

MYTH OR REALITY?
THE DIFFUSION OF FINANCIAL LIBERALIZATION
IN DEVELOPING COUNTRIES

Nancy E. Brune
Alexandra Guisinger
November 2006

Abstract

Over the past two decades, many developing countries have removed restrictions on the movement of capital flows across their borders. Diverging from existing studies of the determinants of financial openness which rely on decision-theoretic models that assume countries make decisions to liberalize independently of what other countries do, we consider an alternate explanation – namely that the decisions made by countries to liberalize are, in fact, very much interdependent. Using a new indicator of financial openness (FOI), we test the extent to which the decision to lift restrictions on capital and current account transactions has been diffused across countries in the developing world.

Our paper makes three contributions to the growing body of literature on the diffusion of policies and practices in three ways. First, we recognize that the dependent variable – financial openness – is not a uniform policy and we take seriously the ways that support for liberalization might vary across individual categories of transactions. Second, we attempt to develop the logic underlying the causal mechanisms driving diffusion. Finally, empirically, most studies of financial openness focus almost exclusively on developed countries, when much of the radical liberalization, particularly in the 1990s, took place in the developing world. Here, we focus on diffusion in developing countries.

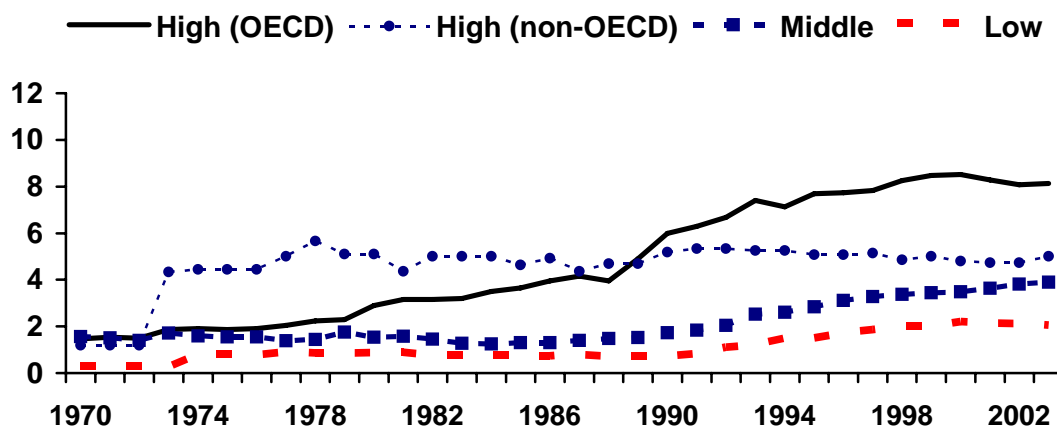
In this paper, we develop a series of hypotheses related to the impact of diffusion on financial liberalization policies and the ways in which diffusion mechanisms may vary across different types or categories of financial transactions. Based on panel data for 117 emerging economies over the period 1970-2002, our results suggest that diffusion has played a role in developing countries' decision to liberalize, albeit the effect is not as strong as expected. As expected, the strength of diffusion mechanisms vary across categories of financial transactions. Finally, diverging from recent empirical studies, we find that emulation-driven diffusion is much more consistently associated with financial liberalization policies than competitive diffusion.

Nancy E. Brune is a fellow at the Center for Globalization and Governance, Princeton University and can be reached at nbrune@sas.upenn.edu. Alexandra Guisinger is Assistant Professor at Notre Dame University and can be reached at guisinger.1@nd.edu. The authors wish to thank Raymond P. Hicks, David Nickerson, Geoffrey Garrett, Dennis Quinn and participants of the workshop on “The Diffusion of Policies and Institutions” (ECPR, Cyprus, April 2006) for helpful comments on substantive issues and methodological design. Please do not cite or quote without permission.

Introduction

Since the end of the Bretton Woods system, governments have increasingly employed controls – meaning regulations and taxes – on different types of cross border financial transactions related to the current and capital accounts. The use of capital controls has been justified on the following grounds: reduction of balance of payments crises; instability and unwarranted exchange rate volatility; retention of domestic savings and prevention of excessive foreign ownership of domestic factors of production; taxation of domestic capital and financial transactions; and reinforcement of stabilization and reform efforts (Guitan 1997). Over the past two decades, however, scores of emerging economies have lifted restrictions on the flows of capital. Figure 1 plots financial openness over time across different levels of income. The upward trend in financial liberalization has been driven by globalization – the rapid movement of goods and services across borders, technological innovation and advances, and the widespread adoption of free market policies – all of which have had the effect of increasing the costs of monitoring and enforcing controls on financial flows.¹ But today, more than half the countries in the world still impose significant restrictions on their capital and current accounts. While most of the countries with open capital and current accounts are developed economies that liberalized during the 1970s and 1980s, less than half of all developing countries have aggressively embraced financial liberalization.

Figure 1. Financial Openness, By Level of Development, 1970-2004



What explains the pattern of financial liberalization, particularly in the developing world? If the costs to liberalizing are so high, what explains why countries have opened their capital and current accounts? First Deputy Managing Director of the IMF, Stanley Fischer, (1998: 8) concluded: “The economics profession knows a great deal about current account liberalization ... It knows far less about capital account liberalization. It is time to bring order both to thinking and policy on the capital account.” In general, current studies exploring the determinants of financial liberalization assume that countries make policy decisions independently of the actions of other countries (or external agents). The variation in financial liberalization outcomes is explained by internal stimuli (i.e. political institutions, economic crises) or national policymakers’ response to external shocks (i.e. internationalization, price changes).

However, the S-shaped patterns of the adoption of financial openness reforms (as demonstrated in Figure 2) in the early and mid-1990s suggest it worthwhile to explore a second class of explanations – namely, one that considers countries as *interdependent* actors. Continuing with this game-theoretic framework of analysis which considers countries as interdependent strategic actors, we examine the ways in which diffusion has played a role in national policymakers’ decisions to remove restrictions on their current and capital accounts. By diffusion, we mean the ‘probability that a country will (voluntarily) adopt certain policies based on prior adoption of policies in a country’s ‘peers’.’²

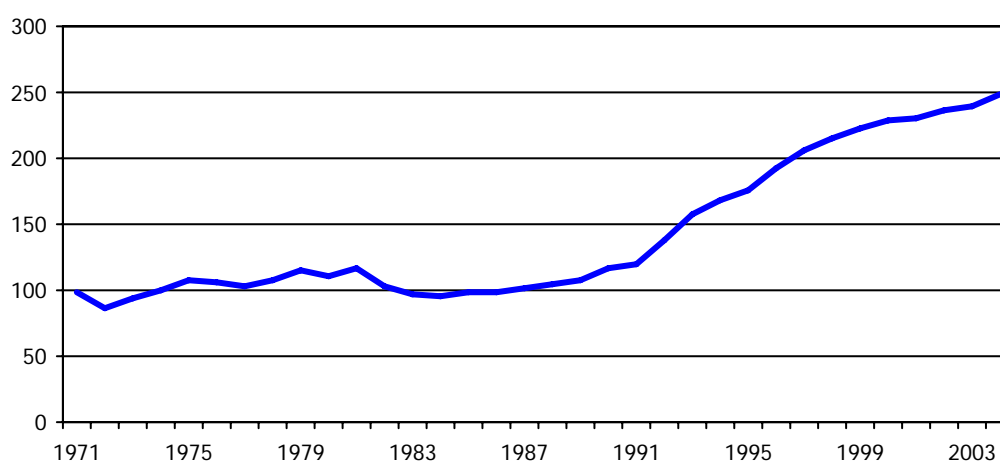
Diffusion as a concept and process has been used widely by anthropologists and sociologists to explain the widespread adoption of cultural practices and organizational forms over time. Sociologists DiMaggio and Powell (1983) suggest two causal mechanisms which drive the increased homogenization of organizational forms (extended by others to include policy choices): competitive and institutional (which includes coercion, as well as normative and mimetic processes). Arguably, globalization and its associated decline in the costs of transportation and communication across distant communities and networks have facilitated the process of emulation and dissemination of information, giving rise to the

1 Federal Reserve Bank of San Francisco (2001).

2 Meseguer (2002).

diffusion of policies and practices. This widespread global adoption of certain reforms and institutional frameworks has given rise to a growing body of diffusion studies.³

Figure 2. Financial Liberalization around the World (1970=100)



Source: financial openness data (Brune 2006)

A growing number of studies examine the role of diffusion in the increasing adoption of financial liberalization policies. In their ground-breaking study, political economists Simmons and Elkins (2004) suggest two specific ways that foreign economic policy choices are diffused: choices by a country's peers can alter either a) the "payoffs" associated with a given policy choice or the b) information set upon which decisions are based. Simmons and Elkins (2004) find that financial openness has been diffused across similarly situated countries competing for capital. Quinn and Toyoda (2005) argue that financial liberalization has been diffused across ideology: global anti-capitalist sentiment had a strong and significant negative effect on capital account openness. Kobrin and Wu (2005) find that the liberalization

³ Scholars have explored the role of diffusion in: growth of welfare states (Strang and Chang 1993); quality certification by firms (Guler et al 2002); neoliberal macroeconomic policies (Meseguer 2002, 2003; Henisz et al 2005); pension privatization (Brooks 2002); privatization (Brune and Garrett 2000, Kogut and Macpherson 2005); trade (Guisinger 2005); FDI restrictions (Kobrin and Wu 2005); central

of FDI restrictions (promotions and guarantees) have been diffused across countries competing for capital, as well countries in shared regional and income networks.

While the recent series of diffusion studies provide some leverage into explaining the cross-variation in financial liberalization, there are methodological limitations which suggest some caution in interpretation of these findings. First, while Simmons and Elkins (2004) test the broadest range of hypotheses driving interdependent decision processes, they use the standard binary variable to capture financial liberalization. Unfortunately, the lack of variation in the dependent variable makes it difficult to rebut the challenge that what one is observing is simply a general trend in openness rather than the diffusion of policy choices across countries and over time.

Second, the diffusion studies (as well as most studies on financial openness) all portray financial liberalization as a uniform policy. However, empirical evidence suggests that countries have different incentives and motivations for removing restrictions on different types of financial transactions (i.e. inflows and outflows, portfolio vs. foreign direct investment). Therefore, we should expect to see diffusion processes vary across types of financial transactions. Third, recent studies leave the logic underlying the causal mechanisms driving different notions of diffusion under theorized and under explored (Weyland 2005).

Here we consider two mechanisms, competition and emulation, through which decision-makers might be influenced to adopt financial liberalization policies. Our objectives are two-fold. First, we challenge the assumption that countries are independent actors and explore the causal mechanisms through which financial liberalization has been diffused, if at all, across developing countries and time. Using 12 measures of financial openness (Brune 2006) for more than 100 developing countries over the entire post-Bretton Woods period, we develop and then test a series of hypotheses related to the effect of diffusion on different financial openness policies.

bank independence (McNamara and Castro 2003); democratization (Coppedge 2005); and deregulation (Gilardi 2003, Levi-Faur).

