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Capital account liberalization, it is fair to say, remains one of the most controversial and least understood policies of our day. One reason is that different theoretical perspectives have very different implications for the desirability of liberalizing capital flows. Another is that empirical analysis has failed to yield conclusive results.

I. Theoretical Perspectives

Models of perfect markets suggest that international capital movements benefit both borrowers and lenders. Because international investment is intertemporal trade, trade between periods and trade between countries have precisely analogous welfare effects. The case for free capital mobility is thus the same as the case for free trade but for the subscripts of the model. To put the point another way, the case for international financial liberalization is the same as the case for domestic financial liberalization. If domestic financial markets can be counted on to deliver an efficient allocation of resources, why can’t international financial markets?

The answer, another influential strand of thought contends, is that this efficient-markets paradigm is fundamentally misleading when applied to capital flows. Limits on capital movements are a distortion. It is an implication of the theory of the second best that removing one distortion need not be welfare enhancing when other distortions are present.

There are any number of constellations of distortions, especially in developing economies, for which this is plausibly the case. If the capital account is liberalized while import-competiting industries are still protected, capital may flow to

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1. The intertemporal approach to capital mobility owes its origins to Fisher (1930). Influential modern treatments that resuscitated this approach and summarized its implications include Sachs (1981) and Frenkel and Razin (1996).
sectors in which the country has a comparative disadvantage, with immiserizing effects (Brecher and Diaz-Alejandro 1977). If a downwardly inflexible real wage causes too many resources to be devoted to capital-intensive activities, a capital inflow may aggravate this misallocation, again reducing the incomes and welfare of domestic residents (Brecher 1983). If information asymmetries are endemic to financial markets and transactions, then there is no reason to assume that financial liberalization, domestic or international, will be welfare improving (Stiglitz 2000). Even if information asymmetries in domestic markets are judged insufficiently severe to undermine the case for domestic financial liberalization, the same may not be true of international financial liberalization to the extent that international financial transactions take place among agents separated by greater physical and cultural distance. Insofar as these problems are most severe when the transactions in question involve developing countries, where the capacity to assemble and process information relevant to financial transactions is least advanced, there can be no presumption that capital will flow to uses for which its marginal product exceeds its opportunity cost.

But are restrictions on capital movements any better? Capital controls shelter financial intermediaries from foreign competition. They weaken the market discipline on policymakers. They vest additional power with bureaucrats who may be even less capable than markets at delivering an efficient allocation of resources and open the door to rent seeking and resource dissipation by interest groups seeking privileged access to foreign capital.

Although there is theoretical support for both positions, the unfortunate fact is that the evidence on them does not speak clearly. It is not simply quarrels among theorists that have rendered capital account liberalization controversial, in other words, but the failure of attempts to move beyond anecdote and assertion to systematic empirical analysis to yield conclusive results.

The question is why. Have the questions been formulated poorly? Are the methods flawed? Or are the data not up to the task? A critical review of the literature is the obvious first step toward answering these questions. The challenge is that the literature is large and varied. Some studies approach the phenomenon from a macroeconomic point of view, others from a microeconomic perspective. Some focus on the effects of capital account liberalization, others on the causes—that is to say, on the political economy of the decision to liberalize. Any survey of this extensive and varied terrain requires a focus. Here the focus is on cross-country studies of the causes and effects of capital account liberalization, because this is where the big questions are asked and attempts are made to reach conclusions of general applicability to developing countries.2

2. This focus on cross-country ("large n") studies not only dictates what is reviewed and what is left aside. It also differentiates this survey from other reviews of the literature on capital controls and capital account liberalization (such as Dooley 1996; Williamson and Mahar 1998; Cooper 1999; Edwards 1999; Neely 1999). At the opposite end of the empirical spectrum lie case studies of particular episodes. While this “small n” approach allows a particular episode to be considered in great detail, it
II. Measuring Capital Account Liberalization

A first reason why studies of capital account liberalization do not speak clearly is the difficulty of measuring the policy. This section considers three approaches to the problem: measures based on statute, on actual flows, and on asset prices.

Efforts to establish the presence of capital account restrictions on the basis of statute typically build on the data published by the International Monetary Fund (IMF) in its Exchange Arrangements and Exchange Restrictions annual. Most studies focus on restrictions on payments for capital transactions. When capital account liberalization is related to a measure of economic performance like GDP growth over a period of years, the annual observations are transformed into a variable measuring the proportion of years when the country had restrictions in place. Some investigators supplement this information with the IMF’s measure of restrictions on payments for current transactions and sometimes with its measures of surrender or repatriation requirements for export proceeds, separate exchange rates for capital transactions or invisibles, and bilateral payments arrangements with members and nonmembers.

is likely to run head long into an identification problem, because many things will have been changing in the country in question in the period under consideration. “Hybrid studies” attempt to strike a balance between these approaches by pooling detailed information on the capital account regime for several countries and years. An example is Reinhart and Smith (1998), who focus on five cases in which restrictions on capital account transactions were imposed or tightened—Brazil in 1994, Chile in 1991, Colombia in 1993, the Czech Republic in 1995, and Malaysia in 1994—and analyze a four-year window surrounding the event. Similarly, Edison and Reinhart (1999) use daily financial data to examine four capital control episodes: Brazil in 1999, Malaysia in 1998, Spain in 1992, and Thailand in 1997. Four countries offer more degrees of freedom than one, to be sure, but it is still hard to know how far one can generalize from a handful of cases.

