and the efficiency of stock market pricing. Therefore, capital controls appear to have widespread effects on market discipline and the allocation of capital across firms, effects that are likely to reduce productivity and growth.

4.5 Capital Controls and the Behavior of Firms and Individuals

Capital controls can cause firms and individuals to alter their behavior to minimize the costs created by the controls. This modification in behavior can result from the explicit tax imposed by the capital controls, as well as from the impact of capital controls on the supply and allocation of capital. In some cases, this modification of behavior can involve inaccurate or dishonest reporting or accounting in order to evade the controls outright. These types of attempts by firms and individuals to minimize the costs of capital controls can create additional distortions in an economy.

4.5.1 Capital Controls and Firm Behavior

One careful study of how capital controls affect firm behavior focuses on U.S. multinationals. Desai, Foley, and Hines (2004) show that U.S. multinationals adjust their trade patterns, profits, and dividend repatriations in order to evade capital controls in other countries. For example, their study estimates that multinational affiliates are about 10 percent more likely to remit dividends to parent companies in the presence of capital controls, and that the distortions to profitability from capital controls are comparable to a 24 percent increase in the corporate tax rate. It also shows that the cost of borrowing is higher in countries with capital controls, and when this effect is combined with the other steps multinationals take to evade the controls, this reduces the size of foreign investment by multinationals by 13 percent to 16 percent. Therefore, not only can capital controls create widespread distortions in how foreign companies behave in countries with controls, but they also reduce the total amount of FDI available to host countries.

Another study that examines the effect of capital controls on firm behavior focuses on local firms instead of multinational affiliates. Schmukler and Vesperoni (2001) use firm-level data from East Asia and Latin America for the 1980s and 1990s to examine how leverage ratios, debt maturity structures, and financing sources change when countries increase their integration with international equity and bond markets and undergo financial liberalization. The study finds that, on average, debt maturity tends to shorten but debt-equity ratios do not increase. It also finds that domestic firms that participate in international markets obtain better financing opportunities and extend their debt maturities. Also, firms in economies with more developed domestic financial systems are less affected by liberalization. These results suggest that some, although not all, firms may have expanded financing opportunities when countries lift their capital controls and increase their integration with global financial markets.

Instead of focusing on a cross section of countries, several studies examine how capital controls affect firm behavior in an individual country. Forbes (2003) shows that the *encaje* (the Chilean tax on capital inflows discussed in section 4.3) caused companies to adjust their financial structure in a number of ways. For example, immediately after the *encaje* was enacted, there was a sharp increase in the number of firms choosing to issue stock that could then be cross-listed in the United States as American Depositary Receipts (ADRs). Individuals trading stock listed as secondary ADRs could avoid paying the *encaje.* In 1995, however, the Chilean government closed this loophole and included ADRs under the *encaje.* The number of Chilean firms issuing stock plummeted. Figure 4.5 shows these distortions to Chilean stock listings created by the *encaje* and changes in its coverage. Cifuentes, Desormeaux, and González (2002) also discuss how changes in this ADR loophole affected the evolution of the Chilean stock market. Their paper argues that the extension of the *encaje* to include secondary ADRs significantly reduced financial liquidity, transactions, and investment in the domestic stock market—a reduction that persisted even after the *encaje* was lifted.

Gallego and Hernández (2003) perform an even more detailed empirical analysis of how the *encaje* affected the financial decisions of Chilean firms. Their study finds that the *encaje* caused firms to reduce their leverage ratios and paid capital, and increase their reliance on retained earnings. This suggests that the capital controls raised the cost of borrowing and of issuing equity, although the average magnitudes of these effects were fairly small. The study also finds that the *encaje* shortened the maturity of debt, while reducing the relative importance of short-term financial debt, indicating that firms shifted to other sources of short-term funding to avoid the tax (such as delaying tax payments and obtaining credit from suppliers). Moreover, one fairly consistent finding throughout the study is that estimates of the average effects of the capital controls mask significant differ-

