

MEASURING FINANCIAL LIBERALIZATION IN LATIN AMERICA: AN INDEX OF BANKING ACTIVITY¹

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Financial liberalization, or the opening of domestic financial markets to competition and foreign capital, is a multifaceted process involving a complex of markets and institutions intermediating funds between lenders and borrowers. Despite this relative simplicity, it is difficult to appreciate what the financial system really is in any measurable sense because the combined interactions of financial and economic factors cannot be easily gauged or estimated through individual markets or variables. Moreover, liberalization often also involves restructuring and strengthening of domestic markets to make them more market-friendly and efficient.

This study attempts to establish a baseline for evaluating the complex process of financial liberalization in Latin America by focusing on important changes in the banking sector. Ideally, we could construct a measure capable of evaluating the totality of the liberalization process—encompassing changes across financial intermediaries, including institutions engaged in banking and nonbanking activity, bond and equity markets. Thus far, however, the types of data available have essentially limited our measure to capturing the changes in the banking sector.² Despite this limitation, the banking sector is a viable proxy for the financial system as a whole because much of the early adjustment in a liberalization process occurs in the banking sector as interest rates are lowered and private credit is made available more broadly. During liberalization, banks may experience substantial gains, but they are also subject to the possibility of substantial losses or crisis as the financial system transitions from a controlled to an open system. Our findings are presented in the Index of Banking Activity (hereafter referred to as the index) covering five countries (Argentina, Brazil, Chile, Mexico, and Peru) and spanning the period from 1980 through 2000.

Before our discussion of the index, this paper includes a section highlighting important elements of the financial liberalization literature as well as a brief description of the development of the modern financial system in each country. This study also presents the findings from

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² This research represents the preliminary stage of a larger project in which we will attempt to expand the scope of the index to capture changes in the financial system more broadly as well as the number of countries covered.

estimations of a series of macroeconomic and institutional variables for each country. Finally, the paper includes a discussion of the policy relevance of the themes explored.

Theoretical Background

The literature on modern financial systems is both vast and diverse. Despite this breadth, however, most research has been influenced by the foundational work of three authors writing in the late sixties and early seventies. Studies focusing on liberalizing or opening are no exception. Goldsmith (1969) looked at financial development, which he defined as the change in financial structure or the combination of financial instruments and institutions. He formulated the basic indicators for the analysis of financial structure and outlined the relationships of financial development with modern economic growth.

Many studies of financial development start from the premise of a repressed financial system, which can largely be traced to writings on financial development by McKinnon (1973) and Shaw (1973). These authors outlined financial repression as the condition in which onerous controls, implemented by interventionist governments, on domestic capital markets fragment local markets, thereby rendering them unproductive and inefficient. Shaw summarized these conditions in stating that the guiding principle of financial repression is to “establish unattractive yields on domestic financial assets and so to repel demand” (1973, 80).

Some Definitions. Studies on this subject must also carefully establish what is meant by the financial system. This task is especially important as both the types and magnitudes of markets increase. The basic definition of an aggregate financial system is straightforward in that it is composed of all the types of financial intermediaries in a particular setting. These may include commercial banks (retail and wholesale), central banks, nonbanking institutions (including insurance companies, investment banks, finance companies, pension funds), and brokerage institutions specializing in bonds and/or equities.

Banks are central to the functioning and support of most all financial activity even if they are not the only important type of institution in a financial system. In many respects, banks are the backbone of the economy and the financial system because they provide the means for intermediation of funds at all levels of economic activity. They provide a means of payment for both consumers and businesses and they intermediate funds between savers and borrowers.

The role played by banks in developing country economies is even more critical because of the nonexistence or shallowness of other mechanisms of finance. Lacking deep equity markets, companies in developing countries rely on banks (both domestic and external based) to make available the capital required for investment and growth (Morris et al. 1990; Rojas-Suárez and Weisbroad 1995). Government-owned banks often play the lead role in this process prior to financial liberalization, but this dominance recedes as private banks gain strength. Banks not only can be seen as catalyzing the financial sector, but they also may be the harbingers of crisis. The tendency for a poorly sequenced liberalization of the general economy to escalate into a balance of payments crisis and later into a banking crisis is discussed below.

Liberalization. Essentially, financial liberalization is the easing of restrictions on the capital account (essentially the flow of funds) and the financial transactions of individuals and businesses in the effort to make financial transactions more efficient and thereby promote a more productive allocation of resources. More generally, it is the policy process through which a country establishes an open financial market in which market forces—and not the government—determine financial outcomes. As we will later see in the index, there is no set path by which countries approach these same goals.

Yet financial liberalization connotes more than changes in the composition of financial institutions and structure as it speaks to the process behind these changes. Williamson and Mahar (1998, 2) describe liberalization as “giving the market the authority to determine who gets and grants credit and at what price.” Johnston and Sundararajan (1999, 2–3) place this policy process within a larger systemic perspective. They state that financial sector liberalization “can be viewed as a set of operational reforms and policy measures designed to deregulate and transform the financial system and its structure with the view to achieving a liberalized market-oriented system within an appropriate regulatory framework.”

Often, however, financial liberalization is defined by the reduction or absence of indicators that characterize financial repression rather than by the presence of a set of characteristics. The definition provided by Beim and Calomiris in their text on emerging markets specifies that financial liberalization is a mixture of the following types of “constraint relaxation”: “1. Elimination of interest rate controls. 2. Lowering of bank reserve requirements. 3. Reduction of government interference in banks’ lending decisions. 4. Privatization of nationalized banks. 5. Introduction of foreign bank competition. 6. Facilitation and encouragement of capital inflows” (2001, 119). These characteristics of financial repression are broadly shared among authors.

This set of indicators has both an explicit domestic and external component. The domestic component includes the banking sector and capital markets while the international component relates primarily to the capital account. Policymakers may choose to distinguish between these two spheres by, for example, opening the capital account in order to attract foreign savings while leaving the domestic banking and equity market closed off to foreign participation. The existence of these two essential yet distinct components presents the possibility that a country’s policy path may not be a straight line toward the total absence of restrictions or complete financial openness.³ Divergent paths may result from policymakers’ efforts to fine-tune controls in response to changes in the domestic and international political economy.