3. Along with narrative accounts of the main changes in policies toward the exchange rate and current and capital account payments, starting in 1967 this report has included a table summarizing the exchange arrangements adopted by member countries, but without any detail on how the narrative accounts are converted to summary data. Prior to 1967, the publication provided exclusively qualitative descriptions of restrictions. Some investigators (for example, Quinn 1997) have built indices of capital account liberalization for the earlier period from this information. In the second half of the 1990s, the IMF began providing more detailed breakdowns of policy measures. Starting in 1996, the report disaggregated controls on export proceeds into “surrender requirements for export proceeds” (requiring exporters to surrender to the authorities foreign exchange earned from exporting) and “repatriation requirements for export proceeds” (requiring them to surrender even payments made to overseas accounts). Starting in 1997 it distinguished controls on capital inflows and outflows. These changes create problems for investigators seeking to create time series for capital account liberalization. Thus Glick and Hutchinson (2000) use surrender requirements for export proceeds, which are more restrictive than repatriation requirements for export proceeds, as equivalent to the pre-1996 export surrender measure, and code a country as having capital account restrictions in place in 1997 or 1998 when the report listed controls as in place for five or more of these capital account subcategories and “financial credit” was one of the categories restricted.

4. Restrictions on current account transactions affect the ability of the private sector to obtain foreign exchange for payments related to merchandise imports and to retain foreign exchange earned through exporting and the ability of foreign direct (and other) investors to repatriate interest earnings and other profits. The argument for using them is that current account transactions can be used to evade restric-
These data have limitations. Data on “restrictions on payments for capital transactions” available before 1996, for example, may not reflect restrictions on capital transfers by nonresidents. In addition, drawing a line between measures affecting the current account and those affecting the capital account is problematic. Thus data on separate exchange rate(s) for some or all capital transactions, for instance, include measures affecting some or all invisibles, which may include payments on current as well as capital account. Bilateral payments arrangements with members and nonmembers include not just separate exchange rates for capital transactions, which are directly relevant to a consideration of capital account liberalization, but also the use of one unitary rate for transactions with one country but a different unitary rate for transactions for another country, where the second kind of multiple rate is often used to discriminate among transactions on current as well as capital account.

Although the presence of current account restrictions, export-surrender requirements, bilateral payments arrangements, and separate exchange rates may convey information on the scope of efforts to deter the evasion of capital controls, deterrence is not their main purpose. Moreover, current account restrictions are likely to have other important effects that the unwary investigator may conflate with their impact on capital mobility. They influence merchandise trade. They limit opportunities for repatriating interest and principal. And insofar as they tend to be imposed by countries suffering from serious policy imbalances, their “effects” will reflect the influence of these deeper policy problems as much as those of the capital controls themselves.

Most studies “solve” the problem of measuring the intensity of controls by ignoring it. They settle for constructing a dummy variable for the presence or

tions on capital account–related payments (by resort to leads and lags and over- and underinvoicing of exports and imports) and that surrender requirements, bilateral payments restrictions, and multiple exchange rates, which may then be used to close off these avenues of evasion, therefore contain information on the intensity of controls.

5. Leading in turn to creative attempts to supplement them. Some investigators have used such sources as the International Finance Corporation’s Emerging Market Facts Book and World Bank country reports. Thus Levine and Zervos (1998) and Levine (1999), who are concerned to identify major changes in restrictions on capital flows, consult all these sources and count only episodes corroborated in more than one publication and described there as “major” or “significant.” Kraay (1998), relying exclusively on Exchange Arrangements and Exchange Restrictions, identifies major liberalization episodes as years that are preceded by five consecutive years of capital controls and followed by five consecutive years of no controls.

6. Similar arguments are made about the black-market premium, which is sometimes used as a measure of restrictions—namely, that it distorts the pattern of trade, is associated with serious macroeconomic policy imbalances, and tends to widen in response to political shocks. Thus, Sachs and Warner’s (1995) measure of economic openness depends mainly on the black-market premium (one of its four components), as Rodríguez and Rodrik (1999) show. Rodríguez and Rodrik argue that this index is unlikely to be a good measure of openness per se because it tends to be associated with macroeconomic and political instability. Similar arguments can be made about capital controls themselves: Countries with serious policy imbalances are the most likely to resort to the instrument. The implication is that any effect superficially associated with the measure conflates the influence of those underlying conditions and that of the policy instrument itself.
absence of controls. In an attempt to go further, Quinn (1997) distinguishes seven categories of statutory measures for 56 countries for 1950–94 and for 8 more countries starting in 1954. Four are current account restrictions, two are capital account restrictions, and one captures international agreements constraining a country’s ability to restrict exchange and capital flows, such as membership in the Organisation for Economic Co-operation and Development (OECD). For each category, Quinn codes the intensity of controls on a 2-point scale (from 0, most intense, to 2, no restriction) to produce a 0–14 index of current and capital account restrictions and a 0–4 index of capital account restrictions. Not surprisingly, Quinn’s index has proven wildly popular and has been used by many subsequent investigators.

The difficulty of deriving measures of the policy regime from information on statutes and policies has led investigators to experiment with alternatives. Kraay (1998) and Swank (1998) use actual capital inflows and outflows as a percentage of GDP as a measure of the freedom of capital movements. The problem, as these investigators are aware, is that actual inflows and outflows will be affected by a range of policies and circumstances—monetary, fiscal, and exchange rate policies; the global economic and financial climate; and political circumstances, to name three—and not merely by restrictions on capital flows. Hence, this measure is unlikely to be an informative indicator of the capital account regime.

Bekaert (1995) and Aherane and others (2000) use one minus the ratio of the market capitalizations of the International Finance Corporation’s (IFC) Investable and Global Indices. The Investible Index consists of the stocks (or portions of stocks) in the Global Index deemed to be available to foreign investors. Thus, one minus the ratio of the two can be interpreted as a measure of the intensity of foreign ownership restrictions. The limitation of this measure, obviously, is that it captures only restrictions on equity inflows.

7. Such a high degree of differentiation necessarily relies on the judgment of the coder. Quinn addresses this problem by having each observation coded by two coders and then reconciling the differences.