We find evidence that financial liberalization policies have been diffused across emerging economies, although much less than anticipated. Supporting our claim that financial liberalization is not a uniform policy choice, we observe that the extent to which diffusion plays a role in policy choices varies across types of financial transactions. In particular, contrary to our expectation, we find that the role of diffusion in driving the removal of controls did not vary across inflows and outflows. Our findings indicate that diffusion tends to play a greater role in the liberalization of fixed value investments (i.e. foreign direct investment) than those with variable valuation (portfolio flows, credit). We observe also that financial liberalization policies were diffused more efficiently through formal networks (e.g. regional trade agreements) than through informal networks.

Two primary implications emerge from our results. First, the results indicate that not all information channels or networks are created alike. Some networks provide a better architecture for filtering information and policy alternatives than others (Lazer 2003, Guisinger 2005). Second, contrary to recent empirical studies (financial liberalization: Simmons and Elkins 2004; market oriented reforms: Henisz et al 2005; bilateral investment treaties: Elkins et al 2006), we find that diffusion as emulation is more consistently associated with financial openness than diffusion as competition. Simmons and Elkins (2004) cautioned that policy adoption driven by diffusion as competition could lead to sub-optimal outcomes. Our results suggest that it is emulation that is driving a country's decision to adopt financial openness policies which could indicate more optimal outcomes for developing countries.

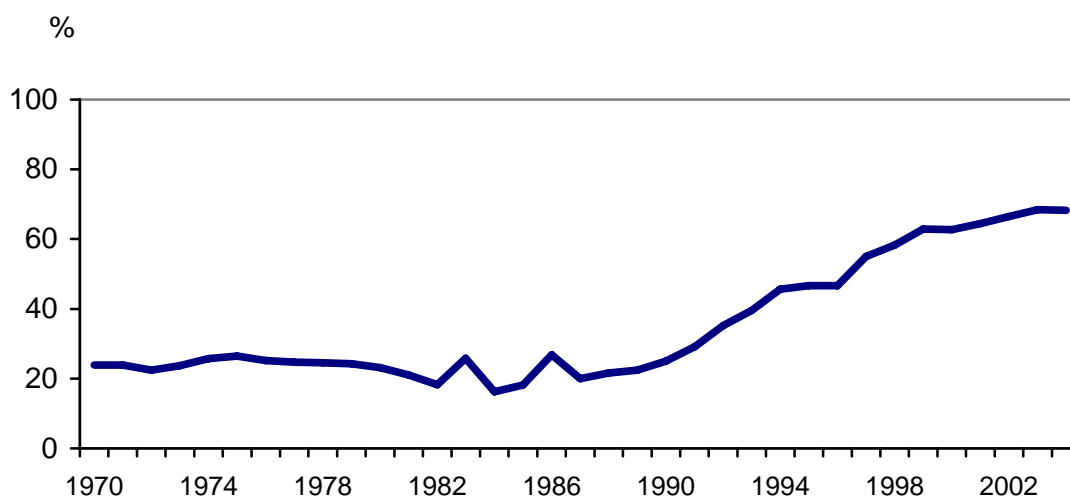
The remainder of this article is divided into five primary sections. Section 2 develops our theoretical arguments about the diffusion of financial liberalization policies over time in the developing world. Section 3 introduces our 12 measures of financial openness. Section 4 discusses methodological issues. In Section 5, we report and discuss the results. Section 6 provides some concluding remarks.

II. Theory

Countries as Interdependent Actors

The current literature on financial liberalization views countries as independent actors who support greater financial openness in response to domestic economic and political conditions or external shocks.⁴ But the widespread adoption of financial liberalization policies over the last two decades, as illustrated in Figure 3, suggests the need to reexamine the assumptions underlying the ways in which national authorities make decisions. In particular, changes in financial openness may be better understood as a game theoretic process. In other words, when deciding whether or not to remove restrictions on the capital and current accounts, emerging economies may be more influenced by the choices made by their “peers” abroad than by domestic factors and conditions.

Figure 3. The Percentage of Developing Countries with Financial Openness Score >1



Source: Brune 2006. Note: The Financial Openness Index is based on a 0-12 scale.

⁴ Political economists have attributed the variation in financial liberalization to partisanship (Alesina et al 1994, Quinn and Inclan 1997), central bank independence (Epstein and Schor 1992, Alesina et al 1994), domestic cleavages/factor endowments (Quinn and Inclan 1997), and crises (Haggard and Maxfield 1996).

Theories of Diffusion

Theories of diffusion tend to fall into one of two broad categories. The first category, coercion (or “coercive isomorphism”), encompasses diffusion mechanisms that involve coercion from one actor (or set of actors) over another. In the increasingly interdependent global order, countries with more power in the international order, or that are perceived as possessing high status or great power (based on financial, military or political resources), are often able to shape the policies adopted by countries that are less powerful (Gilpin 1987) or who depend on the dominant set of actors for some good or resource. International coercion occurs when powerful actors influence the policy choices of governments directly.

While several recent empirical diffusion studies emphasize the coercive role of strong states or multilateral organizations (usually the International Monetary Fund) in widespread policy adoption, we align ourselves with a growing number of scholars who consider diffusion to mean the *voluntary* adoption of policies (Meseguer and Gilardi 2004) and as such, focus on alternate diffusion mechanisms. Moreover, as Guisinger (2005) notes, diffusion as coercion is difficult to observe: it would only exist “if actors adjust their policies because other actors have already done so in response of the preferences of the dominant actor or organization (p. 6).” Underscoring the difficulty in observing coercion, Vreeland (2004) and Brune (2006) argue that countries exercise considerable discretion when seeking out the assistance of the IMF and may request that financing be tied to policy reforms (including financial liberalization).

The second broad category of diffusion explanations seeks to understand the logic behind the decision to adopt policy choices of other countries in the absence of coercion. For Dimaggio and Powell (1987), there are at least two processes by which policy choices might be diffused across countries: competition and emulation. First, “competition” is that process by which a country’s action is conditioned on the previous choices undertaken by one’s competitors (be they in trade or in finance). Emulation encompasses that process by which an action is conditioned on the previous choices of one’s peer group – be it regional, cultural, or economic – or by members of a country’s shared network. Admittedly, isolating specific diffusion causal mechanisms poses significant challenges. Diffusion mechanisms can often be

closely intertwined: peer groups defined by geographic position, for example, may also function as competitors. However, distinguishing between possible diffusion mechanisms is critical to understanding why some countries may find the results of liberalization more beneficial than others. Here, we focus on these two specific conceptions – competition and emulation – of interdependent policy choice between countries.

Competition

Diffusion by competition suggests that while countries may have independent preferences for the level of restrictions on the movement of capital, they will react in response to competitor changes in policy by following as much as possible their competitors' policies. The logic might look something like this:

1. Country A has independent reasons for not removing restrictions on the current and capital account. Even though there are efficiency benefits to financial liberalization, these are outweighed by political costs in terms of the distributive implications of greater financial openness.

2. Country A and Country B are economic competitors. Country B independently chooses to lift controls on capital flows. (The game is agnostic as to why Country B decided to liberalize).

3. Country A recognizes that if B opens its current and capital accounts and it does not, goods (investment, etc) will flow from A to B (i.e. they are economic competitors) such that the efficiency costs of not lifting capital controls would now outweigh the benefits of remaining closed. As a result, Country A removes restrictions on the flow of capital.

Competition is essentially a coordination game in which country A's policy decision is strategic: it liberalizes if B has liberalized; it does not lift controls if B has not. The choice between these two equilibriums is thus determined by B's policy stance which may have in turn been in response to one of its competitors opening or for independent reasons. Central to the logic of diffusion by competition is the idea that the "follower" country is more likely to liberalize its current and capital accounts the greater the extent of liberalization in countries with which it competes more intensely. Central also to diffusion as "competition" is the assumption that the costs and benefits of capital account liberalization are fully

disclosed and understood by the “follower” country (i.e. complete information.) This suggests that when Country A liberalizes, the action reveals something to Country B about the costs or payoffs associated with the decision to liberalize (or conversely, the decision to adopt greater restrictions). Recent studies (Brune and Garrett 2000, Kogut and Macpherson 2003, Simmons and Elkins 2004, Kobrin and Wu 2005) have found evidence suggesting that diffusion as (economic) competition explains the adoption of foreign economic policy choices.

Emulation⁵

Not surprisingly, an environment in which the costs and benefits are uncertain or have not been disclosed fully (incomplete information) should give rise to a second form of strategic interdependence: emulation. Emulation (mimetic isomorphism) refers to the tendency of actors to seek legitimacy or some sort of reputational payoff by emulating the behavior or practices of other actors. Mimetic processes entail imitation in the face of uncertainty that could be a function of “poorly understood technologies, ambiguous goals and environmental turbulence” (Kobrin and Wu 2005, p. 18) among other factors. Driving this process then is a degree of uncertainty surrounding a wide range of policies, making it difficult then for rational policymakers to assess each possible option against its alternatives. For Strang

⁵ In some cases, emulation could be considered rational learning if countries are updating their policy decisions based on the success or failure of peers’ decisions to liberalize. The outcome of others’ liberalization may reveal information about the costs and benefits of capital account liberalization specifically tailored for a country’s own characteristics (i.e. similar legal system, similar economic structure, etc). These policy decisions then constitute natural experiments from which other countries can subsequently learn and update their decisional calculus and estimation of the costs and benefits of opening the current and capital accounts. If liberalization outcomes are successful, other countries are more likely to increase capital openness (i.e. Bayesian updating). Diffusion as rational learning may explain why one particular model or policy gets adopted and why that, over time, policies start to resemble each other.

However, one of the assumptions of ‘rational learning’ is that learning takes place quickly and effortlessly (i.e. low transaction costs). While some benefits of financial liberalization may be revealed immediately, some of the costs, particularly costs stemming from increased exposure to volatile capital markets, may not be fully revealed for a number of years, or the next economic crisis. While countries are not necessarily acting “irrationally” in following cues from similar countries, whether the time span is long enough to constitute a “rational learning” cycle is debatable. Given the short time period of our analysis, we do not consider diffusion as learning.

and Macy (2001), emulation involves an element of problem-solving. Adoption of policies by one country generates informational externalities for other actors (Coleman 1988). As suggested earlier, greater international integration has reduced the costs of communication and the dissemination of information, thereby facilitating emulation and imitation of ideas and policies across distant societies.

Social contact, understandably, provides a natural experiment from which to observe the decisions made by one's 'peers.' Countries which are uncertain as to the costs and benefits of liberalization may look to decisions of natural peer groups – such as those with similar sociological and cultural ties or similar economic or institutional structures – for cues as how to proceed. Actors tied to one another through a shared culture or set of norms seek information through the actions of others in their network, either from the “leaders” or other “adopters” (Meyer et al 1997). Information transmitted across these formal and informal networks imposes fewer transaction costs since there is a shared understanding and knowledge, which reduce costs due to information uncertainty. Admittedly, diffusion as emulation may be less efficient than diffusion as competition owing to the fact that policymakers often suffer from information overload, much of which is irrelevant. While actors seek information from their peer networks, not all networks are equally efficient in filtering and transmitting (appropriate) information (Lazer 2003). Nevertheless, we posit that the logic fueling social emulation looks like this:

1. Country A does not know whether it is desirable to liberalize its current and capital accounts.
2. Countries A and B are connected by a shared network or an array of social ties based on history, culture, language, etc. Alternatively, Country A views itself in the same economic peer groups as country B. As a result of these ties, country A takes policy cues from country B.
3. When country B reduces restrictions on its current and capital accounts, country A mimics its behavior and removes restrictions on the movement of capital.