The literature on financial liberalization, for the most part, tends to be dominated by developed economy experiences due to the longer time span and the availability of more stable data series. However, there is a growing subset of the literature that focuses on developing financial systems like those in Latin America. Often these studies tend to investigate the effect of liberalization on single variables (e.g., capital mobility or interest rates) or the role of crisis in propelling financial system change.

³ In this study, the terms financial openness and financial liberalization are used interchangeably. Both refer to an ongoing process of easing financial restrictions.

The literature can also be characterized by at least four foci exploring the timing of liberalizing reforms, the relationship between liberalization and economic growth, capital controls, and the political economy of financial liberalization. These literatures are only very briefly outlined here in order to introduce the themes.

The focus on timing or sequencing is largely derived from the painful experience of several countries that opened their capital account without first revamping domestic financial structures and improving the country's prudential regulation. A study by Kaminsky and Reinhart (1999) showed that opening the capital account and large-scale capital inflows often resulted in the introduction of increased weaknesses in the banking system. Moreover, subsequent balance of payments crises often ballooned into banking crises. These circumstances place additional burdens on policymakers, who must simultaneously manage the liberalizing reforms and contend with shocks (exogenous and endogenous) and their effects. In their study on sequencing, Johnston and Sundararajan conceptualize a "two-way interaction between financial sector reforms and macroeconomic control" in which consistent and mutually supportive reforms should be carried out in monetary policy, prudential regulation, and institutional reforms (1999, 21–23). In addition to the general economy, there is widespread agreement that financial liberalization cannot be carried out without consideration of monetary, fiscal, and bank regulatory policy.

Other Aspects. The relationship between financial opening or liberalization and economic growth is much less clear despite early claims that liberalization leads to increased investment opportunities, savings, and subsequent economic growth. Given the banking sector's centrality to all aspects of financial activity, we would expect that banking activity would expand and contract alongside the rest of the financial system. Both McKinnon (1973) and Shaw (1973) posited that more developed capital markets would propel economic growth in liberalizing countries. But this has not occurred at all in some countries and has been a short-lived phenomenon in others. In fact, in some instances, such as the early liberalization in Chile, gross national savings actually fell (Diaz-Alejandro 1985) rather than increasing as expected. Other studies have shown that capital inflows (foreign direct investment and portfolio funds) have a modest, positive effect on domestic savings, but that economic growth also tends to promote capital inflows. This dual causality makes difficult the task of separating out the effects of capital flows (Gruben and McLeod 1998).

The literature on capital controls is another area where considerable disagreement prevails. Proponents of measures to curb capital inflows argue that they are like circuit breakers, mitigating the harsh effects of large-scale flows and protecting against the development of crises that may occur in otherwise open economies. In other words, they shield monetary and financial systems from speculative or disruptive pressures. Those who oppose capital controls argue that they are themselves distortionary, deter investment through administrative costs and other fees, and impede capital from reaching its most productive uses. The variety of circumstances and uses of capital controls in the fourteen-country survey by Ariyoshi et al. (2000) found a wide range of success and failure in attaining the targeted objective.

Political economy studies of financial liberalization have also become an important contributor to this literature through its focus on the institutional and policy choice aspects of these reforms. The edited volume by Haggard et al. (1993) is representative of these works in its exploration of how politics affects the role(s) that governments choose to play in financial markets and why some governments choose to open their financial markets. Recent work by Minushkin (2001) by Lukauskas and Minushkin (2000) explores the role of domestic political bargaining among the executive, financial bureaucracy, and leaders in the financial sector in determining the type and pace of liberalizing policies put in place in each country. Another important aspect of the political economy literature explores the impact of financial reform on democracy. Open financial (and economic) markets allow new pressures to enter the political system that could challenge or destabilize incumbent leaders. Armijo (1999, 329) concludes that the tradeoffs of foreign capital are net positive (or at least are better than the absence of foreign capital) for developing economies and that “In the long-run (if not necessarily during the interim), capitalist economic growth does seem to be associated with liberal democracy.”

Although these four themes received only cursory mention here, they are readily apparent in the country descriptions found in the next section.

Historical Background⁴

This section contains a brief synopsis of developments in the modern financial system in each of the countries in our data set. The information attempts to establish a background for each country by highlighting major developments in each case. An evaluation of the impact of these developments on all segments of the economy and economic actors is not included here.

Argentina. The recent history of the Argentine financial system can, in many regards, be characterized into two eras. The period prior to the 1991 Convertibility Plan was marked by a succession of monetary programs, high inflation, and macroeconomic disequilibria. This watershed event marks a new era of stabilization in the monetary system and the general economy.

This dichotomy, however, underplays the importance of developments in the financial sector beginning in the late 1970s. Among the most salient of these reforms were deregulation of the banking sector starting in 1976 and the lifting of interest rates controls in 1977. The central bank made it much easier to charter a new bank and promoted private sector banks by ceasing its own practice of funneling credit to selected sectors. Limits on the access to foreign credit were increased throughout the last half of the decade. Publicly funded deposit insurance (100 percent) was also replaced in 1979 by a bank-funded partial coverage plan. However, improvements in bank supervision were not initiated until 1981, which allowed deep problems to develop quickly but remain uncorrected. The poor sequencing of these reforms led fairly quickly to a banking crisis starting in 1980.

⁴ The information in this section is culled from materials listed in the Selected Research Bibliography following this paper.

The crisis effectively undid the liberalizing experiment. Bank regulators liquidated or intervened failing banks from 1980 through 1982. The assets of these banks represented 16 percent of total commercial bank assets. Finance companies were even harder hit. In order to help keep credit in the system, the official sector was forced to reenter the financial sector as a credit provider. Although this participation was designed to be temporary, the role of public sector actually grew during this period and interest rate controls were reintroduced in late 1982. The crisis stabilized but the general economy never fully recovered as another series of economic plans, including vacillating exchange rate regimes, was introduced throughout the decade to combat inflation and reactivate sustainable growth.