8. A more detailed index has been constructed by Johnston and others (1999) for 41 industrial, developing, and transition economies, but only for 1996. This uses the detailed breakdown of 142 individual types of exchange and capital controls (aggregated into 16 categories) first published in Exchange Arrangements and Exchange Restrictions in 1997. The existence and intensity of controls are measured by normalizing the number of actual categories of controls (separately for controls on current and capital accounts) by the number of feasible measures. The number of countries for which they provide these estimates is limited, reflecting the limited coverage of the 1997 edition of Exchange Arrangements and Exchange Restrictions. In addition, the time dimension is lost due to the absence of comparable data for prior years.

9. It is likely to be useful only for distinguishing countries wholly closed to capital flows, where payments on capital account will be zero, from more open countries, the notion being that only countries with draconian controls that render them wholly closed to international financial markets will display neither inflows or outflows.

10. In addition, the measure captures more than statutory controls; for example, if a large firm that trades on, say, the Manila Stock Exchange is held mainly by one or two Filipino investors, their share would enter the Global Index but its weight in the IFCI would be based on the portion of the shares available to foreigners.
Several researchers have used the correlation of stock market returns across countries as a measure of the international integration of securities markets. But the correlation of raw returns says little about the integration of markets, because returns will vary with the characteristics of the underlying assets, which depend on the characteristics and condition of the entities issuing the claims. Thus, in a study representative of the genre, Bekaert (1995) first regresses national returns in excess of the U.S. interest rate on five instrumental variables (lagged local and U.S. excess returns, local and U.S. dividend yields, and a transformation of the U.S. interest rate, variations in which might create reasons why the excess returns on different markets might differ) to derive expected returns, before computing the correlation of the these expected returns with expected returns in the United States as a measure of market integration.\footnote{A disadvantage of this simple implementation is that no changes in the estimated degree of market integration are allowed to occur over time. Harvey (1995) and Bekaert and Harvey (1995) implement rolling- and switching-regression methods that, subject to further assumptions, permit the degree of market integration to vary over time.} Clearly, the resulting measure is only as good as the model that generates the expected returns.\footnote{If assets are priced according to a multifactor model rather than the one-factor model with constant risk exposures that Bekaert assumes, emerging markets might display cross-section differences in risk exposures and in the correlation of expected returns with the U.S. market, even if those markets are otherwise integrated internationally.} These studies show some markets to be more integrated than would be expected from the statutory restrictions placed on foreign ownership of domestic securities. A limitation of the approach is that it is hard to know whether the contrast reflects the limited effectiveness of the statutes, which results in a misleading picture, or problems with one or more of the assumptions needed to derive expected returns.

Other researchers use onshore-offshore interest differentials and deviations from covered interest parity to measure capital mobility.\footnote{See, for example, Frankel and MacArthur (1988), Giavazzi and Pagano (1988), Cody (1990), Obstfeld (1993), Marston (1993, 1995), and Holmes and Wu (1997). Dooley and Isard (1980), Ito (1983), and Wong (1997), among others, take a similar approach by using the black-market exchange rate premium.} Unlike stock market returns, which must be purged of premia and discounts associated with the characteristics of the entities issuing them before they can be used to gauge market integration, short-term interest rates can be analyzed without transforming them in model-contingent ways.\footnote{Researchers justify their disregard of the country risk premium by focusing on high-quality debt securities for which default risk is close to zero. They disregard currency risk by focusing on covered interest parity.} However, interest differentials tend to be available only for a limited number of countries and years—specifically for countries important enough to have well-developed offshore markets and advanced enough financially to have well-developed forward currency markets. Because industrial and emerging markets with these characteristics are not representative of the...
larger population of developing countries, drawing broad generalizations from these studies is likely to be problematic.\textsuperscript{15}

Onshore-offshore interest differentials also have the inconvenient property of widening when there is an incentive for capital to move (when there is fear of a crisis, for example), while remaining narrower at other times. To put the point another way, differentials reflect not just the stringency of statutory controls but their interaction with ancillary policies and circumstances, making it difficult to separate the two influences.

This observation points to a limitation of virtually all studies of capital controls. Controls tend to be imposed and removed as part of a larger package of policy measures.\textsuperscript{16} Clearly, then, it is important to control for the other elements of the reform package when studying the connections between capital account restrictions and economic growth, investment, and financial depth. Alas, this is easier said than done. Trade openness, financial depth, institutional development, and the like may be no easier to measure in an economically meaningful way than the presence or absence of capital controls. Developing adequate measures of capital account restrictions is a particular problem for the literature on the causes and effects of capital controls, but the more general problem of adequately capturing the economic, financial, and political characteristics of economies, which impinges on all cross-country empirical work of this sort, should not be overlooked.

\textbf{III. Who Uses Controls, Who Liberalizes, and Why?}

A large literature addresses the circumstances under which capital accounts are opened and the circumstances under which restrictions are retained. Perhaps the single most robust regularity in this literature is the negative association between per capita income and controls. Per capita income is typically interpreted in this context as a measure of economic development: The more developed the country, the more likely that it will have removed restrictions on capital flows. The observation that all of today’s high-income countries have removed their controls is consonant with the view that capital account liberalization is a corollary of economic development and maturation.

But why is this the case? Does the more advanced development of institutions and markets in the high-income countries mean that these countries can better

\textsuperscript{15} In addition, focusing on cases where a significant onshore-offshore differential is quoted also has the consequence, not obviously desirable, of shifting attention from policies \textit{designed} to limit capital mobility to policies \textit{effective} in limiting capital mobility. Though many countries may put in place measures to limit capital flows, only where such policies are effective will a consequential offshore market develop and a significant onshore-offshore differential be observed. Focusing on cases where controls were effective—because, for example, the country had the administrative capacity to enforce them—again runs the risk of limiting the analysis to countries that are not representative. And it disregards much of what is interesting in the debate, namely, the capacity of the markets to neutralize the intended effects of statutory measures.