Empirical studies have found evidence suggesting that diffusion as emulation explains the adoption of various policies, including pension privatization (Weyland 2003), macroeconomic and market oriented reforms (Fourcade-Gourinchas and Babb 2002, Meseguer 2002, 2003, Simmons and Elkins 2004, Henisz et al 2005) and privatization (Kogut and Macpherson 2005).

Diffusion Hypotheses

In this section, we develop a set of hypotheses related to the kinds of peer groups and diffusion mechanisms that might affect a developing country's decision to remove controls on the movement of capital across its borders.

Hypotheses I

A. Competition

Globalization and marketization has been marked by greater transparency, openness, falling transportation costs, and widespread market friendly reforms aimed at attracting more mobile capital. Rationally acting governments realize that investors use measures of risk to determine where to invest their limited pool of capital and resources. All else equal, investors tend to compare investment opportunities among countries with similar credit and country risk ratings. Governments, as sophisticated actors, recognize that they are competing for investment with countries that share similar country credit and risk ratings. (As reported, governments have been known to manipulate macroeconomic policy so as to preserve bond ratings and country credit risk ratings.⁶) As such, countries are more likely to take cues from countries with whom they compete for capital, reflected in the credit ratings. For instance, the top ten recipients of foreign direct investment during much of the 1990s were Argentina, Brazil, Chile, Indonesia, Mexico, and Thailand – countries from different regions but with similar country credit risk ratings.

While there may be “first-mover” advantages to liberalizing early so as to capture a greater share of the efficiency gains and potential benefits offered by markets and investors, countries are constrained by the distributional and other costs of lifting capital controls. A government, then, may wait to liberalize its capital account until one of its competitors does. At that time, however, the efficiency costs of continuing to restrict capital flows will outweigh the benefits of protecting certain sectors or maintaining

⁶ Financial Times, February 2003.

capital controls. Similarly, we would expect that financial liberalization in a given country would be heavily influenced by the financial openness policy choices made by countries in its “peer” group of countries with similar country credit risk ratings.

Similarly, trade networks capture a degree of competition between countries that are competing for preferential treatment with third parties (i.e. El Salvador and Nicaragua competing with each other to increase export of agricultural products to the United States). Recent work explores the diffusion of trade policy across countries (Guisinger 2005). This work dovetails previous work by scholars which analyzes how trade networks have influenced countries’ adoption of trade-related policies like tariffs, import and export controls, etc. Emerging economies are sensitive to the conditions and policies of their primary trading partners. Capital controls, for example, may affect black market premia and exchange rate movements, both of which may influence movements of tradables. The nature of trade requires countries to adopt and maintain policies that promote mutually beneficial relationships. Countries may be influenced by primary trading partners to maintain competitive policies and a mutually beneficial trade environment as they compete for preferential trade arrangements with third parties. They may do this by creating even more specialized agreements which include policies on the liberalization of capital controls. Simmons and Elkins (2004) find that a country tends to liberalize if countries with which it competes for capital (captured by Standard and Poor bond ratings) and trade open their capital and current accounts. From this theoretical framework, supported by preliminary empirical evidence, emerge two hypotheses:

H1: Countries are more likely to liberalize if countries with similar country credit risk ratings open their capital accounts.

H2: Countries are more likely to liberalize if their primary trading partners open capital accounts.

Emulation

One of the cohorts or networks through which information about policy decisions might be shared across members is based on the country’s economic and export structures (i.e. agriculture, manufacturing,

minerals and ores, and services. Emerging markets at comparable stages of development tend to have similar economic and market structures, labor institutions, levels of technological skill, and quality of infrastructure systems (i.e. transportation, roads). Networks of countries based on similar economic and export structures provide a natural experiment from which to observe the costs and benefits of adopting particular policy decisions. The way in which a country adopts and implements a policy or manages the political difficulties in adopting reforms reveals information about the costs and benefits of the decision from which similarly situated countries can observe and update their decisional calculus. Diffusion as emulation assumes that countries – who may or may not compete with each other -- emulate the behavior their peers make in response to the global competitive environment. In contrast, diffusion as competition is based on the idea that countries respond directly to policy choices made by those against whom they compete for trade and capital. Admittedly, if countries that compete economically are also similar in economically germane respects, the empirical pattern of financial liberalization diffusion generated by competition and emulation could be the same. However, as operationalized in this paper, competitive diffusion hypotheses are captured by directly competitive interactions (Standard & Poor (S&P) ratings and trading partners).

H3: Countries are more likely to open their capital accounts if countries with similar economic structures open their capital accounts.

H4: Countries are more likely to support capital mobility if countries with similar export structures adopt financial liberalization policies.

The diffusion mechanisms discussed above are based on informal dissemination of information through networks. A more formal set of structures through which information about policy decisions might be shared include formal and informal memberships or participation in groups. These networks may be informal (regular meetings of Central Bank governors)⁷ or formal (bilateral trade agreements or

⁷ Several high powered financial institutions including the International Monetary Fund, the U.S. Federal Reserve Bank, the Bank of England, the Bank of Switzerland and JP Morgan Chase hold meetings

preferential trade agreements (PTAs), bilateral investment treaties (BITS), monetary and economic unions, etc).⁸ The rate at which information travels is a function of the density of networks in which a given developing economy is embedded (Albrow 1997, Van Rossem 1996). More often than not, developing countries participate in more than one regional trade agreement (RTA). Transaction costs are much lower for observing the consequences and benefits of policy decisions made by peers in social and communication networks. We hypothesize that:

H5: Countries are more likely to remove restrictions on their capital and current accounts if countries with which participate in regional trade agreements (RTAs) have also liberalized.

Hypotheses II

While the recent series of diffusion studies provide some leverage into explaining the cross-variation in financial liberalization, there are several limitations. Recent diffusion studies financial liberalization as a uniform policy. But, empirical evidence suggests that policy-makers differentiate between controls on inflows and outflows of capital and across different categories of transactions. For instance, Chile and Malaysia both implemented controls on capital outflows to protect themselves from the volatility of outflows (Edwards 1999, Edwards et al 2000). As Edwards and others have suggested, there are different costs and benefits associated with inflows and outflows of capital. Therefore, we would expect that the casual logic behind the government's decision to lift restrictions should vary across controls on inflows and outflows as well as across different types of transactions. While Figure 4 indicates that openness on inflows and outflows has, in fact, trended together, Figures 5-6 indicates that

throughout the year for central bank governors and their representatives. Through these informal gatherings attended by a professional network of individuals, certain information about policy ideas is transmitted. For example, based on a review of agendas for meetings held in 2005 across several of these institutions, the central bank governors and national policymakers in developing countries discussed reserve asset management.

⁸ Simmons and Elkins (2004) find that liberalization policy choices have been diffused across BITS. Note: We include BITS as a diffusion mechanism, but it was not significant nor did its inclusion change its results. We opted to leave it out of the final model after conversations with Elkins revealed that BITS are neither a mechanism for competition or dissemination of information. Countries, instead, tend to enter BITS to get preferential trade conditions and access to markets that they would not otherwise get.

there is much more divergence in the timing of the removal and imposition of controls on inflows and outflows.

Figure 4. Financial Openness by Inflows and Outflows, 1970-2004

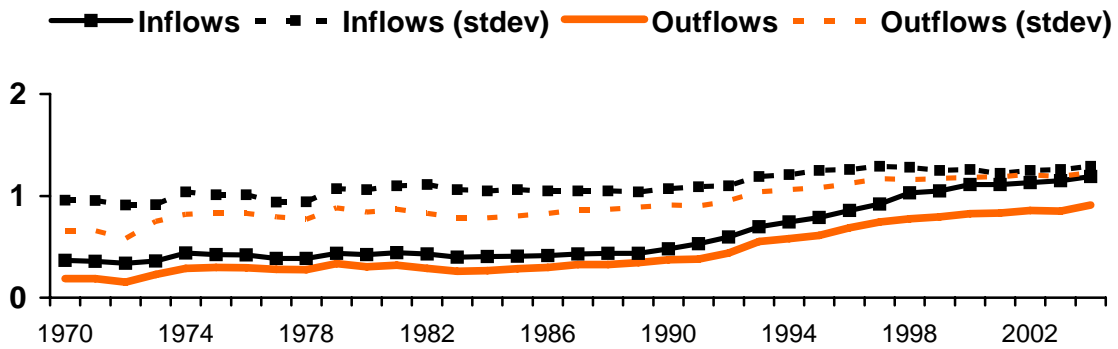


Figure 5. Frequency of Openings and Closings on Inflows, 1970-2004

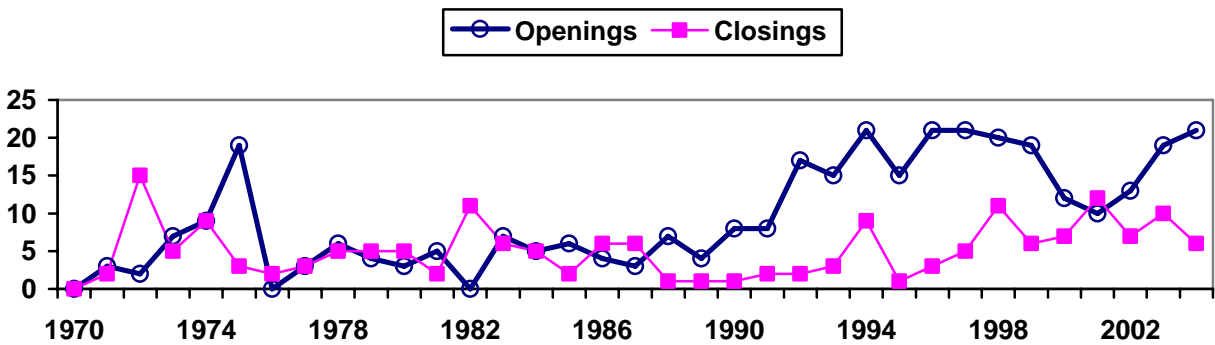
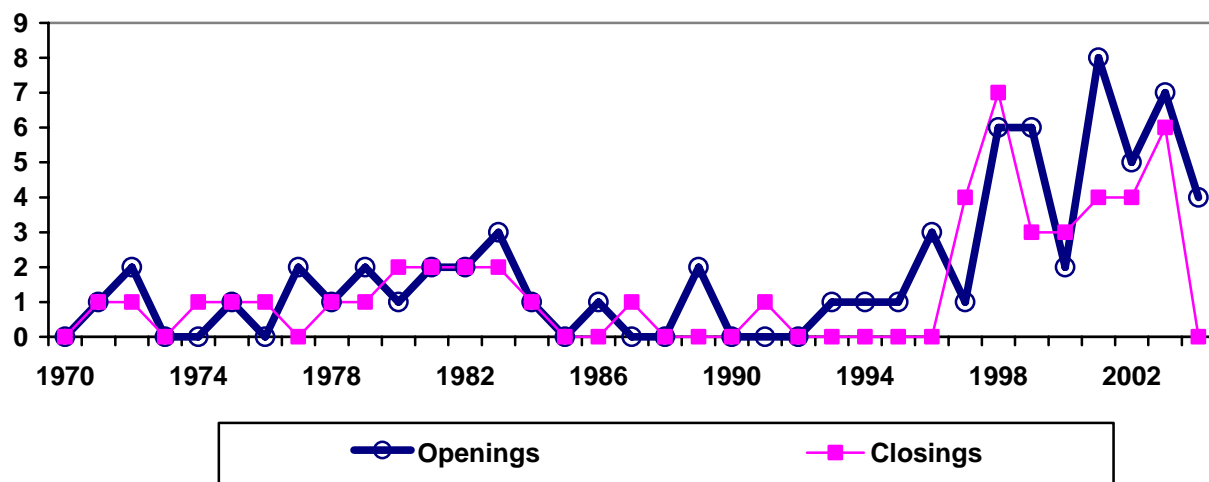


Figure 6. Frequency of Openings and Closings on Outflows, 1970-2004



Based on our argument that the mechanisms that drive diffusion and the extent of diffusion will vary across different types of transactions, we propose four additional hypotheses. First, we hypothesize that diffusion mechanisms should affect the liberalization of outflows in inflows in distinctly different ways. However, the direction of the relationship is unclear. On the one hand, empirical evidence based on the experiences of developing countries suggests that the costs of a sudden outflow of capital are higher than the sudden inflow of capital. Once inside the country’s national borders, investors become more vested; tradable producers become dependent on the access to and extension of foreign credit; workers depend on the continued operations of multinational corporations; companies depend on institutional investment to provide much needed capital for their companies. In short, the costs of financial liberalization policy on outflows are well-known. As such, governments may be less willing to lift controls on outflows than inflows. This implies that diffusion may play a greater role in the financial liberalization of inflows than to outflows. In contrast, financial liberalization policy choices related to outflows may be more subject to domestic political and economic constraints.