The introduction of the Convertibility Plan not only stabilized inflation but also introduced a stable currency through the pegged exchange rate and strong reserve backing and fully opened capital account. The central bank charter was reduced in scope and the institution was granted full legal independence to accommodate the new mandate. State-owned banks (as well as other assets) were also downsized and/or privatized over the next few years. The economy quickly picked up with strong levels of real GDP growth from 1991 to 1995. Despite these improvements, delays in reforming other aspects of the public sector kept the government too large for its revenue base, and the fiscal performance turned to a deficit starting in 1994.

During this period Argentina integrated with the Southern Cone through the customs union Mercosur, resulting in significantly expanded intrabloc trade. However, exports to other countries suffered due to the small export base and the strong peso (now linked indirectly to the value of the rising U.S. dollar). Trade deficits were the norm throughout most of the nineties. The foreign debt also rose dramatically during this period as the government sought to offset revenue shortfalls.

As a result of its financial openness, Argentina has been able to attract large amounts of foreign capital and investment. One of the most dramatic transformations occurred in banking, where much of the sector was sold to foreign ownership. Openness also meant significantly increased external vulnerability. The contagion suffered spillover effects after the December 1994 Mexican Peso Crisis and was again buffeted during the Russian and Asian crises in 1997 and after the Brazilian devaluation in early 1999, even though Argentina had extensive trade and financial exchange only with its neighbor Brazil.

The vulnerability to external crises, the appreciation of the peso, poor competitiveness, and growing fiscal imbalance brought the economy to recession in 1999. Unable to spark growth through traditional policy options like devaluation, fiscal stimuli, or increased exports, the economy began its third year of contraction in 2001.

Brazil. The current financial system structure was founded on laws from the early sixties governing foreign capital, banking, and capital markets. Brazil's high inflation complicated financial growth in important ways. Indexation (or revaluation of prices to reflect inflation) was introduced in 1964 and remained in effect, in one form or another, until the successful implementation of the Real Plan in July 1994. Inflation pressures rippled through the financial system as investors demanded indexed instruments. Short-term repurchase agreements began to

dominate the market during the seventies, and sustained price increases shorted the time horizon of investments, making the provision of long-term credit virtually impossible. A series of sophisticated financial instruments evolved to adapt to these conditions.

Public-owned banks stepped in to provide credit to the private sector, propelling the high growth rates of the seventies. The state was an important actor in the bond market as well, using treasury bonds to finance government operations when external capital market financing was no longer viable. After inflation was stabilized, financial liabilities were no longer eased by price increases, and public sector domestic debt grew as the government resorted to the treasury market to meet revenue needs.

Unable to focus on lending in the face of inflation, banks were nevertheless an intricate part of the financial system as buyers of government bonds and repurchase agreements. Revenue was high during this period, largely due to income from check float and investment of these funds. The number of private domestic banks expanded under these circumstances and in response to the introduction of universal banking (*bancos múltiplos*) in 1988. Although foreign banks had been present in Brazil since the early part of the century either as direct operators in the local market and/or as providers of external credit, the size of their presence diminished along with the Brazilian economy over the course of the eighties.

A series of important changes occurred in the late eighties. The external sector, which the military government had largely reserved for domestic producers, began to open as import tariffs were lowered and the import-substitution model began to be dismantled. At the same time, however, new, more nationalistic provisions were written into the 1988 constitutional revision calling for a temporary prohibition on the installation or expansion of foreign banks until new legislation could be passed. Even so, the implementation of more broad-based reforms was also not pragmatic until inflation could be controlled because, lacking this strong foundation, reforms ran the risk of further destabilization.

The introduction of the *real* and accompanying measures in 1994 were a critical juncture for the entire economy because lower inflation laid a long-awaited foundation for stability and growth. Large amounts of foreign capital entered Brazil, and domestic capital also returned to productive investment. However, the end of inflation profits without commensurate revenue quickly translated into solvency problems for less liquid financial institutions. The government was forced to institute a bank reform program to recapitalize those private institutions that could be restructured while others were liquidated. A subsequent program was developed for banks owned by state-level governments. Public-owned banks have been or are being privatized while private ones were sold to new owners. The bank rescue and programs were successful in cleaning up the financial sector such that the January 1999 devaluation of the *real* did not have a devastating impact. At the same time, industry performance was boosted by yields from government bonds issued in the face of the devaluation.

Brazilian markets have also been embattled by spillover from international economic crises—especially those in Asia and Russia. In 2001, problems in neighboring Argentina contributed to a significant decline in Brazil foreign exchange and financial markets.

Capital flows to and from Brazil have been subject to a changing variety of measures to tax or restrict movements over the past decades. These controls have generally been designed to smooth surges to avoid repetition during periods of heavy inflows and to promote the development of the domestic financial system.

Chile. One of the objectives of the military government that came to power in 1973 was liberalization of the general economy as well as the financial sector. Interest rate controls were lifted in 1975 along with some credit controls. As a result, inflation was lowered considerably, the budget deficit was eliminated, and the public sector was significantly reduced in size through fiscal reforms and privatization of public-owned companies, including banks. After a sharp initial recession in 1975, the economy grew swiftly until another severe recession occurred in 1982.

Capital markets were opened over the course of the decade and capital flow restrictions were removed. This allowed much of the private sector to borrow abroad to fuel its growth needs, and many times the terms of these loans were better abroad during this period, as the availability of cheaper foreign capital did not succeed in driving down domestic interest rates to reasonable rates. The financial sector grew sharply during the late seventies and early eighties.

