Capital Account Liberalization: What Do the Cross-Country Studies Tell Us?[1]

Barry Eichengreen
University of California, Berkeley
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1. Introduction

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. Models of perfect markets suggest that international capital movements benefit both borrowers and lenders. Since 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.[2] Or, 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, and increasingly are, counted on to deliver an efficient allocation of resources, why cannot the same be assumed of 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

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[2]The intertemporal approach to capital mobility owes its origins to Fisher (1930). Influential modern treatments which resuscitated this approach and summarized its implications include (1981) and Frenkel and Razin (1996).

need not be welfare enhancing when other distortions are present. There are any number of constellations of distortions, especially in developing countries, for which this is plausibly the case. If the capital account is liberalized while import-competing industries are still protected, capital may flow into sectors in which the country has a comparative disadvantage, with immiserizing effects (Brecher and Diaz-Alejandro 1977). If a downwardly-inflexible real wage, a la Lewis, causes too many resources to be devoted to capital-intensive activities, then a capital inflow may further 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, either domestic or international, will be welfare improving (Stiglitz 2000). And 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 into uses where 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.

While 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 that attempts to move beyond anecdote and assertion to systematic empirical analysis have not yielded 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 for such a review is that the literature on capital mobility is large and varied. While some studies approach the phenomenon from a macroeconomic point of view, others take a firmly microeconomic perspective. While some focus on the effects of capital account liberalization, others focus 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. In what follows I focus on cross-country studies of the causes and effects of capital account liberalization, because this is where the big questions are asked and because it is where an attempt is made to reach conclusions of general applicability to developing countries.[3]

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[3]This focus on cross-country ("large n") studies dictates what I take up and what I leave aside. It also serves to differentiate my survey from other reviews of the literature on capital controls and capital account liberalization (e.g. Dooley 1996, Williamson and Mahar 1998, Cooper 1999, Edwards 1999, and Neely 1999). At the opposite end of the empirical spectrum lie case studies of particular episodes. While this "small n" approach allows one to consider a particular episode in great detail, it is likely to run head long into an identification problem, since 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 (1999), who focus on five cases where 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:

2. **Measuring Capital Account Liberalization**

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

Efforts to identify the presence or absence of capital account restrictions on the basis of statute typically build on the data published by the International Monetary Fund in its *Exchange Arrangements and Exchange Restrictions* annual.[4] Most studies focus on restrictions on payments for capital transactions (line E2 of the table in question). When capital account liberalization is related to a measure of economic performance like GDP growth over a period of

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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.

[4]Along with narrative accounts of the main changes in policies toward the exchange rate and current- and capital-account payments, from 1967 this report also included a table summarizing the various exchange arrangements and restrictions adopted by member countries. The Fund does not detail how it goes from its narrative accounts to the summary table. Prior to 1967, the publication provided exclusively qualitative descriptions of the restrictions in place and important modifications thereto. Some investigators (e.g. Quinn 1997) have attempted to build up 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 the various policy measures. Starting with its 1996 *Annual Report*, the Fund 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 do so even these payments were made to overseas accounts). Starting in 1997 it distinguished controls on capital inflows and outflows. These changes in categorization create problems of concordance for investigators seeking to create time series for capital account liberalization. Thus, Glick and Hutchison (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 *Annual Report* listed controls as in place for five or more of these capital account subcategories and "financial credit" was one of the categories restricted.

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 Fund's measure of restrictions on payments for current transactions, along with in some cases its measures of surrender or repatriation requirements for export proceeds, separate exchange rates for some or all capital transactions and/or some or all invisibles, and bilateral payments arrangements with members and nonmembers.[5]

These data have limitations.[6] The category "restrictions on payments for capital transactions" available before 1996, for example, refers exclusively to resident-owned funds and may not reflect restrictions on capital transfers by nonresidents. In addition, drawing a line between measures affecting the current and capital accounts is problematic. The category "separate exchange rate(s) for some or all capital transactions," for instance, includes measures affecting "some or all invisibles," which may include payments on current as well as capital

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[5]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 limit 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 restrictions on capital-account-related payments (by resort to leads and lags and over- and under-invoicing 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.

[6]Leading in turn to creative attempts to supplement them. Some investigators have done so using sources such 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) takes a different approach to identifying major episodes of capital account liberalization: relying exclusively on *Exchange Arrangements and Exchange Restrictions* he identifies instances major liberalization episodes as years that are preceded by five consecutive years of capital controls and followed by five consecutive years of no controls.

account. Bilateral payments arrangements with members and nonmembers include not just the maintenance of 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.