On the other hand, there is an equal amount of empirical evidence to suggest that countries may be less likely to remove restrictions on inflows. Economists and the IMF have frequently cautioned against the destabilizing effects of rapid inflows (Lopez-Mejia 1999). In addition, it is widely known that

controls (particularly on inflows) have often been used as an instrument to protect infant industries (including uncompetitive domestic financial intermediaries) and privilege certain groups over others (Alesina et al 1994, Haggard and Maxfield 1996, Lukauskus and Minushkin 2001). In a related point, Haggard and Maxfield (1996) note that international investors tend to have strong preferences about the liberalization of controls on outflows. Investors may not invest in or relocate into a host country unless they have some guarantee or assurance that they can leave. Based on these arguments, we should expect to see that diffusion plays a greater role in the financial liberalization of controls on outflows. Domestic politics may trump the effect of diffusion in explaining the variation in the liberalization of controls on inflows. Given that the empirical record is mixed, our limited hypothesis is simply that:

H6. The strength of diffusion mechanisms should vary across the removal of controls on inflows and outflows.

Our second hypothesis is related to the composition of capital flows. Both governments and investors are sophisticated. Governments realize that not all capital flows bear equal risk. Flows that reflect more variable valuations (or ‘liquid’ sources of capital) – such as portfolio and money market transactions – have a greater ability to “exit” (Hirschman 1970) than fixed valuation investments (such as foreign direct investment whose ability to leave is constrained by buildings, companies, workers, and full-scale production operations.)⁹ Policies related to foreign direct investment are arguably much more transparent than policies related to capital and credit markets. As a result, diffusion might play a greater role in the removal of controls on FDI related-transactions.

H7. Diffusion will play a greater role in changes in liberalization policy on FDI-related transactions (fixed valuation investments) than on money market and credit transactions (more variable valuation investments).

⁹ We are grateful to Thomas Plumper at the University of Essex for encouraging us to think about the nature of the valuation of the investment.

III. Measuring Financial Liberalization

Financial Openness Index (FOI)

This paper explores the extent to which diffusion has driven financial liberalization in developing countries by using a new indicator, the Financial Openness Index (FOI) (Brune 2006). While originally developed to address some of the limitations of previous studies of financial liberalization, primarily their inability to capture the *intensity* of financial liberalization, disaggregated the FOI addresses a separate problem, the inability to distinguish between liberalization in general and specific patterns of liberalization which would signal a diffusion process.

The first systematic attempt to analyze cross-national capital account policy was undertaken by Alesina, Grilli and Milesi-Ferreti (1994). Using data reported in the International Monetary Fund's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER), they coded capital control policy among the OECD countries during the 1980s using a 0-1 dummy variable. Subsequent studies have used the same variable, but have extended the country and year coverage (Leblang 1997, Simmons and Elkins 2004). Dennis Quinn (Quinn 1997, Quinn and Inclan 1997) sought to redress the problem of unmeasured intensity by creating a 0-12 index derived from assessing restrictions on receipts and payments for three categories (imports/exports, invisibles, and capital) of the current and capital account. However, while an improvement on the dummy variable approach, Quinn's index does not distinguish between restrictions on inflows and outflows of different types of capital transactions. In terms of the diffusion hypotheses, the lack of specificity limits the ability to distinguish between general trends and more targeted responses to the policies other countries enact. Moreover, the country and year coverage in Quinn's dataset is biased towards developed countries¹⁰. That said, Quinn's innovative and comprehensive measure ushered in a whole new wave of studies that attempted to explore changes in economic structures and interest group dynamics on financial liberalization in the developed world.

¹⁰ Quinn's larger dataset covers the twenty-one members of the OECD over the period 1950-1988. A smaller one covers two time periods (the mid-1970s and the mid- to late-1980s) but includes a limited number of developing countries as well

Beginning in 1996, the AREAER began explicitly to note the degree of openness on different categories of capital transactions and flows. Johnston and Tamirisa (1998) used this data to code nine categories of capital controls for the single year of 1996. The Financial Openness Index (FOI), an original database upon which the results in this paper are derived, extends the analysis both forward to 2004 and backward to 1965. The resulting FOI was constructed by coding the descriptive data in older issues of AREAER according to Johnston and Tamirisa's methodology and schematic.

The FOI is available for 187 countries over the period 1965-2004. As presented in Table 1, it includes twelve categories of current and capital account transactions: (1) exchange rate arrangements (multiple/dual v. unified); (2) payments from invisible transactions (referring to payments for services such as financial or legal advice, royalties, transfers to overseas residents); (3) proceeds from invisible transactions; (4) proceeds from exports; (5) inward controls on money market transactions; (6) outward controls on money market transactions; (7) inward controls on credit operations; (8) outward controls on credit operations; (9) inward controls on foreign direct investment; (10) outward controls on foreign direct investment; (11) real estate transactions; and (12) controls on provisions and operations of commercial and credit institutions. Each category is coded as either having significant restrictions ("closed"=0) or not ("open"=1). These categories can be used either individually or summed together to create an index, the FOI, with a range of possible scores from 0 (fully closed) to 12 (fully open).¹¹ In the context of testing diffusion hypotheses, the individual policy data provides greater detail on which policies are being opened and when.

¹¹ The FOI is also positively correlated with other measures of capital account openness for those countries and years for which we have comparable data. For example, correlations between the FOI and: a) the Johnson-Tamirisa 1996 dataset is 0.88; b) the IMF AREAER dummy variable is 0.77; c) Quinn's (1997) capital account index is 0.66; and d) Miniane's index is 0.90. See Appendix A for more detail.

Table 1. Components (12) of the Financial Openness Index (FOI)

MXR	Unified vs. Multiple/Dual Exchange Rates (Countries receive a 1 if exchange rate structure is unified)		
	INFLOWS		OUTFLOWS
IN	Controls on Inflows of Invisible Transactions • Repatriation Requirements, Surrender Requirements	OUT	Controls on Outflows of Invisible Transactions • Payments for Invisible Transactions and Current Transfers
EXP	Controls on Proceeds from Exports • Repatriation Requirements, Surrender Requirements		
ICM	Controls on Inflows Pertaining to Capital & Money Market Securities • Shares or other Securities of a Participating Nature • Bonds or Other Debt Securities • Money Market Instruments • Collective Investment Securities • Derivatives and Other Instruments <i>Purchase Locally by Nonresidents</i> <i>Sale of Issue Abroad by Residents</i>	OCM	Controls on Outflows Pertaining to Capital & Money Market Securities • Shares or other Securities of a Participating Nature • Bonds or Other Debt Securities • Money Market Instruments • Collective Investment Securities • Derivatives and Other Instruments <i>Sale or Issue Locally by Non Residents</i> <i>Purchase Abroad by Residents</i>
ICR	Controls on Inflows Pertaining to Credit Operations • Commercial and Financial Credits • Guarantees, Sureties, and Financial Backup Facilities <i>To Residents from Nonresidents</i>	OCR	Controls on Outflows Pertaining to Credit Operations • Commercial & Financial Credits • Guarantees, Sureties, & Financial Backup Facilities <i>By Residents to Non Residents</i>
IFDI	Controls on Inward Direct Investment • Equity, joint ventures • Inward Direct Investment (not including real estate) <i>Purchase Locally by Non Residents</i>	OFDI	Controls on Outward Direct Investment • Equity, joint ventures • Outward Direct Investment • Controls on Liquidation of Direct Investment <i>Purchase Abroad by Residents</i> <i>Sale Locally by Non Residents</i>
GENERAL TRANSACTIONS			
REALE	Controls on Real Estate Transactions Real Estate Transactions <i>Purchase Locally by Non Residents</i> <i>Purchase Abroad by Residents</i> * Note: Category is considered “restricted” if there are controls on either purchase abroad by residents (outflow) or purchase locally by non residents (inflow)		
FIN	Provisions Specific to Commercial Banks • Non resident Deposits & Deposit Overseas • Borrowing Abroad & Foreign Loans		

IV. Methods and Data

Estimation Method

Our analysis focuses on the Post-Bretton Woods period (1970-2002) and the 117 developing countries for which financial liberalization data and sufficient economic data exist. Unusually for cross-country analysis, the dataset includes multiple (up to 12) observations for each country year. Analyzing observations at the individual capital control level, specifically the components of the FOI in Table 1, rather than an aggregated index allows for precise testing of the diffusion hypotheses – the likelihood of openness in an individual capital control is hypothesized to be the effect of openness of the same capital control not more generic openness. That each country makes decisions about 12 such capital control increases the number of observations available annually¹². An analysis of the dataset as a whole permits testing of the most general hypotheses, H1-H5. Additionally, partitioning the dataset allows for the testing of hypotheses H6-H9 in which diffusion mechanisms are argued to be more effective for certain categories of capital controls than others (such as inflows vs. outflows or capital vs. current account). The capital controls are annually observed to be either closed (0) or open (1).

To test the different diffusion mechanisms, five diffusion variables are calculated and included: Standard & Poor's (S&P) Average, Trade Weighted Average, Economic Type Average, Export Type Average and Regional Trade Agreement (RTA) Average. The structure of the diffusion mechanisms assumes that the likelihood of openness in one country (Country A) is influenced by the extent of liberalization in countries with which it shares some kind of relation. In order to test whether an increase or decrease in the liberalization efforts in countries with whom Country A trades (or competes with capital, or participates with in a social network) is associated with a subsequent increase the country of interest, the diffusion variables take the mean value of openness in the preceding period in a country's "peer group" of nations. Again, these means are calculated individually for each specific capital control.