However, by the early eighties, as liquidity shrank internationally, the Chilean economy began to enter a period of deep economic contraction. Many of the large economic groups (in effect, holding companies) that sprang up were centered around a financial institution, and excessive self-lending was a leading contributor to the 1983 economic crisis. Some banks were taken over in late 1981 and others followed; the government soon controlled banks responsible for four-fifths of the financial sector. The ensuing economic crisis brought the government to assume a large portion of the domestic and foreign debt outstanding. These banks were privatized in 1984.

After the economy recovered, continued tight monetary policy and the improvement in the international economy brought a large increase in capital inflows. These flows prompted the government to begin implementing a series of capital control measures to offset the effects of rapid monetary expansion in a small economy. In 1991, controls were put in place to minimize short-term flows, including an unremunerated reserve requirement (URR) of 20 percent on foreign borrowing for a period between ninety days and one year. Subsequently, requirements of minimum stay periods were also placed on certain portfolios and direct investments to further minimize the potential for speculative capital. The URR, which was later applied to portfolio and direct investment capital inflows and increased to 30 percent, was effectively eliminated (i.e., the rate was changed to 0 percent) after the Asian crisis reduced global capital flows. Increased reporting by financial institutions and greater prudential regulation were also introduced to control speculative capital.

Capital outflows were also liberalized starting in 1991, and the ability of individuals and institutions to invest in foreign funds was gradually increased over the decade. Chile was the first country in Latin America to develop a private pension system based upon individual retirement savings accounts. This growing pension system helped promote the development of domestic capital markets and later allowed for greater expansion of Chilean investment abroad.

Banking regulations and information disclosure had been strengthened during the mid-eighties in response to the devastating banking crisis there. In 1989, the central bank was made independent to help promote continued financial stability. Capital adequacy requirements and other banking regulations were strengthened during the nineties. In addition, a well-functioning credit culture is often said to describe the Chilean banking sector. Consequently, transparency and operational efficiency continue to characterize the financial system today.

Mexico. The Mexican financial system has moved from a tightly controlled and closed operating environment to a fully open environment without restrictions on capital inflows or outflows over the past two decades. The 1982 nationalization by President José López Portillo was a key event that critically shaped developments during this period. Mexican economic policy was not overly protectionist, but many feared the growing power of private financial interests, and more than fifty banks were taken over by the government as the country faced an incipient debt crisis. Even so the following administration of Miguel de la Madrid began to liberalize the financial system by lifting exchange controls, privatizing nonbanking components of the nationalized banks, and cutting back on the provision of credit by the state. Starting in 1988, President Carlos Salinas de Gortari accelerated this process by liberalizing interest rates, reducing reserve requirements, and ending the practice of forced lending. Universal banking was introduced in 1990. Salinas also began to lay the groundwork for the privatization of the banks and open up the financial sector to foreign participation by allowing nonresidents to purchase stocks and domestic bonds. Foreign participation was slowly increased as part of the 1994 NAFTA treaty with the United States and Canada.

The sale of nationalized banks in 1991–92 was another defining event for financial sector development. Privatization of the banks was relatively quick, and the government's focus on getting the best price for the banks was later described as an "underlying cause" of the banking crisis in 1995. Seeking high returns for their costly investments, the newly private banks concentrated on lending. Credit was extended too broadly and nonperforming loans rose quickly over the next few years. Undercapitalized banks quickly became insolvent after the government devalued the peso in December 1994 and many borrowers were unable to make payments. After a decade of state-dominated banking, regulation was weak and the new government of Ernesto Zedillo formed the National Banking and Securities Commission (CNBV) in May 1995 from two existing agencies.

The government responded to the banking crisis with a temporary capitalization program (PROCAPTE) and a loan repurchase and capitalization program. The latter is commonly referred to as FOBAPROA after the deposit insurance agency that administered it. These programs are widely considered to have prevented the entire economy from a broader systemic crisis. The costs, however, were high as the government recapitalized banks and absorbed the bulk of the troubled loan assets.

The banking crisis appeared to propel a series of important improvements across the financial system. Mexican accounting and bank reporting standards were brought more closely in line with international standards. Moral hazard was reduced through the gradual limiting of

deposit insurance. All remaining restrictions on foreign participation were removed in 1998. Pension reform was instituted in 1997 with a new saving scheme for private sector employees involving individual accounts managed by private fund managers (AFORES).

Mexico practiced a dual exchange rate between 1982 and late 1991, when it adopted a managed exchange rate that was set on a slow rate of depreciation. The peso enjoyed stability until the March 1994 assassination of the PRI presidential candidate fostered tremendous political uncertainty and rising domestic risk largely based on the tendency for an economic crisis to occur every six years at the end of each presidential administration. The peso depreciated rapidly throughout 1994 despite repeated government interventions. Unable to prop up the currency any longer, the outgoing Salinas administration allowed the peso to float in December.

Peru. Peru has a longer tradition as an open market economy than other Latin American economies owing to its relatively late adoption of import-substitution industrialization (ISI). The modern financial system was established in the thirties as part of the Kemmerer Mission, which provided a blueprint, along liberal lines, for the refounding of financial systems in Andean nations. This system lasted until the mid-sixties, when ISI was adopted. The expansionary period that resulted led to high inflation and later to hyperinflation. Military rulers in Peru oriented the financial sector back toward the state-owned financial institutions, and private banks were subject to a myriad of restrictions and controls, including forced lending.

Some loosening of these financial sector restrictions began to occur during the first half of the eighties. Deregulation contributed to a banking crisis in the early part of the decade and the government takeover of some institutions. Many of these restrictions were put back in place and state development finance returned starting in the mid-eighties after the APRA government came to power. Hyperinflation began in mid-1988 as a result of the expansionary policy. A large expansion in the number of banks did not take place in Peru's hyperinflationary period as occurred in other hyperinflationary economies due to the local practice of interest-bearing checking accounts.

In the general economy, import substitution effectively lasted until Alberto Fujimori took office in July 1990 and began to sharply reorient the economy along liberal lines. Among the more salient measures implemented were a reduction of the fiscal imbalance, imposition of new taxes, and introduction of a managed float as the new foreign exchange regime. State-owned enterprises underwent a wholesale privatization. The tradables sector was quickly opened up through the elimination of restrictions and lowering of the tariff rates. As a result, inflation began to decline and economic growth resumed.