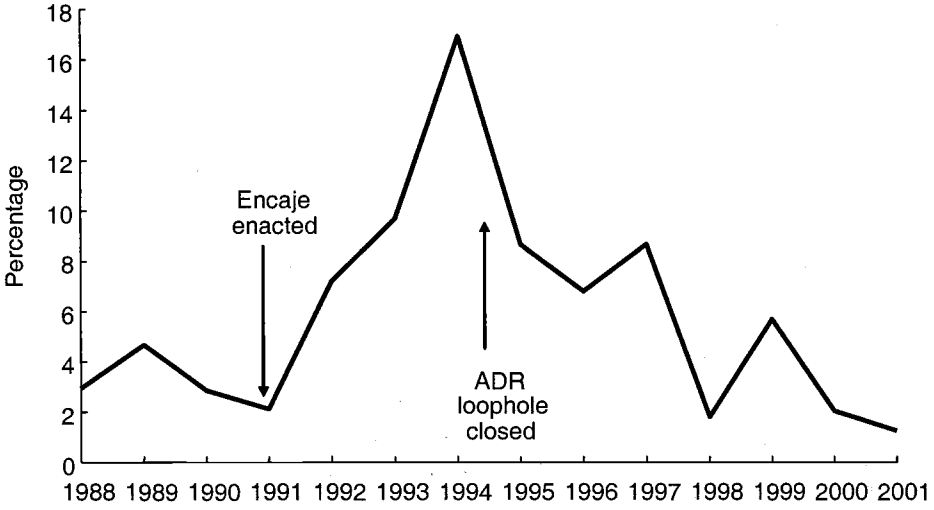

Fig. 4.5 Stock issuance/capital for Chilean firms
Source: Data from Forbes (2003).

ences across firms (as was found in the work discussed in section 4.3 on the impact of the *encaje* on firm financing constraints). Firms that were larger, belonged to a conglomerate, or were able to issue securities abroad were more likely to respond to the capital controls by reducing their leverage through increases in their capital base (instead of resorting to retained earnings). Other firms, and especially smaller firms, were more likely to respond to the capital controls by resorting to retained earnings for financing and increasing their reliance on short-term debt.

Other than the cross-country and Chilean studies on how capital controls affect firm behavior, most other evidence relies on anecdotes instead of formal empirical analysis. Several of these case studies, however, provide more concise descriptions of exactly how companies adapt their behavior in order to avoid capital controls. Many of these mechanisms are difficult to test empirically—but they could explain some of the more general effects discussed throughout this paper. One such study by Loungani and Mauro (2001) focuses on Russia.[23] This paper provides a detailed description of different strategies followed by Russian firms to evade capital controls. For example, in order to take money out of the country, firms would overstate import payments, by means that included the use of fake import contracts for goods and services. Companies would also create enterprises with the sole purpose of presenting fake import contracts requiring ad-

23. Also see Tikhomirov (1997) for an excellent description of different methods used to evade capital controls in Russia.

vance payments, and then the enterprises would be dissolved once the funds had been transferred out of the country. Companies would also misrepresent export earnings, by means such as under-invoicing exports or exporting via an offshore subsidiary with a low recorded transfer price (so that the margin between the transfer and market prices could be deposited offshore). All Russian firms, however, were not equally adept at circumventing the controls, which contributed to uneven competitive conditions and distorted the allocation of resources. The study presents evidence that firms' ability to evade the capital controls was widespread and that, as a result, capital controls increased corruption and lowered economic efficiency in Russia.

4.5.2 Capital Controls and Individual Behavior

Individuals, as well as firms, can modify their behavior to minimize the cost of capital controls—or even evade them outright. One compelling example is how individuals responded to the "*corralito*" enacted by Argentina at the end of 2001. The *corralito* restricted capital outflows and withdrawals from the banking system. During this period the stock market rose dramatically, despite a sharp economic contraction, a plummeting peso, and a banking system on the verge of collapse. Auguste et al. (2002) explain this apparent discrepancy. Investors dodged the capital controls by purchasing Argentine stocks for pesos, converting the stocks into ADRs, and then selling the ADRs in New York for dollars that could be deposited in U.S. bank accounts. The study estimates that the capital outflow through this single loophole was between $835 million and $3.4 billion in just the four months starting in December 2001. Investors were willing to pay a substantial premium to evade the *corralito*—with some ADRs trading at a discount of over 40 percent. Once the conversion of Argentine shares into ADRs was prohibited, the premium returned to nearly zero. Figure 4.6 (replicated from the Auguste et al. paper) shows these trends for one Argentine stock. Melvin (2003) also studies the same episode and reaches similar conclusions. The surge in the ADR premium during the period of the *corralito* reflects what investors were willing to pay to avoid the Argentine capital controls.