\textsuperscript{16} This is a theme of Ariyoshi and others (2000).
accommodate capital account liberalization—that well-developed markets and institutions shift the balance toward benefits and away from costs? Do these countries’ well-developed political systems create avenues through which those who oppose restraints on their civil liberties—including their financial liberties—can make that opposition felt? Explaining why restrictions on international financial flows are more prevalent in some countries than others and why, in particular, they are less prevalent in the high-income countries is at the center of the literature on the political economy of controls.

A specific development-related rationale for controls—on capital outflows in particular—is that they can usefully channel domestic saving into domestic investment in countries where the underdevelopment of markets and institutions would otherwise result in a suboptimal supply of finance for investment. Thus Garrett and others (2000) find that there is a tendency to restrict capital account transactions in countries where domestic savings are scarce and that this effect is strongest for developing economies, where the premium on mobilizing savings for domestic investment is presumably the greatest.

Another strand of work pursues the association of controls with the exchange rate regime. Capital mobility increases the difficulty of operating a currency peg. Countries committed to pegging—China and Malaysia come to mind—may therefore support pegs with restrictions on capital flows. Contributors to the cross-country empirical literature generally find that countries with pegged exchange rates are less likely to have an open capital account (Leblang 1997, 1999; Milesi-Ferretti 1998; Bernhard and Leblang 1999; Garrett and others 2000).17 But it is not clear what should be regarded as endogenous and what as exogenous in this analysis. Does a willingness to adopt a more flexible exchange rate determine the readiness of some countries to remove controls? Or do increases in capital mobility, associated perhaps with the removal of capital controls, lead to the adoption of a more flexible exchange rate, either voluntarily or as a result of crisis? Causality may run both ways, making it difficult to interpret an ordinary least squares regression coefficient on the exchange rate. As will become apparent, this difficulty of pinning down the direction of causality is a chronic problem in the literature on capital account liberalization (and a theme of this survey).

Another line of thought portrays capital controls as an instrument of government revenue management. Controls limit the ability of residents to avoid the inflation tax on domestic money balances by shifting into foreign assets (Alesina and Tabellini 1989). They permit the authorities to raise reserve requirements on domestic financial institutions and thereby reduce their debt servicing costs

17. Similarly, countries with macroeconomic problems that may threaten the stability of a peg (a weak current account, a large budget deficit, sudden increases in interest rates, for example) have a disproportionate tendency to maintain controls, outflow controls in particular (Johnston and Tamirisa 1996).
without eroding the inflation tax base (Drazen 1989). This perspective suggests that controls are likely to be used where the domestic financial system is tightly regulated and reserve requirements can be used to compel financial institutions to hold public sector liabilities. Consistent with this prediction, Leblang (1997) finds that governments that are less reliant on seigniorage are less likely to have capital controls. A further implication is that controls are less likely to be used where the inflation tax is not available because the central bank is independent and monetary policy is controlled by a conservative board. Epstein and Schor (1992), Alesina and others (1994), Quinn and Inclán (1997), Milesi-Ferretti (1998), and Bai and Wei (2000) all find that countries with more independent central banks are less likely to use controls.

But does this pattern reflect the implications of central bank independence and domestic financial liberalization for the availability of inflation tax revenues, as these authors argue, or a common omitted factor—laissez-faire ideology, for example—associated with financial liberalization, central bank independence, and capital decontrol alike? Some investigators have sought to distinguish between these alternatives by adding the political orientation of the government as a further determinant of the propensity to use controls. Once ideology is controlled for, they argue, any surviving correlation between central bank independence and domestic financial liberalization on the one hand and capital account liberalization on the other will reflect the implications of central bank independence and domestic financial liberalization for the seigniorage revenues promised by controls. Though findings on the effect of government ideology are mixed, the effect of central bank independence survives this extension, consistent with the implications of the seigniorage-centered approach.

A number of investigators pursuing this line have found democracy to be positively associated with capital account liberalization (see, for example, Quinn 2000 and Garrett and others 2000). Democracy may be a mechanism for resolving social conflicts that otherwise force resort to financial repression and the inflation tax (Garrett and others 2000). More generally, with democracy comes an increasing recognition of rights, including the international economic rights of

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18. Moreover, by facilitating the use of rate ceilings and other administrative measures that cap interest rates, controls limit the cost of borrowing for those at the head of the financial queue, including the government and any private sector borrowers that it favors.

19. Epstein and Schor (1992) find that left-wing governments are more likely to maintain controls. While Garrett and others (2000) also conclude that left-wing governments are more likely to resort to controls, the effect is statistically insignificant at standard confidence levels. Only when high-income countries are removed from the sample is the association robust. While Quinn and Inclán (1997) also find some evidence that left-wing governments are more likely to retain controls, this effect is much more pronounced for the 1960s and 1970s than the 1980s. Alesina and others (1994) reach even more negative conclusions: They find little discernible effect of ideological orientation either before or during the 1980s after controlling for other characteristics of governments—coalition or majoritarian, cabinet durability and turnover—that plausibly reflect the time horizon of the government and therefore its propensity to put off tax increases to another day in favor of the inflation tax.
residents, and a greater ability to press for the removal of restrictions on their investment options (Dailami 2000).

Several recent studies (Simmons and Elkins 2000; Garrett and others 2000) suggest that “policy contagion” affects the decision to open the capital account. Countries are more likely to liberalize when members of their peer group have done so, holding constant other factors. The pattern can be interpreted as policy emulation (governments are influenced by the initiatives of their neighbors) or signaling (when competitors have liberalized portfolio flows, it becomes harder to retain controls and, at the same time, remain an attractive destination for foreign direct investment).

But are such interpretations justified? It is a common problem in the literature on contagion, financial and otherwise, that the simultaneity of policy initiatives in different countries may reflect not the direct influence of events in one country on another countries but a tendency for decisionmakers to respond similarly to economic and political events not adequately controlled for in the analysis. Simmons and Elkins (2000) address this possibility by defining a country’s economic neighbors as those that compete with it for foreign investment (in the case of capital account restrictions) and those that compete with it in export markets (in the case of current account restrictions). These more sophisticated proxies for policy contagion matter even when crude measures of common omitted factors (such as the share of countries in the same region that have liberalized their capital accounts) are also included in the specification.