These changes were also extended to the financial system. The capital account was opened completely, and limits on foreign currency holdings were abolished. A new banking law, passed in July 1991, allowed a broader range of activities and sought to strengthen supervision. This law also established several important operational measures: foreign banks would receive equal treatment with domestic capital, private banks would be placed on equal footing with banks owned by the public sector, risk diversification would be required among bank loan portfolios, and banks would be allowed to operate nationally. Interest rate controls were lifted and a unified

reserve requirement of 9 percent (minimum) was set for all types of deposits. On the supervisory side, the 1991 law established a central credit information office and a deposit insurance fund and greatly expanded the supervisory powers of regulators.

There were other significant changes as well. A new securities law passed in November 1991 created new investment instruments and required greater information and transparency. The stock exchanges were also privatized under this law. The central bank was given autonomy in 1992 and quickly cut off direct and indirect credit to the government. In 1993, a reserve requirement of 8 percent of risk-weighted assets was established.

The liberal operating environment—combined with the hyperinflationary legacy—appears to have contributed to a greater tendency to hold foreign currency and foreign-currency denominated assets. As a result, the Peruvian economy quickly began to be characterized by de facto dollarization.

The Peruvian banking sector has experienced some instability over the course of the nineties, but a banking crisis has not resulted. The degree and quality of prudential management, higher interest rates, and strong economic growth are generally listed as factors sustaining the banking system through this period of transition.

Domestic capital markets grew considerably over the last decade as a result of capital inflows to Latin America and revitalization of local markets by expanding the number of publicly traded companies and the types of instruments available. The 1993 introduction of private pension funds has also bolstered local capital markets.

Index of Banking Activity

This section describes the indicators and methodology used in the construction of the index. We also discuss our country-level findings here. These discussions are preceded by a brief review of policy-relevant uses of indices and the motivation to create one for this particular purpose.

Why an index? Several important studies have used a single indicator to analyze the process of financial liberalization. In their study about the increase in the risk level of banks due to financial liberalization, Gruben, Koo, and Moore (1999) use privatization of banks as an indicator of financial liberalization. In several studies, financial liberalization has been identified with capital mobility. Esen (2000) studies financial deepening in Turkey, and Haque and Montiel (1991) look at capital mobility in developing countries.

Also many studies tend to use individual indicators to date the onset of financial liberalization. Demirgüç-Kunt and Detragiache (1998) use the deregulation of bank interest rates as an observable policy change to define the initiation of liberalization. Kaminsky and Reinhart (1999) also use this method in their study about banking crisis in order to date financial liberalization in their analysis.

An index allows us to move beyond the snapshot provided by a single indicator to a more panoramic vista of developments in the financial sector. While single indicator studies increase our understanding of liberalization on a given market or variable, they also tend to overlook the array of indicators that may characterize the process of financial liberalization. These overlooked

characteristics provide important information about the financial system, such as the size (relative and absolute), its development in terms of ability to capture savings, and the channeling of these resources to support economic activity via investment projects. The Index of Banking Activity is an initial step to capture and measure the broad array of financial developments during the liberalization process.

Indices have been used by monetary policy-making organizations to monitor monetary and financial conditions as well as a predictive guide for policy making. Canada, New Zealand, Sweden, and Norway have employed indices as monetary policy tools, but Canada and New Zealand are often considered pioneers in the development of these tools.

A Monetary Conditions Index (MCI) was developed by the Reserve Bank of New Zealand “to identify the overall stance of policy being sought and to describe the likely direction and extent of change in stance going forward” (RBNZ 2000, 9). The MCI gauged the effect of exchange and interest rates on aggregate demand and inflation. The intention was to use the MCI as a predictive indicator by which financial actors could adjust short-term interest rates. Although this tool was developed as a way to promote transparency in monetary policy, the Reserve Bank of New Zealand ceased publication of its MCI in 1999, only two years after it began, because the policy horizon was considered too narrow to be effective and the negative impact of the Asian crisis on the local economy distorted the desired outcome.

A longer-running experiment is the MCI initiated by the Bank of Canada in 1987. Canada’s MCI also uses short-term interest rates and the exchange rate to guide policy decisions about adjusting the Overnight Rate Target. The desired monetary conditions are the “operational target of policy” whereas the MCI is the value used to suggest policy change. In Canada, the index is recalculated and published weekly (Freeman 1995).

Indices of financial conditions have also been used to monitor and predict activity in financial markets. These indices most often use high-frequency data, sometimes being updated in real time while markets are open. Similarly, the Bank of Finland has developed an index similar to the MCIs used by other central banks, but its Financial Conditions Index incorporates asset price data, including housing values, as an indicator of future inflation and output (Mayes and Virén 2001).

The index used here is intended as an analytical tool to observe trends in past policy moves and is not intended as predictive policy tool. However, the accompanying regression analysis is intended as an indicative policy technique—at least as far as changes in the banking sector correspond to changes in the tested macroeconomic or institutional variables.

Indicators used to construct the index. The construction of the index draws from the approach by Beck, Demirgüç-Kunt, and Levine (1999) in the selection of relevant categories of financial institutions. These are central banks and other monetary authority institutions, deposit money banks (loosely defined as commercial banks or institutions that issue demand or checking accounts), and other banking institutions such as development banks and banklike institutions (e.g., insurance companies).