Several papers also describe how investors adjusted their behavior to avoid capital controls in Russia. For example, Tikhomirov (1997) provides a number of examples—including how Russian citizens would hold foreign currency funds in banks abroad so that they could invest and utilize these resources more freely. Abalkin and Whalley (1999) discuss how Russian citizens would convert local currency holdings and bank deposits into dollars, partially to facilitate evasion of the controls.

4.5.3 Summary

This series of microeconomic studies suggests that capital controls can cause widespread distortions in the behavior of firms and individuals. U.S.

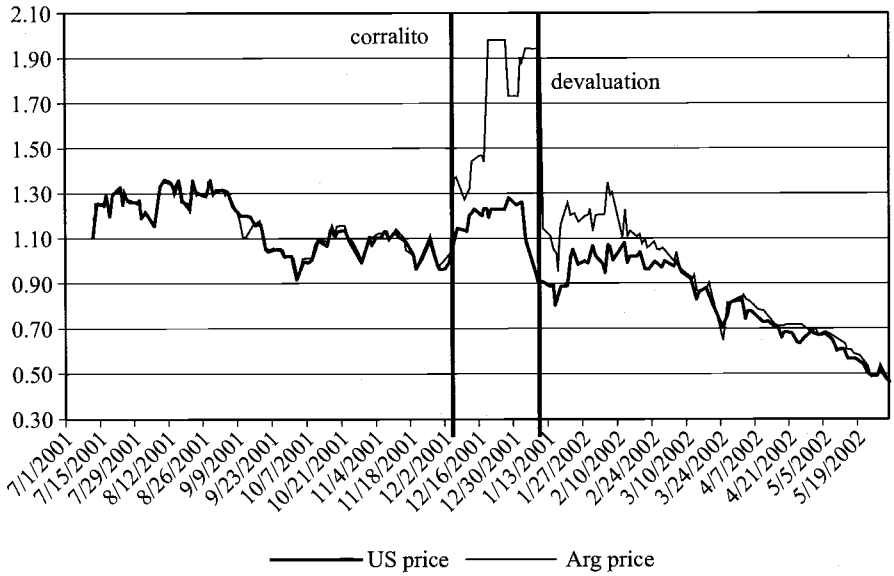

Fig. 4.6 Argentine and U.S. prices and premia for Perez Companc
Source: Auguste et al. (2002, fig. 6).

multinationals adjust their trade patterns, profits, and dividend repatriations to evade the controls. Domestic companies adjust their debt maturities and financing structures when capital controls are lifted. Individuals are willing to pay a substantial premium for a financial transaction that allows them to evade controls. Companies and individuals adopt numerous accounting gimmicks—including creating temporary corporations—simply to dodge the controls. These widespread distortions to firm and individual behavior resulting from the capital controls are likely to be inefficient.

4.6 The Enforcement of Capital Controls

Since firms and individuals will respond to capital controls by adjusting their behavior, enforcing the controls and ensuring that they are effective can not only be a challenge but also involve substantial administrative costs. Implementing capital controls is often a dynamic process. After a system of controls is specified, firms and individuals often find ways to evade the controls, diminishing their effectiveness over time. Governments that do not wish to see the effectiveness of the controls weakened will need to constantly adopt new controls and regulations in order to close loopholes and respond to the adjustments in behavior that resulted from the initial controls. Countries with weak institutions, especially a weak rule of law and high levels of corruption, are even less likely to be able to imple-

ment and enforce capital controls. Moreover, by providing an opportunity for government officials to collect rents, capital controls can increase incentives for corruption and undermine institutions.

There is extensive anecdotal evidence from different countries on the difficulty faced by governments that attempt to enforce capital controls and the link between capital controls and corruption. For example, Tikhomirov (1997) provides a fairly detailed account of the attempts by the Russian government to limit illegal capital flight. Despite the continual passing of new rules and regulations in order to improve the government's control over capital flows, many of these rules were highly ineffective and capital flight was extensive. Different sources suggest that capital flight from Russia between 1990 and 1995 was somewhere in the very wide range of $35 billion to $400 billion. The study asserts that "instead of cutting profits from the illegal transfer of foreign currency funds abroad, these measures [the controls] spread the corruption from the foreign trade sector to the bureaucracy and, later, to the banking sector" (Tikhomirov 1997, p. 595). Russia's challenges in enforcing capital controls, however, could result partially from the weak institutions in the country during the period of this study.