While 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, such deterrence is not their sole or even 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.[7]

Most studies "solve" the problem of measuring the intensity of controls by ignoring it --

[7]Similar arguments are made about the black-market premium, which is sometimes used as a measure of current- and capital-account 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 Rodriguez and Rodrik (1999) show. Rodriguez 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, namely, that countries with serious policy imbalances are 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.

that is to say, they settle for constructing a zero/one dummy for the presence or absence of controls. One attempt to go further is Quinn (1997). For 56 countries over the period 1950 to 1994 and an additional 8 countries starting in 1954, Quinn distinguishes 7 categories of statutory measures. Four are current account restrictions, two are capital account restrictions, and one attempts to capture international agreements like OECD membership constraining the ability of a country to restrict exchange and capital flows. For each of these categories, Quinn codes the intensity of controls on a two-point scale (where values increase at half point increments from 0 to 0.5, 1, 1.5, 2, with 0 denoting most intense and 2 denoting no restriction). This produces an index of current and capital account restrictions that ranges from 0 to 14 and an index of capital account restrictions that varies from 0 to 4.[8] Not surprisingly, Quinn's index has proven wildly popular and has been used by a number of subsequent investigators.[9]

The difficulty of deriving measures of the policy regime from information on statute and policy 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

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[8]Such a high degree of differentiation necessarily relies on the discretion and judgement of the coder. Quinn addresses this problem by having each observation coded twice by two separate coders and then attempting to reconcile differences.

[9]A still more detailed index has been constructed by Johnston et al. (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. Johnston et al. measure the existence and intensity of controls by normalizing the number of actual categories of controls (separately for controls on current payments and transfers on the one hand and capital controls on the other) by the number of feasible measures. Unfortunately, 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.

movements. The problem, as these investigators are aware, is that actual inflows and outflows will be affected by a range of policies and circumstances — the stance of 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.[10]

Bekaert (1995) and Ahearne, Griever and Warnock (2000) use one minus the ratio of the market capitalizations of the International Finance Corporation's Investable and Global Indices. The former consists of those stocks (or portions of stocks) in the latter 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.[11]

A variety of authors have used the correlation of stock market returns across countries as a measure of the international integration of securities markets. Unfortunately, the correlation of raw returns says little about the integration of markets, since returns will vary as a function of the characteristics of the underlying assets, which will depend in turn on the characteristics and condition of the entities issuing the claims. Thus, Bekaert (1995), in a study representative of the genre, first regresses national returns in excess of the U.S. interest rate on five instrumental

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[10]It is likely to be useful only for distinguishing countries wholly closed to capital flows, where payments on capital account will be zero, from their more open counterparts the notion here being that only countries with draconian controls that render them wholly closed to international financial markets will display neither inflows or outflows at a point in time.

[11]In addition, the measure captures more than just 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 IFCG index but its weight in the IFCI would be based on the portion of the shares available to foreigners.

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 then computing the correlation of the latter with expected returns in the United States as a measure of market integration.[12] Clearly, the resulting measure of market integration is only as good as the model used to generate the expected returns.[13] Some markets appear more integrated, according to these studies, than one would expect on the basis of the statutory restrictions governments place on foreign ownership of domestic securities. That it is hard to know whether the contrast reflects the limited effectiveness of (and therefore misleading picture painted by) the statutes on the books or problems with one or more of the assumptions needed to derive expected returns points up the limitation of the approach.

Other authors use onshore-offshore interest differentials and deviations from covered interest parity to measure capital mobility.[14] Unlike stock market returns, which must be purged of premia and discounts associated with the distinctive characteristics of the entities issuing them

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[12]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.

[13]If assets are priced according to a multifactor model rather than the one-factor model with constant risk exposures that Bekaert assumes, then emerging markets might display cross-section differences in their risk exposures and, in turn, in the correlation of expected returns with the U.S. market, even if those markets are otherwise integrated internationally.

[14]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.

before they can be used to gauge market integration, short-term interest rates can be analyzed without first transforming them in model-contingent ways.[15] 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 sufficiently advanced financially to have well-developed currency forward markets. That industrial and emerging markets with these characteristics are not representative of the larger population of developing countries renders problematic any attempt to draw broad generalizations from studies using these asset-based measures.[16]

Onshore-offshore interest differentials also have the inconvenient property of widening when there is an incentive for capital to move, for 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 out the influence of the former.