The four indicators used in the construction of the index are⁵

1. *Average annual nominal interest rate.* The objective of this variable is, essentially, to capture the regulatory environment (i.e., state of government regulations) of the banking sector. If the government controls interest rates, the banking and financial systems are not liberalizing. Under this environment, they are in fact repressed. It is also important to note, however, that these rates are ex-post and are affected by other economic conditions.
2. *Commercial bank assets as a percentage of total financial assets.* This variable is used to measure the relative size of commercial banks. Assets are equal to total claims on domestic nonfinancial sectors, including the central and local governments and the private sector.
3. *Liquid liabilities as a percentage of GDP.* Liquid liabilities are the sum of currency plus demand and interest-bearing liabilities of banks and other financial intermediaries divided by GDP. This is the broadest financial indicator of financial intermediation because it looks at the overall size of the financial sector. However, it does not distinguish between the different sectors of the financial system or between liabilities. In developing country environments like Latin America, banks generally hold the bulk of these liabilities.
4. *Private credit by commercial banks as a percentage of GDP.* The variable measures the financial activity of commercial banks and is an indicator of how the financial system is supporting economic activity (i.e., the private sector). It measures the ability of financial intermediaries to carry out their primary function—to direct savings to investors.

These four indicators provided stable results that broadly corresponded to the historical background in each of the countries. Other indicators were also considered for the estimation of the index but were ultimately rejected. Private credit by commercial banks and other banking institutions as a percentage of GDP was excluded because it does not differentiate between private and public sector banks. The ratio of commercial bank assets over central bank assets, a widely used measurement of financial development, was rejected due to the lack of a complete time series. Also, the ratio of stock market capitalization to GDP, an indicator of the size of the stock market, was rejected for the estimation of the index because the volatility of equities made the index highly unstable from year to year and there were some holes in the series.

Methodology used in the index. The index, which includes data for Argentina, Brazil, Chile, Mexico, and Peru, covers the period from 1980 to 2000 except for Brazil, where the data begins in 1983. In order to compare our findings with more stable, developed country

⁵ Academic literature in this area provides a strong basis for the selection of these particular indicators. Studies that have also employed these indicators include the following: (1) average annual nominal interest rates—Gruben, Koom, and Moore (1999); Haque and Montiel (1991); the annual report of the Inter-American Development Bank (1996); Demirgüç-Kunt, and Detragiache (1999); (2) commercial bank assets (percentage of total financial assets)—King and Levine (1993); Beck, Demirgüç-Kunt, and Levine (1999); (3) liquid liabilities (percentage of GDP)—McKinnon (1973); King and Levine (1993); Beck, Demirgüç-Kunt, and Levine (1999); and (4) private credit by commercial banks (percentage of GDP)—the annual report of the Inter-American Development Bank (1996); King and Levine (1993); Beck, Demirgüç-Kunt, and Levine (1999).

experiences, we also construct an index for Canada, New Zealand, and the United States. In all cases, we estimated the index using the same four indicators described above.

The index is constructed using the methodology developed by Stock and Watson (1991) to estimate an index of coincident economic indicators. The idea behind this method is that comovements in macroeconomic variables have a common element described as the current state of the economy. In terms of IFD, the index will capture the state of the financial system that is common to the financial indicators used in its elaboration. Under other methodologies, the weights of the indicators are generally arbitrarily assigned. Instead, here the estimation of weights and the index will come from the internal calculation of the model.

This method is preferable because there is no single common indicator that reflects the state of the financial system. Indeed, the state of the financial system is the combination of multiple indicators—the product of which is unobservable. Therefore, we must construct a variable representing the state of the financial system, and this must be defined mathematically. This definition will require the formulation of a probability model for the estimation. We apply the probability model by Stock and Watson (1991) representing a parametric “single-index” model in which the state of financial system is the unobservable variable common to several financial indicators. Given that this model is linear in the unobservable variables, the Kalman filter can be used to construct a Gaussian likelihood function and to estimate the unknown parameters by maximum likelihood.⁶ See Appendix A for the explanation of the single index model.

The base year chosen for the index was 1990 because 1990 represents a general starting date for the economic and financial reforms that began to transform the region’s economies. Thus, the index number for each country is 100 in the year 1990. It is important to point out what the index results can tell us and what they do not. Movements in the index number connote changes in the activity, size, and intermediation of the banking sector. An increasing number means greater deepening and improved performance in a country’s financial system. Conversely, a decreasing number means a decline in the deepening and performance in a country’s financial system. Less directly, changes in the index number reflect developments in the financial system as a whole because of the important role played by the banking sector.

Importantly, the index number is *not* a direct measurement of the size of the banking system, but rather a measure of the change in activity relative to the base year. The index number is the result of the combination of four indicators that characterize the state of the banking system in each year. Due to the coincident methodology used to construct the index, the result does not imply that all four indicators are moving in the direction of the index number or even moving in the same direction relative to each other at any given time.

Furthermore, the results are *not* comparable across countries because the index number in each country in each year is in part informed by the particular outcomes of that country during the preceding years. We can and will compare the variation in the index numbers for each country as a measure of the pace of opening in the banking sector. Before reviewing the index for our five Latin American countries, we first review the index for the United States, Canada, and New

Zealand. At the end of the section where we discuss the results of econometric regressions for macroeconomic and institutional variables, we also attempt to bring the indices for all five countries together into a panel data series and discern common elements for these particular countries.

Findings of the index. This section shows financial development in the respective countries as seen through our index. To demonstrate the utility of the index we first briefly review indices for the United States, Canada, and New Zealand. In our discussion of the performance in our five Latin American countries, we attempt to correlate these findings with the historical background given previously as well as the performance of the four indicators used to construct the index. The index for each country is demonstrated in a chart that also includes the variation or change in the index. This change is used as a measure of the pace or speed of deepening underway in each country's banking sector. The econometric regressions described below will corroborate the importance of macroeconomic and institutional variables in determining the course of financial deepening in each country.

Developed country comparisons. Charts 1 and 2 show how the index performs in the context of a mature financial system with stable economic and financial development. In the United States, we observe the effects of growth leading up to the Savings and Loan crisis of the early nineties and the subsequent receding in the years after.⁷ This receding is clearly obvious in the line (right scale) that shows the annual movements in the index number. We also observe the sustained deepening in banking and finance in the second half of the nineties. The relative lack of change during the period as a whole is also remarkable. The average annual variation over the entire period is 0.9 percent.