The Chilean experience with the *encaje* (discussed above) therefore provides a useful contrast. Chile has sound institutions, a strong rule of law, and low levels of corruption. Despite these advantages, the government was constantly modifying the *encaje* in order to close new loopholes that were discovered by firms and investors. These changes included everything from the types of inflows covered, to the currency with which to pay the tax, to restrictions on rolling over maturing investments.[24] Moreover, despite Chile's constant attempts to raise the amount of the tax, tighten the capital controls, and close loopholes, there is some evidence that the effectiveness of the controls may still have declined over time.[25] Central bank data show that in 1992 the *encaje* covered about half of total gross capital inflows, but in subsequent years coverage declined to only 24 percent of inflows (Gallego, Hernández, and Schmidt-Hebbel 1999). Despite these challenges of enforcing the capital controls, however, the Chilean government still collected substantial revenues under the tax, which suggests that it still maintained some degree of effectiveness.[26]

24. See Simone and Sorsa (1999) or Ariyoshi et al. (2000) for detailed information on this evolution of capital account restrictions in Chile over the 1990s.

25. For example, Cowan and de Gregorio (1998) calculate the "power" of the controls and argue that their power declined between 1995 and 1997 as evasion increased. Other studies, however, argue that the power of the controls increased steadily over time until they were removed in 1998. For example, see Gallego, Hernández, and Schmidt-Hebbel (1999) and Valdés-Prieto and Soto (1998). Also see Simone and Sorsa (1999) for an overview of work on the evasion of the *encaje*.

26. Gallego, Hernández, and Schmidt-Hebbel (1999) report that between June 1991 and September 1998, the *encaje* increased central bank reserves by an average of 2 percent of GDP, or 40 percent of the average capital account surplus.

Moreover, as new financial instruments continue to be developed and investors and firms become more adept at transferring capital across borders, it will become even more difficult to enforce capital controls. The recent case of Argentine investors using ADRs to evade the *corralito* provides a clear example of this challenge. After studying this experience, Auguste et al. (2002) suggest that once countries allow financial market development, "it may be difficult if not impossible to reverse the process of capital market integration with (even draconian) capital controls" (p. 4).

4.7 Conclusions

Although the cross-country macroeconomic evidence on how capital account liberalization affects growth has yielded mixed results to date, a series of microeconomic papers provides far more persuasive evidence on the diverse effects of capital controls and capital account liberalization. The studies surveyed in this paper present compelling empirical evidence that capital controls can affect the supply and cost of capital, market discipline, the allocation of resources, and the behavior of firms and individuals. Several studies also find that the effects of capital account liberalization vary across types of firms, reflecting different preexisting distortions under capital controls. For example, although lifting capital controls tends to reduce financial constraints for most firms, it can have no effect (or even increase financial constraints) for firms that received preferential treatment under the controls or had already found ways to evade them.

This microeconomic research on the impact of capital controls, however, is only in its infancy. Much more careful analysis is needed to better understand why capital account liberalization can have varied effects in different countries, and especially on what variables determine the success of liberalizations. For example, what are the microeconomic consequences of different sequencing when lifting capital controls? What are the microeconomic linkages between trade liberalizations and capital account liberalizations? How do different institutions interact with the microeconomic effects of capital controls? And are the benefits of capital account liberalization usually level effects or growth effects?

Moreover, although this paper discusses how capital controls and financial liberalizations directly affect a series of microeconomic variables, it does not address a number of additional channels by which capital controls could affect key macroeconomic variables (such as exchange rates, the financial system, and/or monetary policy), which could, in turn, have additional effects on firms and individuals. For example, controls on capital outflows could reduce pressure on a currency to depreciate, and controls on capital inflows could reduce pressure on a currency to appreciate. Controls on capital outflows could help support a weak financial system, while controls on capital inflows could hinder the development of a deeper and

more efficient financial market. Controls on capital inflows and outflows could create a wedge between domestic and foreign interest rates, thereby providing a country with more flexibility to follow an independent monetary policy. Changes in exchange rates, the financial system, and interest rates will, in turn, affect a range of microeconomic variables in the economy.[27] The paper also does not make any attempt to address the political economy of capital controls, such as what factors determine whether a country is more likely to adopt controls or liberalize its capital account.[28]

Although this survey does not address a number of questions, largely due to the limited microeconomic evidence that currently exists on these issues, it does present a series of convincing results on the effects of capital controls and benefits from capital account liberalizations. Although some specific effects vary across country experiences, capital controls generally reduce the supply of capital, increase the price of capital, and increase financial constraints, especially for smaller firms, firms in less distorted financial markets, and firms without access to international financial markets or preferred access to credit. Capital controls can insulate an economy from competitive forces, reducing market discipline and hindering the efficient allocation of capital through several channels. Capital controls can also cause widespread distortions in behavior, affecting multinationals, domestic companies, and individuals. Moreover, administering capital controls requires a recurrent cost by the government, especially to enforce the regulations and update rules to close loopholes. These widespread effects of capital controls suggest that even though they may yield limited benefits in certain circumstances, they also have substantial and often unexpected economic costs. Capital controls are no free lunch.