This observation points up a limitation of virtually all studies of capital controls. Controls

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[15]Authors 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.

[16]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 *designed* to limit capital mobility to policies *effective* in limiting capital mobility. While 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.

tend to be imposed and removed as part of a larger package of policy measures.[17] Clearly, it is important when studying the connection of capital account restrictions to economic growth, investment, and financial depth to control for the other elements of the reform package. 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.

3. 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 the presence of controls. Per capita income is typically interpreted in this context as a measure of economic development: the more developed the country, the more likely it will be to 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? Is it that the more advanced development of institutions and

[17]This is a theme of Ariyoshi et al. (2000).

markets in the high income countries means that these countries can better accommodate capital account liberalization -- that well developed markets and institutions shift the balance toward benefits and away from costs? Is it that 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, Guisinger and Sorens (2000) find that there is a particular tendency to restrict capital account transactions in countries where domestic savings are scarce, and that this effect is strongest for developing countries, where the premium on mobilizing savings for domestic investment purposes is presumably the greatest.

Another strand of work pursues the association of controls with the exchange rate regime. It is widely recognized that capital mobility increases the difficulty of operating a currency peg. Countries committed to pegging -- China and Malaysia spring to mind -- may therefore support that policy with restrictions on capital flows. Consistent with this view, 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, Milesi-Ferretti 1998, Bernhard and Leblang 1999,

Leblang 1999, Garrett, Guisinger and Sorens 2000).[18]

But it is not clear what should be regarded as endogenous and exogenous in this analysis. Does their 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 the result of a crisis? One suspects that causality runs 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 instruments used by governments for revenue-related purposes. Controls limit the ability of residents to shift into foreign assets in order to avoid the inflation tax on domestic money balances (Alesina and Tabellini 1989). They permit the authorities to raise reserve requirements on domestic financial institutions and thereby reduce their debt servicing costs without eroding the inflation tax base (Drazen 1989).[19] 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

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[18]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).

[19]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 itself and any private-sector borrowers that it favors.

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 central bank is independent and monetary policy is controlled by a conservative board. Epstein and Schor (1992), Alesina, Grilli and Milesi-Ferretti (1994), Quinn and Inclan (1997), Milesi-Ferretti (1998) and Bai and Wei (2000) all find that countries with more independent central banks are less likely to utilize 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 utilize controls. Once one controls for ideology, any surviving correlation between central bank independence and domestic financial liberalization on the one hand and capital account liberalization on the other will, they argue, reflects the implications of the former for the seignorage revenues promised by the latter. While findings regarding the effect of the government's ideological orientation are mixed, the effect of central bank independence in particular survives this extension, consistent with the implications of the seigniorage-centered approach.[20]

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[20]Epstein and Schor (1992) find that left-wing governments are more likely to maintain controls. While Garrett, Guisinger and Sorens (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 Inclan (1997) also find some evidence that left-wing governments are more likely to retain controls, this effect is much more pronounced in the 1960s and 1970s than the 1980s. Alesina, Grilli and Milesi-Ferretti (1994) reach even more negative conclusions: they find

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, Guisinger and Sorens 2000). This may reflect the role of democracy as a mechanism for resolving the social conflicts that otherwise force resort to financial repression and the inflation tax (Garrett, Guisinger and Sorens 2000). More generally, democracy gives rise to the increasing recognition of rights, including the international economic rights of residents, who have a greater ability to press for the removal of restrictions on their investment options (Dailami 2000).

Several recent studies (Simmons and Elkins 2000, Garrett, Guisinger and Sorens 2000) suggest that "policy contagion" plays a role in 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 determinants of the decision. The pattern can be interpreted in terms of policy emulation (governments are influenced by the initiatives of their neighbors) and signaling (when one's competitors have liberalized portfolio flows, it becomes harder to retain controls and 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 other, that the simultaneity of policy initiatives in different countries may reflect not the direct influence of events in one country on those in other countries but simply the tendency of decision makers to respond in like fashion to economic and political events not

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little discernible effect of ideological orientation either before or during the 1980s once one controls for other characteristics of governments -- coalition verus 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 resort to the inflation tax.

adequately controlled for in the analysis.[21] Simmons and Elkins address this possibility by defining a country's economic neighbors as those which compete with it for foreign investment (in the case of capital-account restrictions) and those which 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 for example) 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 the deregulation of domestic financial institutions and markets in a growing number of countries. Governments and central banks have been abandoning currency pegs in favor of greater exchange rate flexibility. The 1980s and 1990s were decades of democratization in much of the developing world. And as these developments led some countries to liberalize, the trend gathered momentum as suggested by the literature on policy contagion. Together these forces lent considerable impetus to the process of capital account liberalization.[22]

Before researchers congratulate themselves for their success and close up shop, it is worth noting certain other explanations have been denied the same systematic attention. For example, capital controls may have become less attractive because information and communications

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[21]For a discussion of this common-unobserved-shocks problem, see Eichengreen and Rose (1999).