The data for Canada in Chart 2 show an expanding but stable banking sector. The variation (see line) in the index is more erratic than in the United States, but the overall stability of the sector is also shown. Measures to increase competition in the banking sector put in place in the late eighties coupled with the implementation of inflation targeting in 1991 may have enabled the sector to strengthen in the nineties. The average annual change in the index over the entire period is 2.4 percent, with most of the change occurring in the nineties. For the 1991–2000 period, the average annual change was 3 percent.

Chart 3 with the index for New Zealand demonstrates a remarkably different pattern. The huge gains increase in the depth of the banking sector, which occurred after a series of financial reforms were implemented in the eighties, is plainly evident in the index. The cumulative effect of the removal of interest and exchange rate controls, along with the liberalization of the capital account, in the mid-eighties is shown. The move to an independent central bank in 1989 and the decision to implement an inflation-targeting model may also have supported this growth. Between 1980 and 2000, the index number for New Zealand grew almost sixfold. This growth is reflected in the average annual growth rate of 10.6 percent in the change in the index (see line).

⁶ Our appreciation to Alan Clayton-Matthews, who provided the programs of the estimation procedure.

⁷ A longer time period would better illustrate the phenomenal growth in banking in the United States. Here, however, we compare the developed countries to the same time period as period of reference for Latin America.

Argentina. After starting the eighties at a strong level, the index for Argentina observes the most pronounced receding of the five banking sectors in Latin America throughout the so-called Lost Decade. The general decline after the 1981–82 banking crisis and the devastation of the external debt crisis during that same period are clearly evident. This slowdown continued during the 1980s, when the participation of the public sector grew as a credit provider and restrictions on interest rates were reimposed in 1982. In 1983, commercial bank assets as a percentage of total financial assets and private credit of commercial banks as a percentage of GDP presented their largest decline (–18.6 percent and –20.6 percent, respectively) over the last two decades. Also, between 1983 and 1987, these two indicators and liquid liabilities as a percentage of GDP each decreased on average 6.5 percent. After 1986, the lowest score for Argentina, the index records the slow recovery of the banking sector through the rest of the decade. This recovery is likely linked to the series of economic stabilization programs implemented during this period and is evident in the index because an explicit aim of these heterodox programs was to increase the liquidity or money supply in order to expand aggregate demand and economy activity. In 1989, commercial bank assets as a percentage of total financial assets increased 30.2 percent—the largest increase in this indicator over the last two decades.

However, this stabilization/stimulus effort was not sustainable, and the banking sector experienced another crisis between 1990 and 1991 along with the economy in general. Liquid liabilities as a percentage of GDP decreased 18.1 percent on average between 1988 and 1990. In 1991, the Convertibility Plan and the corollary economic policies propelled an opening of the financial system overall. The privatization of public sector banks, the elimination of restrictions on interest rates, and exchange rate stability supported growth in the index for most of the decade. Between 1992 and 1999, the growth rate of the private credit indicator increased around 10 percent per year, and the growth rate of the liquid liabilities indicator continuously grew during this period (averaging 16.8 percent per year). Argentina's highest index number occurred in 1999 and then dipped in the subsequent year. This result is consistent with the general economic contraction, beginning in 1999, and the persistent financial crisis that ensued.

The line in Chart 4 (see right scale) shows the rate of change in the index number. The results are striking because Argentina's index exhibited the lowest average growth rate (1.1 percent) among the five countries over the entire period. Similarly, the average growth rate in the eighties (0.45 percent) was also the lowest. This result is likely due to the fact that Argentina started at a very high level compared to the other countries. In 1980, Argentina's index number was slightly above the base year of 1990, and the number for 1991 was even higher. This result should be recognition of the liberalizing programs that Argentina's military governments enacted during the seventies. Indeed, the index for 1981 was not exceeded until 1993—more than a decade later.

Brazil. In the case of Brazil, the index shows a remarkable pattern of continued deepening underway since 1983 (Chart 5). Although there are some fluctuations over the time span, there is a strong trend of continued increase in the performance of the index over the entire period. Indeed, the index number grows by more than 100 over the entire time period.

Nevertheless, some of the fluctuations were very intense—effectively representing positive and negative shocks to the banking sector. These variations can be seen in the line in the chart that shows the growth rate of the index (see right scale). In 1986 and 1989 the index grew 36 percent and 45 percent, respectively. Indeed, between 1986 and 1989, the growth rate in private credit and bank assets grew 35.6 percent and 18.9 percent, respectively. However, during the following years, the index contracted by 13 percent in 1990 and an additional 7 percent in 1991. In 1992, bank deepening began to pick up again and grew until 1995—the first full year of the *Real Plan*, the dramatic, new stabilization program. This drop mirrors the dramatic decline in the financial sector relative to Brazil's output as inflation began to be contained. Spillover from Mexico's Peso Crisis may also have contributed to the decline.

After 1995, positive developments resume until 2000. Stabilization of inflation and the general economy enabled growth by banks and the financial sector overall. Curiously, the index for Brazil does not appear to reflect strong negative shocks from the Asian and Russian crises or from the country's devaluation in January 1999. It is open to debate, however, whether the index would have grown more were it not for these shocks. Between 1992 and 1999, the growth rates for the bank assets, private credit, and liquid liabilities indicators increased in a similar proportion, averaging 8.4 percent. Also, interest rates declined continuously after the implementation of the *Real Plan*, with the exception of 1998. This increase could be the result of uncertainty in international financial markets due to the Asian and Russian crises as well as concerns over capital outflows.

Compared to the other four countries, the line in Chart 5 illustrates that Brazil had the highest rates of banking sector deepening. The index grew at an average rate of 7.7 percent across the entire period. The growth rates were also the highest in each of the two decades. During the eighties (1984–90), the index grew at a very high average annual rate of 11.7 percent. The growth rate fell considerably in the nineties, but it still grew at an average rate of 4.9 percent.