¹² With 12 capital control policies per year, each country should have 396 observations and the dataset 46,332 observations. As not all countries entered the international system prior to 1970 and financial liberalization data is not available for all country years, the resulting panel is unbalanced with just under half of the observations missing.

If diffusion is taking place, these diffusion variables should be positively associated with the country's subsequent capital control liberalization behavior.

Standard & Poor's Average captures diffusion through shared credit risk. Standard and Poor's annually provides seven credit rating groups. To calculate the Standard & Poor's Average for a country year capital control policy observation, each country is placed in a group defined by its year and credit rating. Not counting the country itself, the mean capital control openness is calculated for the group in each year for each individual capital control (the numeric equivalent of the percentage of credit peers coded as "open" for the individual capital control). The Trade Weighted Average is an export trade weighted average of the capital controls of the trading partners of the observed country. Countries for which export data exists but capital control data does not exist are assumed to have "closed" controls. Those for which export trade information is missing are excluded. The trade data comes from the Department of Trade dataset and is smoothed by a 3 year moving average.¹³

Diffusion as emulation was captured by shared Economic Structure, shared Export Structure and participation in Regional Trade Agreements (RTAs). As with the Standard and Poor's diffusion variable, Economic Structure and Export Structure are measured by grouping countries and averaging the individual policies of the group (excluding the observed country). The economic structure of the economy is technically broken into five groups (Agriculture, Fuel and Ore, Manufacturing, Services, and Diversified) according to the primary source of GDP; however, since only Bulgaria is categorized as primarily manufacturing and is not included in the dataset, as a practical matter there are 4 groups each year. In contrast, the economic structure of exports classifies countries according to the primary source of exports in all five categories (Agriculture, Fuel and Ore, Manufacturing, Services, and Diversified).

¹³ Countries in the general dataset but for which DOT trade data exists only for imports includes Bhutan, Botswana, Cayman Islands, Eritrea, Lesotho, Namibia, and Swaziland. For these countries, capital control information is included for the purposes of other countries' trade partner diffusion measure calculation, but they do not have these measures themselves. Additional countries excluded are: Andorra, Channel Islands, Isle of Man, Liechtenstein, Marshall Islands, Mayotte, Micronesia, Fed. Sts., Monaco, Northern Mariana Islands, Palau, Puerto Rico, San Marino, Taiwan, Virgin Islands (U.S.), and West Bank and Gaza..

The RTA Average combines information about the openness of a country's (mostly) regional trade agreement partners. All agreements are weighed equally, regardless of the number of members or other possible weighting schemes. Countries may be linked to other countries through multiple overlapping regional trade agreements. Thirty-one (31) regional trading groups were coded. Countries not in one of these trading groups received a score of 0.¹⁴

Table 2 presents average financial openness for all capital control policies and for capital control policies grouped by category (Capital Market, Credit Market, FDI, Current Account, Inflows, and Outflows). Figure 1 illustrates the trends in averages over time. Although on average during the period from 1970 to 2004, less than a quarter of capital controls were "open", Figure 1 illustrated the upswing during this period. The slight S-shape curve suggests that diffusion mechanisms may be at work. Table 2 also presents a summary of the means of the diffusion variables. Most notably, developing countries' primary trading partners appear substantially more open than the countries themselves.

In addition to the diffusion variables, we include the lagged dependent variable for the prior period to control for general openness trends. Doing so acknowledges the null hypothesis that there is no pattern in the financial liberalization policy changes that are observed: everything may just be trending upwards towards greater openness.

Following Brune et al (2001), we also account for a variety of other domestic and international influences on financial openness through a number of economic and political variables. Unlike the diffusion variables, the summary statistics of these variables (presented in Table 3) are unaffected by the partitioning of the dataset. With respect to levels of development and economic performance, we include GDP Growth, GDP per capita, inflation and savings rates. Emerging markets with low domestic savings rates may need to open their capital accounts to attract foreign investment. Countries with slower rates of economic growth and higher rates of inflation may feel the need to open their capital accounts in an effort

¹⁴ A score of a 0 is the equivalent of an interaction term in which a country is first observed as being in or not in an RTA and then coded for the average openness of RTA members.

to improve economic performance.¹⁵ Economic stability is accounted for by including reserves and current account balance. We account for international forces (“push factors”) by including world interest rates. We also include dummy variables to account for both fixed exchange rates regimes and currency crises. The degree to which a country is integrated into the international economy is accounted for by including trade and private capital flows (both as a proportion of annual GDP). The influence of domestic political and institutional variables is accounted for by including regime type (democracy), central bank independence and partisan politics (right wing governments). Appendix B describes the data and sources.

Two separate analyses are presented. First, we test the general diffusion hypotheses 1-5 on the full dataset. Second, to test whether different categories of capital controls are more or less influenced by decision making in other countries, we partition the dataset by categories of capital controls. The first partition between inflows and outflows is used in a test of hypotheses 6: *The strength of diffusion mechanisms should vary across the removal of controls on inflows and outflows*. The second partition, between the four categories of capital controls, is used to test hypotheses 7-9 which suggest that the effect of specific diffusion mechanisms will vary across the types of capital control: Capital Market, Credit Market, FDI, and Current Account.

Both analyses use a random-effects logit model which includes a lagged dependent variable to control for the prior year’s capital control measure. The logit model with a lagged dependent variable is comparable to a dynamic probit model and offers advantages over other common estimation methods. First, while other tests of diffusion mechanisms have used duration models (see for example, Henisz et al 2005 Rodine Hardy 2006), the typical duration model assumption of a standard path to a single “death” does not pertain to capital controls. Unlike many other policies, financial liberalization policy choices can and indeed have been reversed from to year. As demonstrated by Figures 5-6, while over time, many countries have opened their capital and current accounts, each year at least one country has selected to impose controls on the movement of financial flows across its borders. Additionally, there is no

¹⁵ We took the square root of the inflation rate (rather than, say, logs) to take into account long tails in both positive and negative inflation.

theoretical reason that suggests that financial liberalization should follow a specific schedule – or an underlying distribution of “failure times” - as is generally required for duration models. Instead, we model dependency on prior decision making by lagging the dependent variables, thus acknowledging that policy-decisions like financial openness are highly dependent on prior decision-making.

Alternatively, the analyses could have aggregated policies for each country year and used a linear model (see Brune et al, 2001). However, our goal is to test relationships between countries’ capital control policies rather than aggregate levels of openness. A linear model using an index to capture both a country’s own policies and its peers would not distinguish between different types of capital controls and thus could lead to a mismatch of policies both within and between countries. With 12 possible capital controls included in the index, a linear analysis using the index as the dependent variable runs the danger of finding a positive correlation between a country’s increased openness and its peers increased openness, even if the policies selected were distinct – say one country opens its three controls on inflows while others their three controls on outflows. Numerically, these would look the same, despite substantive differences. Even for the same country, from year to year, an index could hide the fact that some policies were closed, if in the same year other policies were opened. For studies focusing on openness, this issue is muted, but here with the focus on the diffusion of policy selection it is important to observe individual policy selection and not assume that all financial liberalization policies are substitutes.

V. Results

The first analysis (see Table 4), which combines all financial openness policies, in general shows the expected diffusion results. In both models, we control for country and for individual categories of financial transactions. With the exception of diffusion based on “Export Type,” increased openness by a country’s regional partners, trade partners, S&P peers, and economic structure peers leads to higher probability of open capital controls, even after controlling for the strong effect of prior policy decisions and an upward trend in openness (time). Diffusion based on shared membership in RTAs was most strongly related to financial liberalization in the developing world.

As predicted, our results indicate that there is variation in the likelihood that governments will lift restrictions on individual types of transactions. For example, countries are more likely to open all other capital controls than the excluded policy “FIN” (Provisions Specific to Commercial Banks) and are most likely to be open on exchange rate policies (“RATE”). Countries are also more likely to remove restrictions on inflows and outflows of foreign direct investment than on capital markets, credit transactions and current account-related capital transactions (i.e. invisibles and the surrender of export proceeds). The strong and positive finding on all of the diffusion variables (excepting export structure) in Table 4 owes to the fact that we are aggregating all of the individual observations assessing the impact of diffusion on each of the 12 types of FOI transactions.

Also as expected, increased world interests rates, domestic spending, and fixed exchange rates are correlated with a lower likelihood of opening controls. In contrast, wealthier and more economically integrated countries are significantly correlated with a greater likelihood of opening capital controls. While democratic states appear to be less likely to open, the relationship is not significant. However, both having a right power in party and being under an IMF program are significantly linked to greater openness.

However, the story changes once capital controls are disaggregated into groups (Table 5). There is no evidence that financial liberalization has been diffused across peer groups based on shared credit ratings (H1). Diffusion based on trade-weighted peer groupings was only associated with greater openness on current account transactions (H2). Diffusion as emulation (based on peer groupings of countries with similar economic structures-H3) was associated with greater openness on inflows and outflows (Columns 1 and 2), but appears to have been driven largely by liberalization of FDI-related transactions (Column 6). Contrary to our hypothesis (H4), diffusion based on peer groupings of countries with similar export structures was associated with greater restrictions on all types of financial transactions. There was strong evidence for H5, namely that countries were more likely to remove restrictions on their capital and current accounts if countries with which participate in regional trade

Table 2. Average Capital Control Measure and Diffusion Measures (Combined and Grouped)

	All	Capital Market	Credit Market	FDI	Current Account	Inflows	Outflows
Capital Control Openness	0.22	0.16	0.18	0.21	0.23	0.19	0.18
Lagged Openness	0.21	0.15	0.17	0.20	0.22	0.18	0.17
Diffusion Measure - RTA Average	0.20	0.15	0.19	0.19	0.22	0.17	0.18
Diffusion Measure - Trade Weighted Average	0.52	0.25	0.61	0.34	0.69	0.39	0.41
Diffusion Measure - S&P Average	0.25	0.18	0.22	0.25	0.26	0.22	0.22
Diffusion Measure - Economic Type Average	0.27	0.19	0.25	0.26	0.30	0.23	0.23
Diffusion Measure - Export Type Average	0.29	0.20	0.27	0.27	0.31	0.24	0.25

Table 3: Summary Statistics of Non-Diffusion Independent Variables

Indendent Variables (Not Cap Measure Dependent)	Mean	Std. Dev.	Min	Max
Currency Crisis	0.23	0.42	0	1
World (U.S.) Real Interest Rates	5.99	1.37	3.09	8.66
GDP Growth	3.14	5.25	-50.25	35.22
Savings	15.52	12.07	-48.51	63.08
Current Account Balance	-4.96	8.17	-52.69	53.23
Reserves	-0.90	3.68	-48.30	31.74
Inflation, square root	7.69	6.38	1.68	116.81
Fixed Exchange Rate	0.50	0.50	0	1
GDP PC, log of	6.95	1.09	4.49	9.30
Trade as % of GDP	72.65	39.46	6.32	282.40
Private Capital Flows as % of GDP	12.14	25.68	0.00	649.17
Central Bank Independence	0.27	0.45	0	1
Democracy (ACLP)	0.50	0.50	0	1
Right Party In Power	0.25	0.43	0	1
Under IMF Program (Vreeland, Brune 2000-2004)	0.51	0.50	0	1

Table 4: Results from Random-Effects Logit Model (1971-2002) on Combined Capital Control Policies