[22]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.

technologies have grown more sophisticated, rendering controls more porous and their effective application more distortionary (Eichengreen and Mussa et al. 1998). The technical progress in question is hard to measure. A time trend intended to capture secular improvements in information 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 others that are more difficult to capture.

4. 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 in the period 1975-1989, 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 enrolment, quality of government, and regional dummies 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 1960-1989, 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). That the period considered by Quinn starts earlier may mean that his sample includes more observations in which countries liberalized FDI inflows, with positive effects on growth, and fewer where they liberalized short-term portfolio flows, the effects of which may have been more mixed. In addition, Quinn's list of independent variables is longer, and he looks at the change in capital account openness rather than the level. Edwards (2001) has emphasized 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.[23] Also important may be that Quinn's country sample is different, in that he considers fewer low-income developing countries. There are reasons to think that the effects of capital account liberalization vary with financial and institutional development. Removing capital controls may be welfare and efficiency enhancing only when serious imperfections in the information and contracting environment are absent; as noted in Section 1 above, this is an implication of the theory of the second best. Portfolio capital inflows stimulate growth, this argument goes, only when markets have developed to the point where they can allocate finance efficiently and when the contracting environment is such that agents must live with the consequences of their investment decisions. The Asian crisis encouraged the belief that countries opening their

[23]I return to the distinction between partial and comprehensive capital account openness and restrictions in Section 6 on crises below.

economies to international financial transactions benefit only if they first strengthen their markets and institutions; thus, we should expect a positive impact on growth only if prudential supervision is first upgraded, the moral hazard created by an excessively generous 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.

While 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.[24] 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 artefact. And there is some suggestion that capital account liberalization is more beneficial in more financially- and institutionally-developed economies.[25]

But do these apparent differences between high- and low-income 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

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[24] Quinn's measure of capital-account openness enters negatively, in other words, while the interaction between capital-account openness and per capita income enters positively.

[25]Using a different methodology, Quinn (2000) reaches a similar conclusion. He estimates bivariate VARs using growth rates and his measures of capital account liberalization, individually for a large number of middle- and low-income countries. He finds scant evidence that capital account liberalization has had a positive impact on growth in the poorest countries, but some positive evidence for middle-income countries, especially those that have other characteristics likely to render them attractive to foreign investors.

other policies and institutions.[26] The results are not encouraging: the interaction of the quality of policy and institutions with financial openness is almost never positive and significant, and it is sometimes significantly negative.[27] Arteta, Eichengreen and Wyplosz (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 which 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 of the issue has barely begun. (In other words, there do not appear to be other "large-n" studies like that of

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[26]Kraay uses the ratio of M2 to GDP and the ratio of domestic credit to the private sector relative to GDP as ex ante proxies for the level of financial development, and one minus the average number of banking crises per year as an ex post indicator of financial strength. As an indicator of the strength of bank regulation, he uses a measure based on whether banks are authorized to engage in nontraditional activities such as securities dealing and insurance. And to capture the broader policy and institutional environment, he uses a weighted average of fiscal deficits and inflation, the black market premium, and indices of corruption and the quality of bureaucracy.

[27]Note that the test here is for whether the effects of capital account openness are *conditional* on these measures of institutional development. The latter are not simply used as additional controls in the growth equation; rather, they are entered interactively.

Arteta, Eichengreen and Wyplosz 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 particular measures of policies and institutions used. Here, it will be evident, work is already underway. Another is to pin down the mechanisms and or channels through which capital account liberalization affects the economy. It is to exemplars of this second approach that we now turn.

5. 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, inter alia, 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. In this section I focus on two of the channels that have received the most attention: the impact of capital account policies on investment, and their impact on the depth and development of financial markets.