These findings go a good way toward explaining the recent trend toward capital account liberalization. Financial repression has given way to deregulation of domestic financial institutions and markets in a growing number of countries. Governments and central banks have abandoned currency pegs in favor of greater exchange rate flexibility. The 1980s and 1990s were decades of democratization in much of the developing world. As these developments led some countries to liberalize, the trend gathered momentum, as the literature on policy contagion suggests. Together these forces lent considerable impetus to the process of capital account liberalization. 21

Before researchers congratulate themselves for their success and close up shop, it is worth noting other explanations that have been denied the same systematic attention. For example, capital controls may have become less attractive because information and communications technologies have grown more sophisticated, rendering controls more porous and their effective application more distortionary (Eichengreen and others 1998). The technical progress in question is hard to measure. A time trend intended to capture secular improvements in information

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20. For a discussion of the problem of common unobserved shocks, see Eichengreen and Rose (1999).
21. At the same time, the research described in this section suggests the kinds of circumstances and events—disenchantment with financial liberalization, disaffection with flexible exchange rates, ineffective democratic governance—that could conceivably reverse the trend toward capital account liberalization sometime in the future.
and communications technologies would be contaminated by a variety of other omitted factors that were also changing over time. As is the case all too often in empirical economics, there may have been a tendency to focus on factors that are readily measured and quantified to the neglect of those that are more difficult to capture.

IV. Capital Mobility and Growth

The most widely cited study of the correlation of capital account liberalization with growth is Rodrik (1998). Using data for roughly 100 industrial and developing countries for 1975–89, Rodrik regresses the growth of GDP per capita on the share of years when the capital account was free of restriction (as measured by the binary indicator constructed by the IMF), controlling for determinants suggested by the empirical growth literature (initial income per capita, secondary school enrollment, quality of government, and regional dummy variables for East Asia, Latin America, and Sub-Saharan Africa). He finds no association between capital account openness and growth and questions whether capital flows favor economic development.

Given the currency of this article among economists, it is striking that the leading study of the question in political science reaches the opposite conclusion. For 66 countries over the period 1960–89, Quinn (1997) reports a positive correlation between the change in his capital account openness indicator and growth. That correlation is robust and statistically significant at standard confidence levels.

What explains the contrast is not clear. One difference that may matter is that Quinn’s study starts earlier. Consequently, growth in his sample period is not dominated to the same extent by the “lost decade” of the 1980s (when there were virtually no capital flows to emerging markets to stimulate growth). With an earlier start, his sample may include more observations in which countries liberalized inflows of foreign direct investment, with positive effects on growth, and fewer in which they liberalized short-term portfolio flows, whose effects may have been more mixed. In addition, Quinn has more independent variables, and he looks at the change in capital account openness rather than the level. Edwards (2001) emphasizes that Quinn’s measure of capital account liberalization is more nuanced and presumably informative. For example, Quinn’s measure conveys information about whether capital account opening was partial or across the board, whereas the standard IMF measure does not.22

Quinn’s country sample is also different, in that he considers fewer low-income developing economies. There are reasons to think that the effects of capital account liberalization vary with financial and institutional development. Remov-

22. I return to the distinction between partial and comprehensive capital account openness and restrictions in section VI on crises.
ing capital controls may be welfare and efficiency enhancing only when there are no serious imperfections in the information and contracting environment, an implication of the theory of the second best, as noted at the beginning of this article. Portfolio capital inflows stimulate growth, this argument goes, only when markets have developed enough to allocate finance efficiently and when the contracting environment forces agents to live with the consequences of their investment decisions. The Asian crisis encouraged the belief that countries that open their economies to international financial transactions benefit only if they first strengthen their markets and institutions. Thus a positive impact on growth comes only if prudential supervision is first upgraded, the moral hazard created by too generous a financial safety net is limited, corporate governance and creditor rights are strengthened, and transparent auditing and accounting standards and equitable bankruptcy and insolvency procedures are adopted.

Although these institutional prerequisites are difficult to measure, there is a presumption that they are most advanced in high-income countries. Edwards (2001) supports this view: Using Quinn’s measure of the intensity of capital account restrictions, he finds that liberalization boosts growth in high-income countries but slows it in low-income countries.23 He shows further that the significance of capital controls evaporates when the IMF index used by Rodrik is substituted for Quinn’s more differentiated measure. Thus it is tempting to think that the absence of an effect in earlier studies is a statistical artifact. And there is some suggestion that capital account liberalization is more beneficial in more financially and institutionally developed economies.24

But do these apparent differences between high- and low-income countries really reflect their different stages of financial and institutional development? Kraay (1998) attempts to directly test the hypothesis that the effects of capital account liberalization depend on the strength of the financial system, the effectiveness of prudential supervision and regulation, and the quality of other policies and institutions.25 The results are not encouraging: the interaction of the quality of policy and institutions with financial openness is almost never posi-
Arteta and others (2001) similarly interact the level of capital account openness with the liquid liabilities of the financial system as a measure of financial depth and with International Country Risk Guide’s index of law and order as a measure of institutional development. Again, the results are largely negative. There is little evidence that the growth effects of capital account openness are shaped in robust and predictable ways by a country’s level of financial and institutional development.

More important for shaping the effects of capital account liberalization, these authors suggest, is the sequencing of reforms. Countries that first complete the process of macroeconomic stabilization, allowing them to remove exchange controls and other distortions on the current account side, enjoy stronger growth effects of capital account openness. While some of the qualitative literature similarly suggests that sequencing is an important determinant of the effects of capital account opening, systematic cross-country empirical analysis has barely begun. (In other words, there do not appear to be other “large-n” studies like that of Arteta and others 2001 that address this question.)