Capital Control Measures (12 per country)	All Capital Control Measures		
	Coef.	SE	
Prior Years Policy (lagged dependent variable)	7.14	(0.14)	***
Currency Crisis	0.08	(0.13)	
US World Real Interest Rates	-0.09	(0.04)	**
GDP Growth	0.01	(0.01)	
Savings	-0.03	(0.01)	***
Current Account Balance (IMF and World Bank)	0.00	(0.01)	
Reserves	-0.04	(0.01)	***
Square Root of Inflation	0.00	(0.01)	
Fixed Exchange Rate	-0.48	(0.15)	***
GDP Per Capita logged	0.28	(0.12)	**
Trade	0.01	(0.00)	***
Private Capital	0.01	(0.00)	
Central Bank Independence	0.26	(0.19)	
Democracy - 1 if country democratic (ACLP)	-0.22	(0.18)	
Right Party In Power	0.50	(0.15)	***
Country under IMF Program	0.47	(0.13)	***
Diffusion Measure - Trade Weighted Average	0.89	(0.35)	***
Diffusion Measure - S&P Average	0.99	(0.56)	*
Diffusion Measure - Economic Type Average	1.40	(0.58)	**
Diffusion Measure - Export Type Average	-1.76	(0.60)	***
Diffusion Measure - RTA Average	1.62	(0.26)	***
Controls on EXP	1.38	(0.43)	***
Controls on IMC	1.35	(0.40)	***
Controls on ICR	1.21	(0.44)	***
Controls on IFDI	1.85	(0.41)	***
Controls on ININV	1.51	(0.46)	***
Controls on OCM	1.43	(0.40)	***
Controls on OCR	1.31	(0.42)	***
Controls on OFDI	1.82	(0.43)	***
Controls on OUTINV	1.48	(0.46)	***
Controls on RATE	2.33	(0.71)	***
Controls on REALESTATE	1.12	(0.41)	***
time	0.03	(0.02)	**
Constant	-9.54	(1.00)	***
/lnsig2u	-0.08	(0.19)	
sigma_u	0.96	(0.09)	
rho	0.22	(0.03)	

agreements (RTAs) have also liberalized. The coefficient on the RTA diffusion variable is positive and significant for all categories of transactions except the case of credit markets.

Our findings have some interesting implications for our more theoretically innovative sets of hypotheses (H6-H7). First, contrary to our prediction (H6), there is no indication that the impact of diffusion mechanisms on liberalization varied across inflows and outflows. While the diffusion mechanisms (based on RTA and economic type peer groupings) were more strongly (bigger coefficients) associated with liberalization of controls on outflows (Column 2), they were significantly and positively associated with the liberalization of controls on inflows (Column 1). This finding underscores the mixed empirical evidence regarding the government's use of controls on inflows and outflows. Under some conditions, depending on the strength of various interest group pressures and the threat of rapid movements of capital, governments may be more likely to use controls on inflows (outflows). Under other conditions, governments may choose to liberalize controls on inflows (outflows). There is some support for our H7 (i.e. diffusion should play a greater role in more transparent transactions (i.e. FDI) than on highly liquid instruments (i.e. capital market related transactions)). As reported in Column 6, the liberalization of controls on FDI related transactions has been driven by diffusion as emulation (RTA and Economic Structure Diffusion). Per Column 1, diffusion played a much less prominent role in the liberalization of capital market and securities related transactions (only the RTA diffusion variable was significant at the 10% level) and credit market transactions (no effect). This finding confirms what we have observed in the real world – namely that national authorities are concerned with the volatility of certain flows and actively use direct policy measures to offset this volatility and potentially rapid “exit” of capital.

Table 5. Results from Random-Effects Logit Model (1971-2002) on Grouped Capital Control Policies

Openess by Capital Control Type (Countries=117)	(1)		(2)		(3)		(4)		(5)		(6)	
	Inflows		Outflows		Current Account		Capital Market		Credit Market		FDI	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Prior Years Policy (lagged DepVar)	8.09	(0.30) ***	7.83	(0.41) ***	7.41	(0.30) ***	7.74	(0.43) ***	8.36	(0.47) ***	8.54	(0.42) ***
Currency Crisis	0.04	(0.27)	0.24	(0.30)	0.13	(0.24)	0.41	(0.35)	0.10	(0.35)	-0.22	(0.33)
World Real Interest Rates	-0.06	(0.09)	-0.07	(0.10)	-0.18	(0.08) **	-0.15	(0.12)	0.03	(0.11)	-0.08	(0.10)
GDP Growth	0.01	(0.02)	0.03	(0.03)	0.02	(0.02)	0.03	(0.03)	0.03	(0.03)	-0.01	(0.03)
Savings	-0.02	(0.01) *	-0.06	(0.02) ***	-0.01	(0.02)	-0.06	(0.02) ***	-0.06	(0.02) ***	-0.02	(0.02)
Current Account Balance	-0.01	(0.02)	0.01	(0.02)	-0.02	(0.02)	0.00	(0.02)	0.02	(0.02)	-0.01	(0.02)
Reserves	-0.04	(0.02) *	-0.03	(0.03)	-0.03	(0.02)	-0.04	(0.03)	-0.05	(0.03)	-0.03	(0.03)
Inflation, square root of	0.01	(0.02)	0.00	(0.02)	0.02	(0.01)	0.01	(0.02)	0.01	(0.02)	-0.01	(0.02)
Fixed Exchange Rate	-0.36	(0.28)	-1.32	(0.35) ***	-0.85	(0.28) ***	-1.01	(0.41) **	-0.36	(0.38)	-0.84	(0.34) **
GDP PC, log of	0.05	(0.19)	0.68	(0.27) **	0.31	(0.21)	0.73	(0.31) **	0.91	(0.31) ***	-0.01	(0.20)
Trade	0.01	(0.00) *	0.01	(0.01) **	0.01	(0.00) *	0.01	(0.01) **	0.00	(0.01)	0.01	(0.00) **
Private Capital Flows as % of GDP	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)
Central Bk. Independence	0.10	(0.32)	-0.24	(0.43)	0.31	(0.33)	-0.47	(0.46)	0.58	(0.45)	0.06	(0.34)
Democracy (ACLP)	-0.27	(0.30)	-1.00	(0.43) **	0.23	(0.33)	0.32	(0.44)	-0.98	(0.46) **	-0.61	(0.34) *
Right Party In Power	0.79	(0.28) ***	1.20	(0.35) ***	0.27	(0.28)	1.11	(0.39) ***	0.86	(0.37) **	0.77	(0.33) **
Under IMF Program	0.64	(0.27) **	0.53	(0.32)	0.83	(0.26) ***	0.94	(0.39) **	0.08	(0.35)	0.67	(0.32) **
Diffusion Measure - Trade Weighted Av.	-0.13	(0.47)	-0.28	(0.59)	1.26	(0.738) *	0.97	(1.08)	0.37	(0.92)	-0.47	(0.76)
Diffusion Measure - S&P Average	1.50	(1.22)	1.90	(1.68)	0.04	(1.16)	1.87	(2.01)	-1.38	(1.79)	0.87	(1.37)
Diffusion Measure - Economic Type Av.	2.43	(1.19) **	3.50	(1.39) **	1.50	(0.95)	1.31	(1.94)	1.33	(1.45)	3.00	(1.36) **
Diffusion Measure - Export Type Av.	-2.89	(1.34) **	-2.01	(1.38)	-1.34	(0.98)	-4.14	(2.11) *	-3.92	(1.56) **	-1.17	(1.47)
Diffusion Measure - RTA Average	1.35	(0.63) **	2.51	(0.78) ***	1.61	(0.55) ***	1.73	(0.96) *	0.77	(0.85)	2.04	(0.74) ***
time	0.03	(0.03)	0.03	(0.04)	0.04	(0.03)	0.01	(0.04)	0.11	(0.05) **	0.02	(0.04)
Constant	-6.36	(1.50) ***	-11.16	(2.14) ***	-8.87	(1.70) ***	-10.86	(2.43) ***	-12.59	(2.46) ***	-5.45	(1.73) ***
Observations	5670		5670		5670		3780		3780		3780	

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

With respect to other variables, we find that only lower savings, higher GDP PC, fixed exchange rate regimes and higher levels of trade were consistently associated with greater financial openness across the four categories of transactions (FDI, credit transactions, capital markets and current account related transactions). With respect to domestic institutional variables, we observe that right led governments and non democratic regimes are generally associated with greater financial liberalization. The partisan result is supported by earlier studies (Alesina et al). However, the negative coefficient on democracy diverges from recent studies (Simmons and Elkins 2004, Girma and Shortland 2005) that find a positive relationship between democracy and financial liberalization. Participation in IMF programs is generally associated with greater financial liberalization (except for the case of credit transactions).

Briefly, the finding that financial liberalization of credit related transactions has been driven largely by domestic political conditions is not surprising. Governments have long used preferential credit to support protected industries, fund supporters and promote particular agendas. As Haggard and Maxfield (1996) note, where the domestic financial sector is weak and heavily protected, resistance to financial opening is likely to come from the powerful beneficiaries of artificially cheap credit and trade protection, as well as from heavily regulated banks that rely on the absence of competition for profitability. As such, we would expect that domestic political factors may be more likely to drive the liberalization of credit related transactions than the prior policy decisions made by a country's peers.

In conclusion, we summarize the findings as follows. First, we observe that financial liberalization policies have been diffused across emerging economies, although much less than anticipated. Supporting our claim that financial liberalization is not a uniform policy choice, we observe that extent to which diffusion plays a role in policy choices varies across types of financial transactions. In particular, contrary to our expectation, we find that the role of diffusion in driving the removal of controls did not vary across inflows and outflows. Our findings indicate that diffusion tends to play a greater role in the liberalization of fixed value investments (i.e. foreign direct investment) than those with variable valuations (portfolio flows, credit). We observe also that financial liberalization policies were

diffused more efficiently through formal networks than through informal networks. Finally, diffusion by emulation seems to be more consistently linked to financial openness than has diffusion by competition.

V. Conclusion

Broadly, the findings presented here underscore the need to consider countries as interdependent actors who respond to the decisions made by external actors abroad. Even after taking into account the effect of political and economic determinants, the findings indicate that countries have adopted financial liberalization after taking cues from the policy actions of countries within their spheres of influence.

More specifically, the results indicate that informational networks, both informal and formal, do transmit important information about the costs and benefits of certain policies. One implication that emerges from this finding is that international organizations and agreements might serve as important vehicles in conveying and disseminating information about the costs and benefits of policies and reforms. However, not all information channels or networks are created alike. Some networks have internal systems that more efficiently filter information and policy alternatives than others (Lazer 2003, Guisinger 2005). As such, national and international policymakers should think carefully about how information is gathered and conveyed. Second, our findings may have implications for sequencing of financial liberalization. Diffusion plays a greater role in the liberalization of controls on foreign direct investment. Perhaps policymakers might more easily build support for financial liberalization over the long term by starting with a policy that is more easily diffused across different mechanisms.

Finally, contrary to recent empirical studies (financial liberalization: Simmons and Elkins 2004; market oriented reforms: Henisz et al 2005; bilateral investment treaties: Elkins et al 2006), we find that diffusion as emulation is more consistently associated with financial openness than diffusion as competition. In addition to increasing the probability that a country is adopting policy choices that are welfare-enhancing (as opposed to adopting policies that are simply inappropriate given the its particular constraints or could result in a race to the bottom dynamic), this finding suggests that maybe there is some learning effect which deserves further exploration.