There is no shortage of attempts to analyze the connections between capital account policies and investment. Rodrik (1998) relates the investment/GDP 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 then 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 for one of Kraay's three measures of capital account openness.[28]

Since the evidence on investment does not speak clearly, it is logical to strip another layer off the onion and consider variables like real interest rates and financial depth -- that is to say, 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 e.g. Alesina, Grilli and Milesi-Ferretti 1994, Grilli and Milesi-Ferretti 1995, Bordo and Eichengreen 1998, and 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

[28]The measure in question is actual (gross) inflows and outflows. Since the interaction term is then gross inflows and outflows times net inflows and outflows, one suspects that it is dominated by cases where investment reacted to exceptional surges of capital inflows. In addition one worries about the near-tautological nature of using a variable that essentially captures whether or not capital flowed in as a way of determining whether the policy affected investment. Kray's findings also appear to be sensitive to estimator used and sample period considered: he obtains different results depending on whether he estimates his investment equation by ordinary least squares or instruments his measures of capital account restrictions to control for their endogeneity.

cost of investment, succeed in nurturing growth. While artificially low real rates reduce the required return on investment, they hinder financial development. And financial development presumably increases the efficiency of investment as well as financing and otherwise facilitating experimentation with new technologies.[29]

Klein and Olivei (1999) find that capital account openness stimulates financial depth (measured, alternatively, as the change in the ratios of liquid liabilities to GDP, claims on the nonfinancial private sector relative to GDP, and deposit money bank domestic assets relative to the sum of deposit money bank domestic assets 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 authors like Kraay and Arteta, Eichengreen and Wyplosz find little evidence that an open capital account does more to stimulate growth in high-income countries,[30] Klein and Olivei conclude that it may still 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

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[29]The literature on the link between financial development and growth is vast -- vaster even than on the topic surveyed here. Attempting to review the controversies and contributions would not be realistic. The reader may refer to Levine (1997) for a full-scale review of the topic.

[30]Edwards (2001) is an exception in this regard, as noted above.

financial development is limited to high-income countries. Levine and Zervos (1998) find for 16 developing countries 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 on the grounds that they had 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, since 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 Korea, or measures limiting foreign investment in domestic securities markets are relaxed earlier, as in Malaysia. Implementing such distinctions will also require measures of the development of the information and contracting environment, since asymmetric information and poor contract enforcement are thought to favor banks over securities markets.[31]

Another set of studies builds on the observation that controls are disproportionately utilized by countries with chronic macroeconomic imbalances (see e.g. Alesina, Grilli and Milesi-

[31]The argument being, as noted in the preceding footnote, 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).

Ferretti 1994, Grilli and Milesi-Ferretti 1995, Wyplosz 1999 and 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.[32] By now it will be clear that not a few studies advancing such conclusions have identification problems. While countries suffering from chronic 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 so few studies have addressed this identification problem may reflect the difficulty of finding plausible instruments for the endogenous variables.

One response taken 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 versus the 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.[33] Garrett (2000) finds that this effect is specific to the exchange rate regime: that governments come under less pressure to limit spending when the exchange rate is allowed to float, but that 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 capital taxation (taxes on profits and other returns to capital). The idea that capital account liberalization, which

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[32]Along with the seigniorage-related rationale reviewed above.

[33]Quinn (1997) reports a positive association between public spending and capital-account liberalization but concludes that the correlation is not robust.

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) all find that rates of capital taxation are unchanged or even higher in countries with open capital accounts. Since 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 make this finding go away. This, clearly, is a puzzle requiring further study.

Finally, a number of authors, 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 of the 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.[34] Using data for a cross-section of countries, Montiel and Reinhart (1999) find that controls succeed in reducing the share of portfolio and short-term capital flows in total inflows, while increasing the share of foreign direct investment and leaving the overall volume of capital inflows unchanged. This generalizes the conclusions of detailed studies for Chile, many of which conclude that the country's holding period tax on capital inflows reduced the volume of short-term inflows but in a way that was fully

[34]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 arise 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 lead a shortening of the maturity structure of the debt.

compensated for by increases in long-term flows. (In other words, only the maturity structure and not the level of the flows was affected by these controls.[35]) Montiel and Reinhart find that this effect is general; it is found not only in Chile but in a number of other emerging markets pursuing similar policies.

Controls a la Chile with the potential to reduce the risk of currency and financial crises have their advocates in the scholarly and official communities. But is this advocacy justified? Answering this question requires determining whether controls in fact reduce crisis risk, the issue to which I now turn.