One way of unraveling the mystery of why the growth effects of capital account liberalization do not seem to vary as expected with institutional and financial development is to determine whether these results are sensitive to the measures of policies and institutions used. Here, it will be evident, work is already under way. Another way is to pin down the mechanisms or channels through which capital account liberalization affects the economy, the approach examined next.

V. Channels Linking Capital Account Liberalization with Growth

The cross-country growth literature points to a number of factors that plausibly intermediate between capital account liberalization and growth. Investment, financial development, and the stability of macroeconomic policy, among other variables, have been shown to be positively related to an economy’s rate of growth (see, for example, Levine and Renelt 1992; Levine 1997; Barro 1997). All of these variables create channels through which capital account liberalization can potentially exercise an effect. Studying the impact of capital account policy on these intermediate variables is thus a way of inferring its implications for growth. This section focuses on the impact of capital account policies on two of the channels that have received the most attention: investment and the depth and development of financial markets.

Many attempts have been made to analyze the connections between capital account policies and investment. Rodrik (1998) relates the investment to GDP

26. Note that the test here is for whether the effects of capital account openness are conditional on these measures of institutional development. These measures are not simply used as additional controls in the growth equation; rather, they are entered interactively.
ratio to the IMF’s measure of capital account openness, again finding no trace of an effect. Kraay (1998) similarly finds no impact on gross domestic investment as a share of GDP, using the IMF index, the Quinn index, and gross inflows and outflows as alternative measures of financial openness. He considers the possibility that capital account openness positively affects investment only in countries where risk-adjusted returns exceed the world average—that is, where liberalization will cause capital to flow in rather than out. Using the average balance on the financial account of the balance of payments as a proxy for risk-adjusted returns, he reports a positive impact on investment when this variable is interacted with capital account openness. However, the coefficient in question differs significantly from zero for only one of Kraay’s three measures of capital account openness.27

Because the evidence on investment does not speak clearly, it is logical to strip off another layer and consider variables like real interest rates and financial depth—factors on which investment plausibly depends. Governments have used capital controls in support of administrative measures designed to keep interest rates low with the express purpose of stimulating investment. And a substantial number of studies have confirmed that capital controls are associated with lower real interest rates (see, for example, Alesina and others 1994; Grilli and Milesi-Ferretti 1995; Bordo and Eichengreen 1998; Wyplosz 1999). But whether there are benefits for growth is a separate question. The literature on financial repression—especially the recent literature—is skeptical that interest rate ceilings, even if they reduce the cost of investment, succeed in nurturing growth. Although artificially low real rates reduce the required return on investment, they impede financial development. And financial development presumably increases the efficiency of investment as well as financing and otherwise facilitating experimentation with new technologies.28

Klein and Olivei (1999) find that capital account openness stimulates financial depth (measured variously as the change in the ratios of liquid liabilities to GDP, claims on the nonfinancial private sector, and bank domestic assets in deposit money to the sum of bank domestic assets in deposit money and central bank domestic assets). But the correlation between capital account openness and financial deepening is limited to the OECD countries; the relationship dissolves...
when these countries are excluded from the sample. Thus where researchers like Kraay (1998) and Arteta and others (2001) find little evidence that an open capital account does more to stimulate growth in high-income countries,\(^{29}\) Klein and Olivei conclude that it may do more in the advanced industrial countries to stimulate certain inputs into growth—specifically, well-developed financial markets. That the effect is indirect (an open capital account encourages financial development, which in turn encourages growth) and contingent (presumably) on a range of intervening factors may be why it has been so difficult to document a direct link from the capital account to growth that varies between high- and low-income countries.

But not all investigators agree that the influence of capital account liberalization on financial development is limited to high-income countries. Levine and Zervos (1998) find for 16 developing economies that stock markets become larger and more liquid after the capital account is opened. To be sure, this study focuses on a different aspect of financial development, namely, stock markets rather than bank intermediation. But why the evidence for different financial markets is apparently contradictory is not clear. It could be that Levine and Zervos’s 16 countries, selected for having functioning stock markets, were already relatively advanced financially, so that capital account liberalization could then have a positive and powerful impact on their further deepening and development. Alternatively, it could be that banking systems typically are already relatively well developed when capital accounts are opened, so that the main effect of liberalization is on stock markets whose development is still at an earlier stage.

Sorting through this controversy may require more sophisticated measures of capital account liberalization. Whether liberalization favors the development of banks or securities markets plausibly depends on how liberalization proceeds—on whether restrictions on offshore borrowing by banks are relaxed first, as in the Republic of Korea, or measures limiting foreign investment in domestic securities markets are eased instead, as in Malaysia. Implementing such distinctions will also require measures of the development of the information and contracting environment, because asymmetric information and poor contract enforcement are thought to favor banks over securities markets.\(^{30}\)

Another set of studies builds on the observation that controls are disproportionately used by countries with chronic macroeconomic imbalances (see, for example, Alesina and others 1994; Grilli and Milesi-Ferretti 1995; Wyplosz 1999; Garrett 1995, 1998, 2000). The motivation is presumably to limit capital flight and contain the threat from these imbalances for the stability of financial markets.\(^{31}\) By now it will be clear that more than a few studies advancing such conclusions have identification problems. Whereas countries suffering from chronic

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29. Edwards (2001) is an exception in this regard, as noted above.
30. The argument being that banks are in the business of internalizing transactions that cannot take place at arm’s length due to such market imperfections (Baskin and Miranti 1997).
31. Along with the seigniorage-related rationale reviewed previously.
Macroeconomic imbalances are more likely to resort to controls, governments and central banks enjoying the additional policy autonomy that controls confer may indulge in more expansionary policies. That few studies have addressed this identification problem may reflect the difficulty of finding plausible instruments for the endogenous variables.