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27. For example, see Forbes (2002a, 2002b) for a literature review and analysis of just the single topic of how depreciations affect different measures of firm performance.

28. For a discussion of these political economy questions, see Johnston and Tamirisa (1998).

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Comment Charles W. Calomiris

Kristin Forbes offers a compelling case for the proposition that capital controls generally impose significant economic costs, and more—she pro-

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vides an illuminating review of the microeconomic empirical literature that nicely summarizes the various channels through which capital controls harm the economy. Forbes does not argue against potential benefits from capital controls, but rather cautions against advocating capital controls only on the basis of arguments or evidence suggesting that they may have gross benefits.

The various channels she describes remind us that financial-sector policies alter economic outcomes not only through their immediate effects on the flow of investment, but also through important indirect effects on the productivity of investment, which operate through market competition and discipline, political economic outcomes, and the costs firms expend to avoid financial constraints. The methodological point of the paper—that macroeconomic studies of capital controls using cross-country aggregate data are prone to error because of difficulties of measurement—bears emphasis, as do the unambiguous results of the microeconomic empirical literature, which does not suffer similar measurement problems.

Some of the evidence summarized by Forbes does not directly address the consequences of capital controls, but rather examines the effects of financial controls of many kinds on financial and real outcomes at the firm level. But there are many studies that do bear directly on the question of the costliness of capital controls.

Chari and Henry (2004) find that equity market liberalizations (the removal of capital controls relating to equity markets) are associated with very large positive price effects on domestic stock prices, which are especially large for those in which foreigners are able to invest. Related macroeconomic work by Bekaert, Harvey, and Lundblad (2004, 2005), finds that equity market liberalizations spur economic growth and reduce consumption volatility; significantly, they show that these positive effects associated with international liberalization of equity markets are not explained by other (potentially correlated) financial reforms.

Harrison, Love, and McMillan (2004) find that capital account restrictions increase firms' financing constraints, especially for domestically owned firms. Similarly, Forbes (2003) and Gallego and Hernández (2003) show that Chile's *encaje* reduced the use of debt finance, increased firms' reliance on retained earnings and costly equity offerings, and reduced investment growth, particularly for smaller firms (those most likely to face external financing constraints). Johnson and Mitton (2002) show that Malaysia's capital controls favored politically connected firms by removing the discipline of the marketplace that would otherwise have steered resources elsewhere. Desai, Foley, and Hines (2004) show that, on average, capital controls raise the cost of funds and reduce investments by multinational firms in a manner comparable to a 24 percent increase in the corporate tax rate.

The notion that capital controls are costly also finds support from other

studies, especially the economic history literature, which emphasizes the positive effects of Western European capital outflows (largely from Great Britain) in promoting global economic growth in the pre-World War I era (see Calomiris 2005 for a review). From the perspective of the unambiguously favorable macroeconomic historical evidence on capital mobility, the ambiguity of the macroeconomic evidence from the post-World War II era is quite revealing.

In my view, that difference points to incentive problems in financial regulation in the current era (especially generous safety nets for domestic banks) as the main problem in need of a policy remedy, rather than capital flows per se. Emerging market financial crises (in which so-called sudden stops of capital can be an important exacerbating influence) have been associated with overreliance on short-term, dollar-denominated debt inflows—a form of international financial flow that reflects a weak domestic financing system, and a form of capital inflow that was extremely uncommon historically. In part, the absence of such destabilizing capital flows historically reflected the fact that historical banking systems, even in emerging market countries, largely avoided incentive problems from government protection.

Is it possible to avoid the costs of destabilizing capital flows without giving up the advantages of accessing foreign capital? Yes. Rather than employing costly limits on capital inflows to emerging market countries, policy should instead focus on ways to improve the underlying problem of weak domestic bank regulation and thus overcome perverse incentives created by government policies that encourage the reliance on destabilizing forms of foreign capital.

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