References

- Albrow, Martin. 1997. *The Global Age*. Stanford, CA: Stanford University Press.
- Alesina, Alberto, Vittorio Grilli and Gian Maria Milesi-Ferretti. 1994. "The Political Economy of Capital Controls," in Leonardo Leiderman and Assaf Razin (eds), *Capital Mobility: The Impact on Consumption, Investment and Growth*, Cambridge: Cambridge University Press, pp. 289-328.
- Brooks, Sarah. 2005. *Interdependent and Domestic Foundations of Policy Change: The Diffusion of Pension Privatization around the World*. MS. *International Studies Quarterly*.
- Brune, Nancy. 2006. *Financial Liberalization and Governance in the Developing World*. Ph.D. Dissertation. Yale University.
- Brune, Nancy, Geoffrey Garrett and Bruce Kogut. *The IMF and the Spread of Global Privatization*. IMF Staff Papers 51. 2004.
- Coleman, J.S. 1988. Social Capital in the Creation of Human Capital. *American Journal of Sociology* 94:S95-S120.
- Cukierman, Alex. 1992. *Central Bank Strategy, Credibility, and Independence: Theory and Evidence*. (Boston: MIT Press).
- DiMaggio, Paul J., and Walter W. Powell. 1983. The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review* 48:147-160.
- Edwards, Sebastian. 1999. How effective are capital controls? *Journal of Economic Perspectives*, 13(4): 65-84.
- Elkins, Zachary, Andrew Guzman and Beth Simmons. 2006. Competing for Capital: The Diffusion of Bilateral Investment Treaties, 1960-2000. *International Organization* 60 (forthcoming)
- Gilpin, Robert. 1987. *The Political Economy of International Relations*. Princeton, NJ: Princeton University Press.
- Girma and Shortland. 2005. *The Political Economy of Financial Liberalisation*. University of Leicester. Working Paper No. 05/12. United Kingdom.
- Guisinger, Alexandra. 2005. *Understanding Cross-Country Patterns in Trade Liberalization*. Ph.D. Dissertation, Yale University.
- Guitan. 1997.
- Haggard, Stephan and Sylvia Maxfield. 1996. *The Political Economy of Financial Internationalization in*

- the Developing World. *International Organization*, 50(1): 35-68.
- Henisz, Witold J., Bennet A. Zelner and Mauro F. Guillen. 2006. The Worldwide Diffusion of Market-Oriented Infrastructure Reform, 1977-1999.
- Hirschman, Albert O. 1970. *Exit, Voice and Loyalty*. Cambridge, MA: Harvard University Press.
- Kobrin, Stephen J and Xun Wu. Reason, Imitation or Coercion? The Liberalization of FDI Policy in Developing Countries, 1992-2001.
- Kogut, Bruce, and J. Muir Macpherson. 2005. The Decision to Privatize as an Economic Policy Idea: Espistemic Communities and Diffusion. Fontainebleau: INDEAD.
- Johnson, Simon and Todd Mitton. 2001. Cronyism and Capital Controls: Evidence from Malaysia. NBER Working Paper 8521.
- Lukauskas, Arvid and Susan Minushkin. 2000. Explaining Styles of Financial Market Opening in Chile, Mexico, South Korea and Turkey. *International Studies Quarterly* 44 (4): 695-723.
- Lazer, David. 2003. Information and Innovation in a Networked World. In eds. R.L. Brieger, K.M Carley, and P. Pattison, *Dynamic Social Network Modeling and Analysis: workshop summary and papers*. Washington, DC: National Academies Press.
- Leblang, David A. 1997. Domestic and Systemic Determinants of Capital Controls in the Developed and Developing World. *International Studies Quarterly* 41: 435-54.
- Leblang, David A. 1999. Domestic Political Institutions and Exchange Rate Commitments in the Developing World. *International Studies Quarterly* 43: 599-620.
- Marshall, Monty G. and Keith Jagers. 2005. POLITY IV: Political Regime Characteristics and Transitions, 1800-2003. Center for International Development and Conflict Management (CIDCM), University of Maryland, College Park.
- McNamara, Kathleen R., and Eduardo C. Castro. 2003. The Diffusion of Central Bank Independence. Philadelphia: Presented at 2003 APSA Meeting.
- Meseguer, Covadonga. 2004. What Role for Learning? The Diffusion of Privatization in OECD and Latin American Countries. *Journal of Public Policy* 24(3): 299-325.
- Meseguer, Covadonga. 2006. Rational Learning and Bounded Learning in the Diffusion of Policy Innovations. *Rationality and Society* 18(1): 35-66.

- Meyer, John W. et. al. 1997. World Society and the Nation State. *American Journal of Sociology* 103: 144-81.
- Miniane, Jacques. 2004. "A New Set of Measures on Capital Account Restrictions." *IMF Staff Papers* 51 (2): 276-308.
- Quinn, Dennis P. and Carla Inclán. 1997. The Origins of Financial Openness: A Study of Current and Capital Account Liberalization. *American Journal of Political Science* 41 (3): 771-813.
- Quinn, Dennis P. and A. Maria Toyoda. 2005. Ideology and Voter Sentiment as Determinants of International Financial Liberalization. in *International Diffusion of Political and Economic Liberalization*. Weatherhead Center for International Affairs, Harvard University.
- Simmons, Beth A. and Zachary Elkins. 2004. The Globalization of Liberalization: Policy Diffusion in the International Political Economy. *American Journal of Political Science*. Vol. 98 (1): 171-189.
- Simmons, Beth, Frank Dobbin and Geoffrey Garrett. 2006. Introduction: The International Diffusion of Liberalism. *International Organization* 60 (forthcoming).
- Standard and Poor's. Sovereign Ratings History Since 1975. September 2005.
- Van Rossem, Ronald. 1996. The World System Paradigm as General Theory of Development: A Cross-National Test. *American Sociological Review* 61:508-527.
- United Nations Conference on Trade and Development. 2000. Bilateral Investment Treaties 1959-1999. (New York: United Nations).
- United Nations Conference on Trade and Development. World Investment Report. Various years. (New York: United Nations).
- Vreeland, James Raymond. 2003. *The IMF and Economic Development*. New York: Cambridge University Press.
- Weyland, Kurt. 2005. Theories of Policy Diffusion: Lessons from Latin American Pension Reform. *World Politics* 57: 262-295.
- World Bank, World Development Indicators CD-Rom 2005

Appendix A. Measures of Financial Openness

There are two broad types of variables used in the literature on the freedom of capital to move across borders. One measures capital mobility directly, in terms of either convergence in rates of return across countries (Frankel 1993) or the extent to which domestic savings rates affect domestic investment (Feldstein and Horioka 1980). This approach views capital mobility as a behavioral outcome (affected by biases of investors, information technology, etc).

The limitation of this approach is that these measures may be correlated with other factors that trended together during the same period of analysis, but which have nothing to do with openness. This covariation makes it very difficult to draw irrefutable conclusions about causality among these data series. Even Frankel (1993) who pioneered the analysis of covered interest rate differentials between countries (that is, the difference between interest rates in one country and those in an offshore benchmark, controlling for forward exchange rate expectations), suggested that high flows might indicate volatility in the investment climate rather than openness to cross-border movements, per se. At best, behavioral measures capture indirect attempts by policymakers to promote financial liberalization.

The second class of variables attempts to directly capture the efforts of governments to affect cross-border capital flows – that is, the extent to which purchases and sales of assets that cross national borders are restricted by government regulations. Table 1.2 summarizes some of the recent studies using new measurements of financial liberalization. The first systematic attempt to analyze cross-national capital account policy was undertaken by Alesina, Grilli and Milesi-Ferreti (1994). Using data reported in the International Monetary Fund's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER), they coded capital control policy among the OECD countries during the 1980s using a 0-1 dummy variable. Subsequent studies have used the same variable, but have extended the country and year coverage (Leblang 1997, Simmons and Elkins 2004).

The principal problem with the IMF dummy variable measure is that it fails to capture the *intensity* of financial liberalization. Dennis Quinn (Quinn 1997, Quinn and Inclan 1997) sought to redress this problem by creating a 0-12 index derived from assessing restrictions on receipts and payments for three categories (imports/exports, invisibles, and capital) of the current and capital account. Each category was given an openness value based on a four-point scale (0, 0.5, 1.5, and 2.0) and then summed across the six categories for a possible score range of 0-12. Quinn's larger dataset covers the twenty-one members of the OECD over the period 1950-1988. A

smaller one covers two time periods (the mid-1970s and the mid- to late-1980s) but includes a limited number of developing countries as well. While an improvement on the dummy variable approach, Quinn's index does not distinguish between restrictions on inflows and outflows of different types of capital transactions. Moreover, the country and year coverage in Quinn's dataset is biased towards developed countries. That said, Quinn's innovative and comprehensive measure ushered in a whole new wave of studies that attempted to explore changes in economic structures and interest group dynamics on financial liberalization in the developed world.

In more recent studies, other capital account measures have appeared. Abiad and Mody (2005) have created an index (based on a scale of 0-3) on financial openness for 35 countries over the period 1973-1996. Their measure assesses the degree of policy liberalization on: credit controls, interest rate controls, entry barriers, regulations and securities markets, privatization in the financial sector and restrictions on international financial transactions. Chinn and Ito (2003) create an index based on four binary measures: existence of multiple exchange rates, restrictions on capital and current account transactions and requirement of surrender of export proceeds. This measure provides coverage for 163 countries over the twenty-year period 1970-2003. Gastanaga, Nugent and Pashamova (1998) have an openness policy reform measure (based on 10 point scale) for 49 countries over the period 1970-1995 which covers restrictions on inward and outward foreign direct investment, and provisions specific to financial institutions (specifically, the right of ownership of a bank account by non residents).

Miniane (2004) has created a thirteen-point scale of financial openness from 1983-2000 on 33 developing and developed countries. While country coverage is limited and the measure does not disaggregate between inflows and outflows, the Miniane index assesses openness on money market instruments, collective investment securities, derivatives and other instruments, credit operations (commercial credits, financial credits, guarantees, securities, and financial back-up facilities), direct investment, liquidation of direct investment, real estate, provisions specific to commercial banks and other credit institutions, provisions specific to institutional investors, and whether a country has a dual exchange rate regime.

With the single exception of the Miniane measure, the shared feature of most of the new financial openness measures is that the index of financial openness seems to contain measures of *other* policy choices governments make. For instance, Mody's measure assesses the degree of privatization of banks and entry barriers to determine the degree of financial openness. But while these measures are well poised to capture the idea of 'financial openness,' they are rendered problematic by the high risk of endogeneity between financial liberalization and other policy

measures. The problem of endogeneity emerges when the measure of financial liberalization includes policy measures that are correlated with the institutions and policy outcomes that are being analyzed. Moreover, assessing openness as a function of other policy measures makes it difficult to identify and isolate the micro foundational causal mechanisms affecting the government's decision to change policies related to capital controls. Similarly, it is difficult to isolate the effects of capital account policy on financial development or economic growth, for example, if the measure of openness is a composite of other policy measures. In conclusion, the IMF dummy variable does not capture the intensity or range of policy options available to governments to meet their objectives of revenue management, preservation of monetary policy autonomy and diversification or risk. Other measures are afflicted with problems of endogeneity, limited country coverage and the inability to disaggregate controls on inflows and outflows.