One response by those concerned with the impact of controls on the public finances has been to move from the budget balance to its components (the expenditure and tax sides and different categories of taxes and spending), where the causality running from controls to budgetary outcomes is presumably easier to identify. Garrett and Mitchell (2000) find that public spending is lower when the capital account is open, which they interpret as capital mobility applying fiscal discipline. Garrett (2000) finds that this effect is specific to the exchange rate regime: Governments come under less pressure to limit spending when the exchange rate is allowed to float, but the combination of fixed rates and an open capital account has a strong disciplining effect.

A particular mystery is the impact of capital account liberalization on taxes on profits and other returns to capital. The idea that capital account liberalization, which increases the effective elasticity of supply of capital, should put downward pressure on the rate of capital taxation is one of the most fundamental corollaries of the theory of public finance. But the evidence to this effect is surprisingly weak. Quinn (1997), Swank (1998), Garrett (2000), and Garrett and Mitchell (2000) find that rates of capital taxation are unchanged or even higher in countries with open capital accounts. Because most countries with open capital accounts are relatively high-income, it may simply be that they have large public sectors (by Wagner’s Law) and high tax rates. But Quinn, Swank, Garrett, and others go to considerable lengths to control for income and other country characteristics that may independently influence the level of capital taxation, and none of their extensions makes this finding go away. Clearly, this is a puzzle requiring further study.

Finally, a number of researchers, motivated by the association of short-term foreign debt with crises and, in particular, by the perception that debt runs played a role in many episodes of serious turbulence in emerging markets in recent years, have asked whether controls can be used to lengthen the maturity structure of foreign obligations. Using data for a cross-section of countries, Montiel and Reinhart (1999) find that controls reduce the share of portfolio and short-term capital flows in total inflows, while increasing the share of foreign direct invest-

32. Quinn (1997) reports a positive association between public spending and capital account liberalization but concludes that the correlation is not robust.
33. On the association of short-term debt with crises, see Rodrik and Velasco (1999). Readers whose sensitivities will have been heightened by the preceding discussion to the causality problems arising in other contexts will not be surprised that the same issue arises here. Rather than short-term debt causing crises, in other words, it has been argued that anticipations of crises leads to a shortening of the maturity structure of the debt.
ment and leaving the overall volume of capital inflows unchanged. This generalizes the findings of detailed studies for Chile, many of which conclude that its holding period tax on capital inflows reduced the volume of short-term inflows but in a way that was fully compensated for by increased long-term flows. (In other words, only the maturity structure and not the level of the flows was affected by these controls.\textsuperscript{34})

Controls like Chile’s, with the potential to reduce the risk of currency and financial crises, have their advocates in the scholarly and policymaking communities. But is this advocacy justified? Answering this question requires determining whether controls in fact reduce crisis risk.

VI. Crises and Liberalization of the Capital Account

The currency and banking crises of the 1990s did much to encourage the belief that capital account liberalization raises the risk of financial instability. The relaxation of capital controls in Europe following the implementation of the Single European Act made the realignment of currencies participating in Europe’s Exchange Rate Mechanism more difficult, allowing competitiveness problems to build up, exposing governments and central banks to speculative pressures, and culminating in the crisis of 1992 (Eichengreen and Wyplosz 1993). Capital account liberalization was implicated in Asia’s crisis insofar as the selective opening of capital accounts allowed banks to respond to the moral hazard created by government guarantees and to lever up their bets (Furman and Stiglitz 1998). China’s success in insulating itself from this instability by the use of capital controls is widely seen as the exception that proves the rule.\textsuperscript{35} These assertions are controversial; scholars continue to debate the causes of the European and Asian crises and the role of capital flows. But it is curious, given the intensity of the debate, how few cross-country studies have sought to systematically weigh the evidence.

One reason may be that problems of reverse causality are severe in this context. Countries experiencing financial turbulence may impose or reinforce controls, as did Malaysia following the outbreak of the Asian crisis. Or they may relax their controls in an effort to restore investor confidence, as did Thailand in January 1998 and the Republic of Korea several months later. The absence of controls may or may not heighten crisis risk, but the fact that crisis risk sometimes prompts changes in the capital account regime makes it hard to distinguish cause from effect.

\textsuperscript{34} Studies that reach this conclusion include Soto (1997), De Gregorio and others (1998), and Valdes-Prieto and Soto (1998).

\textsuperscript{35} China restricted borrowing by Chinese entities, restricted portfolio outflows by Chinese citizens and inflows by foreigners, and banned futures trading in yuan. While cautioning that controls were probably only one of several factors making for the resiliency of the Chinese economy, Fernald and Babson (1999) conclude that without a freely accessible onshore futures market, speculation against the yuan would be difficult and that controls on outflows make it harder for Chinese investors to convert their yuan if they expect the currency to weaken.
In fact, contrary to the intuition described at the beginning of this section, the cross-country evidence generally suggests that controls heighten currency crisis risk. Glick and Hutchinson (2000) combine data on the presence or absence of controls at the end of one year (from the IMF’s *Exchange Arrangements and Exchange Restrictions*) with data on the occurrence of currency crises in the next. In both bivariate and multivariate analyses they find a positive correlation between capital controls and crises. Leblang (2000) uses the narrative accounts in *Exchange Arrangements and Exchange Restrictions* to code changes in capital controls monthly and finds that controls are associated with an increased probability of currency crises. He also finds evidence that controls influence the likelihood that governments and central banks will successfully defend the currency against attack.

An interpretation, following Bertolini and Drazen (1997a, b) and Drazen (1997), is that countries maintaining or imposing controls send a negative signal to the markets. Investors may suspect a country that resorts to controls of reluctance to commit to the rigorous course of fiscal and monetary treatment to maintain stability. They may worry that a government inclined to resort to controls will be particularly willing to compromise investor rights. The signal may incite investors to flee and, if the control regime is less than watertight, enable them to do just that.