6. Effects of Liberalization: Crises

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 ERM currencies 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). And China's success in insulating itself from this instability by the use of capital controls is widely

[35]Studies which reach this conclusion include Soto (1997), De Gregorio et al.(1998) and Valdes Prieto and Soto (1998).

seen as the exception that proves the rule.[36] 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 South 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.

In fact, the cross-country evidence generally suggests, contrary to the intuition described at the top of this section, that the presence of controls *heightens* currency-crisis risk. Glick and Huchison (2000) combine data on the presence or absence of controls at the end of one year (from the relevant tables 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; he too finds that the presence of controls is associated with an increased

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[36]China's controls took the form of restrictions on borrowing by Chinese entities, restrictions on portfolio outflows by Chinese citizens and inflows by foreigners, and a ban on futures trading in renminbi. 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, it is difficult to speculate against the future value of the renminbi, and controls on outflows make it harder for Chinese investors to convert their renminbi if they expect the currency to weaken."

probability of currency crises. He then goes on to analyze whether the presence of controls influences the likelihood that government and central banks will succeed in defending the currency against attack, and finds some evidence to this effect.

An interpretation, following Bartolini 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 required for the maintenance of stability. They may worry that a government inclined to resort to controls will be particularly willing to compromise investor rights. Either way, the signal may incite investors to flee and, if the control regime is less than water-tight, enable them to do just that.

But have these authors identified the direction of causality? If governments impose controls in anticipation of looming financial problems, as certainly can be the case, then timing cannot identify the direction of causality.[37] 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 degrees of intensity may vary in their effectiveness in containing threats to currency stability, while 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

[37]For example, Thailand introduced partial controls in May 1997, prior to its crisis, before extending their coverage on several subsequent occasions: in June, July and September of 1997 and January of 1998. That Glick and Hutchison 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, the length of time between the observation of controls and the occurrence of a crisis is *at most* a year and in practice can be considerably less. That is to say, Glick and Hutchison relate the presence or absence of controls *at the end* of year t to the presence or absence of a crisis *anytime* in year t+1.

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 from Korea's crisis, that country having 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, except of the most draconian sort, may be incapable of restraining capital flight if panic breaks out.[38]

In addition, different controls may send different signals. Inflow controls a la Chile can be justified as prudential measures -- as a way of reinforcing regulations designed to ensure the stability of the financial system (Eichengreen and Mussa et al. 1998). They thus may be perceived as a signal that the authorities take seriously their commitment to currency and banking stability. Outflow controls, in contrast, may only suggest that the authorities are desperate. Using data for a sample of 15 developing countries, Rossi (1999) finds that the presence of outflow controls heightens 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.

7. From Research to Policy, and From Policy to Research

Turning from research to policy, one arguably finds a greater degree of consensus on the lessons of international experience. That the G-7 countries all have open capital accounts is

[38]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.

regarded as a telling point. 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 that 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 to the point where one can be confident 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 advisors may differ on precisely when and how to liberalize international financial transactions so as to best insure that capital inflows are channeled in productive directions, in other words, but there is little support for refusing to liberalize or

(Malaysia in 1998-9 notwithstanding) for reversing previous liberalization measures. International financial liberalization, to paraphrase Marx, may be just another instance where the more developed country shows its less developed counterpart an image of its future.

Given the breadth of support apparently 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 for the conventional wisdom to be rethought. Given these stakes, priority should be attached to research with immediate promise for solving the key empirical puzzles. Empiricists need to better distinguish different kinds of controls -- on inflows versus outflows, and on transactions involving banks on the one hand and securities markets on the other. They need to develop more informative measures of those aspects of the legal, contracting and information environments that plausibly shape the effects of capital account liberalization. They need to construct better indicators of the other policy initiatives with which capital account liberalization is sequenced.

These extensions that 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 with not 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 more definitive evidence of the effects of policies toward the capital account is to

be found at the microeconomic level. 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 from this rapidly expanding body literature may be helpful by illustrating the kind of questions asked and answers found. For example, Tandon (1994) shows that firms offering bonds on international markets achieve a reduction in the required rate of return on their equity. 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, Strikland and Zenner (2000) show that firms from emerging markets listing in the U.S. are able to relax capital constraints -- that is, the cash-flow sensitivity of their investment declines -- while no such change is evident for firms from industrial countries, where capital constraints are presumably less.

Still more remains to be learned by adopting this 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 these microeconomic studies back into the macroeconomic framework adopted by the researchers whose work has been the topic of this survey.

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