Table A1. Summary of Other Measures of Financial Liberalization

Name	Information Source	Coverage	Coding	Advantages (A) and Disadvantages (D)
IMF Dummy	IMF AREAR	All IMF member countries, 1967-1995	0/1 coding depending on whether country has controls on outflows	A: Extensive Coverage D: Accounts only for controls on outflows; does not capture range of policy options
Quinn (1997)	AREAR	63 countries, 4 years publicly available: 1958, 1973, 1982, 1988	For capital account receipts and payments, assigns a value between 0 and 2 in increments of 0.5	A: Considers severity (intensity) or restrictions; Discriminates between inflows and outflows D. Limited disaggregation and public availability
Johnston and Tamirisa (1998)	AREAR	45 countries, 1996	Average of all possible 0/1 dummies on new AREAR	A: Discriminates between inflows and outflows D: Coverage restricted to post 1996
Rossi (1999)	AREAR, others non-specified	15 countries, 1989-1997	For 1997, average of 0/1 dummies over all disaggregated categories of transactions. For 1989, 3 possible values depending on whether 1997 value is high, medium or low	A: Discriminates between inflows and outflows D: 1989 Index can only take 3 values; Values between 1989 and 1997 are interpolated; Limited coverage
Chinn and Ito (2003)	AREAR	163 countries, 1970-2003	Sum of all 0/1 dummies over 4 categories	A: Extensive coverage; Distinguishes across different types of transactions D: Does not distinguish between controls on inflows and outflows
Miniane (2004)	AREAR	34 countries, 1983-2000	Average of all possible 0/1 dummies over 13 categories of capital account transactions	A: Substantial disaggregation; Indicates systematically when coding is done by induction rather than through explicit information D: Limited coverage; No distinction between controls on inflows and outflows
Brune (2006)	AREAR	187 countries, 1965-2004	Based on 0-12 index; sum of all 0/1 dummies over 12 flows, or 5 disaggregated categories, (4 of which separate controls on inflows and outflows)	A: Extensive coverage; Discriminates between controls on inflows and outflows and across different types of transactions

Other Measures				
Gastanaga, Nugent and Pashamova (1998)	Various sources	49 LDCs, 1970-1995	Based on 10 point scale which covers restrictions on inward and outward FDI, inward and outward and provisions specific to financial institutions	A: Substantial disaggregation and distinction between controls on inflows and outflows D: Limited coverage
Lane and Milesi-Ferretti (2001)	Authors' own calculations	67 countries, 1970-1998	Computes portfolio and direct investment assets and liabilities as a share of GDP	A: Measure is direct mapping of the common trade openness measure D: Changes in asset prices can lead to changes in the measure with no corresponding change in positions and/or in de jure restrictions; Low values in the index may be because of factors other than capital account restrictions
Edison and Warnock (2003)	Standard and Poor's/IFC	29 emerging economies, 1988-2004	Computes the share of domestic equities (measured in market capitalization) that are open for foreign purchase	A: Monthly measure; appropriate metric D: Restrictions on domestic equity purchases by foreigners are a limited subset of all possible restrictions
Abiad and Mody (2005)	Various sources	35 countries, 1973-1996	Index based on six measures of policy liberalization (entry barriers, credit controls, interest rate controls, regulations and securities markets, bank privatization, and restrictions on international financial transactions)	A: Extensive coverage D: Does not discriminate on inflows and outflows; some policy measures not directly related to removal of controls on capital and current accounts

Note: Drawn largely from Miniane (2004).
Information on Chinn-Ito (2003) and Abiad and Mody (2005) added by author.

Table A2. Correlation Matrix of Components of Financial Openness Index, 1970-2004

	over all FOI	All Inflo ws	all outflo ws	Exchan ge rate regime	invisible transacti ons in	export procee ds in	invisible transacti ons out	capit al mark et in	capit al mark et out	Credi t mark et in	credit mark et out	direct invest in	dire ct inve st out	real estat e	financial institutio ns	IMF dummy variable
overall FOI	1.0															
all inflows	0.91	1.0														
all outflows	0.93	0.85	1.0													
exchange rate regime	0.30	0.11	0.16	1.0												
invisibles (in)	0.84	0.64	0.73	0.20	1.0											
export proceeds (in)	0.81	0.60	0.67	0.25	0.83	1.0										
invisibles (out)	0.83	0.66	0.72	0.15	0.76	0.75	1.0									
capital market (in)	0.75	0.82	0.75	0.08	0.54	0.48	0.49	1.0								
capital market (out)	0.79	0.76	0.87	0.13	0.59	0.53	0.54	0.79	1.0							
credit operations (in)	0.83	0.83	0.76	0.13	0.62	0.63	0.68	0.59	0.58	1.0						
credit operations (out)	0.86	0.80	0.92	0.12	0.66	0.60	0.65	0.62	0.73	0.80	1.0					
direct inv (in)	0.59	0.77	0.50	0.03	0.35	0.34	0.40	0.49	0.44	0.46	0.44	1.0				
direct inv (out)	0.86	0.73	0.91	0.17	0.72	0.67	0.74	0.63	0.66	0.67	0.75	0.46	1.0			
real estate	0.79	0.85	0.75	0.09	0.58	0.53	0.57	0.59	0.67	0.64	0.73	0.55	0.62	1.0		
financial institutions	0.41	0.32	0.36	0.06	0.27	0.28	0.33	0.20	0.18	0.40	0.42	0.15	0.32	0.29	1.0	
imf dummy variable	0.78	0.64	0.71	0.13	0.72	0.70	0.81	0.47	0.54	0.65	0.66	0.36	0.71	0.61	0.37	1.0

Table A3. Correlations Between Brune FOI and other Financial Openness Measures

Measure	Correlation with FOI	Time Period	Comments
Brune FOI (2006)	.	187 countries, 1965-2004	Discriminates between inflows and outflows in 5 categories
IMF Dummy	(.77)	188 IMF member countries), 1950-1997	Does not capture range of policy instruments available to governments to control financial flows
Quinn (1997)	(.66)	63 countries: 1958, 1973, 1982 and 1988	Discriminates between inflows and outflows; Limited year and country coverage
Johnston and Tamirisa (1996)	(.88)	45 countries, 1996	Discriminates between inflows and outflows in more than 20 categories
Miniane (2005)	(.90)	1983-2000, 34 countries	Covers 13 categories of transactions; Does not discriminate between inflows and outflows; Limited year coverage

Appendix B. List of Variables

Variable	Definition	Source
GNP PC (log of)	GNP per capita in thousands of constant 2000 \$US	World Bank World Development Indicators 2005 CD-ROM
Fixed Exchange Rate	A dummy variable where 1= fixed (“1”) pegs to the dollar, sterling or franc, and pegs to a basket of currencies or other individual currencies, and cases the IMF codes as pegs with limited flexibility. We coded as “0” crawling pegs, managed floats and independently floating exchange rates.	Leblang (1999). Supplemented by Brune (2005) using the IMF’s AREAER .
Currency Crisis	Dummy =1 country experienced currency crisis	Leblang (1999), supplemented by Brune (2006)
World Interest Rates	Measured as U.S. interest rates	WBWDI
Current Account Balance		WB WDI and IMF International Financial Statistics CD-Rom
Reserves	Gross international reserves expressed in terms of number of months of imports of goods and services which could be paid for.	WBWDI
Inflation rate, square root of	Implicit price deflator for the “the average annual rate of price change in the economy as a whole”. Square roots rather than logs were taken to reduce skewness because there were several large negative values in the data set.	WBWDI
GDP growth	Real annual GDP growth (%)	WBWDI
Domestic savings rate	Gross Domestic Savings as a proportion of GDP. Gross savings are the difference between GDP and total consumption.	WBWDI
IMF	Dummy variable indicating whether Country is under one of four IMF programs (Stand By Arrangement, Extended Fund Facility Arrangement, Structural Adjustment Facility Arrangement, or Enhanced Structural Adjustment Facility Arrangement)	Vreeland (2001); Supplemented by Brune (2006)
Trade	Exports plus Imports as Share of GDP	WBWDI
Private Capital flows (as % of GDP)	Private capital flows as share of GDP	WBWDI
Democracy	Dummy =1 if country has democratic regime	Alvarez, Cheibub, Limongi,

		Przeworski 2001
Partisanship	Dummy=1 if country governed by a right-wing party	Addonizio & Brune (2005).
Central Bank Independence	Dummy = 1 if central bank is independent	Cukierman (1992), supplemented by Castro and McNamara (2004)
Regional Trade Agreement Diffusion	Groupings by participation in regional trade agreements (includes monetary unions)	UNCTAD 2006, WTO 2006.
Trade Weighted Diffusion	Groupings based on primary trading partners.	UNCTAD; Guisinger 2006.
Economic Structure Diffusion	Groupings of countries based on percentage of economy derived from agriculture, manufacturing, minerals and ore, services and diversified.	WBWDI
Export Structure Diffusion	Groupings of countries based on percentage of exports derived from agriculture, manufacturing, minerals, & services.	WBWDI
Country Credit Risk Diffusion	Groupings of countries based on S&P country credit risk rating.	Standard and Poor (2005)

Table 1A.1: Correlation Matrix of Components of Financial Openness Index, 1970-2004

	overall FOI	All Inflows	all outflows	exchange rate regime	invisible transactions in	export proceeds in	invisible transactions out	capital market in	capital market out	Credit market in	credit market out	direct invest in	direct invest out	real estate	financial institutions	IMF dummy variable
overall FOI	1.0															
all inflows	0.91	1.0														
all outflows	0.93	0.85	1.0													
exchange rate regime	0.30	0.11	0.16	1.0												
invisibles (in)	0.84	0.64	0.73	0.20	1.0											
export proceeds (in)	0.81	0.60	0.67	0.25	0.83	1.0										
invisibles (out)	0.83	0.66	0.72	0.15	0.76	0.75	1.0									
capital market (in)	0.75	0.82	0.75	0.08	0.54	0.48	0.49	1.0								
capital market (out)	0.79	0.76	0.87	0.13	0.59	0.53	0.54	0.79	1.0							
credit operations (in)	0.83	0.83	0.76	0.13	0.62	0.63	0.68	0.59	0.58	1.0						
credit operations (out)	0.86	0.80	0.92	0.12	0.66	0.60	0.65	0.62	0.73	0.80	1.0					
direct inv (in)	0.59	0.77	0.50	0.03	0.35	0.34	0.40	0.49	0.44	0.46	0.44	1.0				
direct inv (out)	0.86	0.73	0.91	0.17	0.72	0.67	0.74	0.63	0.66	0.67	0.75	0.46	1.0			
real estate	0.79	0.85	0.75	0.09	0.58	0.53	0.57	0.59	0.67	0.64	0.73	0.55	0.62	1.0		
financial institutions	0.41	0.32	0.36	0.06	0.27	0.28	0.33	0.20	0.18	0.40	0.42	0.15	0.32	0.29	1.0	
imf dummy variable	0.78	0.64	0.71	0.13	0.72	0.70	0.81	0.47	0.54	0.65	0.66	0.36	0.71	0.61	0.37	1.0

Liberalization