But have these researchers identified the direction of causality? If governments impose controls in anticipation of looming financial problems, then timing cannot identify the direction of causality. And, even more than in other contexts, there is reason to question the conclusions of an analysis that lumps all controls together. Controls of different intensity may not be equally effective in containing threats to currency stability, and different types of controls and different forms of liberalization may have different implications for financial stability. Liberalizing banks’ access to offshore funding but not also permitting foreign access to domestic equity and bond markets may be more destabilizing than doing the reverse; it may cause foreign funds to flow in through the banking system, the weakest link in the financial chain. This is a common conclusion drawn from the crisis in Korea, which liberalized offshore bank funding before permitting foreign access to its securities markets. Even if inflow controls can reduce crisis risk by preventing banks and firms from becoming excessively dependent on short-term foreign debt, outflow controls,

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36. For example, Thailand introduced partial controls in May 1997, prior to its crisis, and later extended their coverage several times: in June, July, and September 1997 and January 1998. That Glick and Hutchinson relate the presence or absence of controls in one year to crises in the next may convince some readers that they have finessed this problem; surely controls imposed fully a year before a crisis are not the response of the authorities to subsequent difficulties. In fact, however, Glick and Hutchinson relate the presence or absence of controls at the end of year $t$ to the presence or absence of a crisis any time in year $t + 1$, so that the time between the observation of controls and the occurrence of a crisis is at most a year—and in practice can be considerably less.
except of the most draconian sort, may be incapable of restraining capital flight if panic breaks out.  

In addition, different controls may send different signals. Inflow controls like Chile’s can be justified as prudential measures—a way of reinforcing regulations designed to stabilize the financial system (Eichengreen and others 1998). They may then be perceived as a signal that the authorities take seriously their commitment to currency and banking stability. Outflow controls, in contrast, may suggest only that the authorities are desperate. Using data for 15 developing countries, Rossi (1999) finds that outflow controls heighten the risk of currency crises but that inflow controls reduce it. Outflow controls similarly are associated with an increased risk of banking crises, whereas inflow controls have no discernible effect.

VII. From Research to Policy and from Policy to Research

Turning from research to policy, one finds greater consensus on the lessons of international experience. That the G7 countries all have open capital accounts is regarded as telling. For those who emphasize this fact, capital account liberalization is just another manifestation of the policies of financial deregulation that countries adopt as they develop economically and institutionally, and specifically as they acquire the capacity to operate market-led financial systems. In other words, the relaxation of statutory restrictions on international financial transactions and the growth of cross-border financial flows reflect the same forces that encourage the removal of repressive domestic financial regulations and facilitate reliance on domestic financial markets to guide the allocation of resources.

The same arguments suggesting that domestic financial deepening and development enhance the efficiency of investment, facilitate experimentation with new technologies, and encourage growth and efficiency generally similarly support the presumption that international portfolio diversification and cross-border portfolio investment should encourage efficiency and growth. Capital account liberalization can be counterproductive, to be sure, if it takes place before severe policy-related distortions have been removed and before domestic markets, institutions, and the administrative capacity of the prudential authorities have developed enough to generate confidence that foreign finance will be channeled in productive directions. This qualification may be too frequently neglected—as the unconditional advocacy of capital account liberalization heard in the mid-1990s and the Asian crisis that quickly followed remind us to our chagrin—but this caveat, too, is now an integral part of the conventional wisdom.

But if caveats like this one complicate the journey, the destination, from all appearances, remains the same. Officials and their advisers may differ on precisely when and how to liberalize international financial transactions so as to

37. The fact that outflow controls tend to be the dominant variety in crisis-prone countries may therefore be another part of the explanation for why previous cross-country studies have found a positive association between controls and crisis incidence.
best ensure that capital inflows are channeled in productive directions, in other words, but there is little support for refusing to liberalize or (Malaysia in 1998–99 notwithstanding) for reversing previous liberalization measures. International financial liberalization, to paraphrase Marx, may be just another instance of the more developed economies showing their less developed counterparts an image of their future.

Given the breadth of support commanded by this synthesis, the lack of empirical substantiation of its fundamental tenets is worrisome indeed. If the evidence is really not there, then it is high time to rethink the conventional wisdom. With these stakes, priority should be attached to research with immediate promise for solving the key empirical puzzles. Empiricists need to better distinguish among controls—between inflows and outflows and between transactions involving banks and those involving securities markets. They need to develop more informative measures of the legal, contracting, and information environments that plausibly shape the effects of capital account liberalization. They also need to construct better indicators of the other policy initiatives with which capital account liberalization is sequenced.

These extensions can be undertaken in the context of existing macro-oriented cross-country research. Admittedly, operationalizing them presumes a not inconsiderable investment in data, constructed in ways that are consistent across countries and over time. The call for more and better data is standard fare in surveys like this one; here, however, is a case where it warrants its place of prominence.

But could it be that the problem is with the framework and not with the data and methods used to operationalize it? The literature on capital account liberalization has been written by macroeconomists, for macroeconomists, with an emphasis on the macroeconomics of growth and crisis. Perhaps the microeconomic level offers more definitive evidence of the effects of capital account policies. A growing body of firm-level evidence and analysis, surveyed by Karoly (1998) and Stulz (1999), suggests that this may be the case. Some examples illustrate the kinds of questions asked and answers found. Tandon (1994) shows a reduction in the required rate of return on equity for firms offering bonds on international markets. Smith and Sofianos (1997) show that firms listing abroad experience an increase in trading volume, consistent with the argument that financial integration leads to greater liquidity and hence a lower cost of capital. Lins and others (2000) show that firms from emerging markets listing in the United States are able to relax capital constraints—that is, the cash-flow sensitivity of their investment declines—but no such change is evident for firms from industrial countries, where capital constraints are presumably less.

More remains to be learned from a microeconomic perspective. That said, answering the big questions like how growth and crises are affected by capital account liberalization will ultimately require mapping the findings of microeconomic studies back into the macroeconomic framework adopted by the researchers whose work was reviewed in this survey.
References

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