Chile. There are two very remarkable observations from the index results for Chile (see Chart 6). First, the sharp increase for Chile in the first half of the eighties shows the index numbers doubling between 1980 and 1983. The growth rate of the index number was 39 percent in both 1981 and 1982. The highest level for the index during the eighties occurred in 1983. The impact of the banking crisis in the early eighties is clearly seen in the receding of the index from 1983 through 1988.

The second observation is the U-curve over the time span. This pattern is very clear even as small spikes occurred in 1989 and 1990. Overall, Chile experienced sustained moderate growth in banking activity and in the index results over time. The average annual growth rate in the index was 5.2 percent in the eighties, followed by 4.3 percent in the nineties. Chile's average index growth rate for the entire period was 4.8 percent. This moderation is not immediately evident in the line in Chart 6 (see right scale), as the peaks and valleys appear quite irregular. The sustained but moderate deepening in the banking sector corresponds with Chile's broader history of financial growth.

The peaks in Chile's index in 1993 and 1996 may be explained by the growth in private credit in those years by 11.3 percent and 13.3 percent, respectively—the largest surges in the nineties. Also, the indicators for bank assets and private credit show a continuous increase of 3.6 percent and 5.8 percent between 1992 and 2000, supporting the moderate but sustained deepening in Chile. Interest rates in Chile declined continuously from 1991 until 1997. Similar to the case in Argentina, interest rates rose in 1998—hinting at the effects of the Asian and Russian crises on the uncertainty in the financial system.

Interestingly, the index results behave quite similarly for both Chile and Argentina. They both exhibit patterns of long-run decline followed by two years of growth from 1989 to 1990, then slight retrenchment followed by steady growth from 1991 going forward. The growth rate for Chile's index grew at a much faster pace overall, however.

Mexico. Mexico's index (Chart 7) shows clearly the expected pattern of banking sector deepening, beginning in the late 1980s, after the financial repression during most of that decade. Since then, the Mexican financial system has experienced continuous growth in its performance—interrupted only by the Peso Crisis. The effects of the 1982 nationalization of the banks and the external debt crisis can be seen in the 16 percent decline in the index registered in that same year. In 1988, the index begins a period of strong growth as the government began to divest itself of nationalized financial assets, interest rates were freed, reserve requirement ratios were reduced, and the practice of targeted credit was ended. Indeed, the index doubled in the period between 1988 and 1994. This growth reflects the strong growth rates in three of the component indicators in the index. Bank assets, private credit, and liquid liabilities increased, on average, 12.5 percent, 25.8 percent, and 7.7 percent, respectively, during this period. Also, interest rates declined continuously between 1988 and 1994, facilitating the growth in banking intermediation.

The devastating impact of the December 1994 Peso Crisis is clearly shown in the index number for 1995, which contracted by nearly 21 percent and was flat in 1996. Indeed, as a result of the Peso Crisis, the index receded to a level not seen since 1991, when concerted financial liberalization began to really take effect. The rapid bounce-back in Mexico's financial structure is seen in the 23 percent growth in the index number in 1997. However, this deepening has effectively flat-lined since then with very small or slightly negative growth. The government's implementation of bank rescue programs, including loan repurchase and capitalization policies to prevent the collapse of the banking system, were surely factors in the 1997 recovery in the index number. Nevertheless, the fact that the index number in 2000 was not yet back up to the 1994 index number is telling. These changes are clearly observable in the line in Chart 4 (note right scale). In contrast to the performance of the indicators between 1988 and 1994, there is a sharp decline in their average growth for the period between 1996 and 2000. The rates of growth in the bank assets, private credit, and liquid liabilities indicators averaged 5.0 percent, -13.1 percent, and -3.3 percent, respectively.

Peru. As we will see shortly, the performance of the index for Peru exhibits some unique characteristics, but there are some similarities with other countries as well. Peru's index is similar

to the ones for Argentina and Brazil in that the banking/financial system experienced a collapse in the early part of the eighties due to the combination of deregulation and the external debt crisis. The index number fell more than 8 percent in 1982. However, Peru differs from the other countries in that its index collapses again later in the decade. The index number grew rapidly in 1984 and 1985, growing by 31 percent and 26 percent, respectively, in those years. However, the subsequent collapse in 1987 marked the second and more acute financial retrenchment in a decade. The index for Peru contracted by more than 35 percent in 1987—the largest decline in any of the countries in a single year.

The third period of recovery starts in 1988 with the implementation of heterodox programs that injected liquidity into the financial system via expansionary monetary and fiscal policies. Peru's index grew by more than 61 percent in 1988—the single largest increase in any of the countries in a single year. In 1991, the financial system slowed down again and the index contracts nearly 14 percent amid an environment of hyperinflation and recession. Between 1980 and 1989, the bank assets indicator showed an average increase of 1.7 percent, in contrast to the indicators for private credit and liquid liabilities, which presented an average decline of 3.3 and 5.0 percent, respectively.

The index results for Peru are also notable in that they did not register the extensive reforms instituted by the Fujimori administrations starting in 1991. Peru adopted one of the deepest programs of financial reform in Latin America—interest rate controls were dropped, subsidized/targeted credit was eliminated, and reserve requirements on domestic currency were reduced in a very swift fashion (along with regulatory improvements in the banking system). But the index does not reflect these reforms. One explanation for this may be the lack of coordination between the new market-oriented rules implemented in 1993 and 1994 and state-owned commercial banks, which resulted in a sharp drop-off in bank performance. This may explain the decline (6.7 percent) in the index number for 1994. The economic decline associated with the El Niño weather pattern may also have contributed to the fall in the index. After the privatization of state-owned banks, the financial system shows very stable activity overcoming the various external financial shocks in the late nineties.

However, the stability in banking activity shown in the index did not include any growth. The line in Chart 8 (note right scale) registered an average annual growth rate of -0.37 percent throughout the nineties—the lowest average for any of the countries during that same period. Between 1992 and 2000, the bank assets indicator grew 1.7 percent on average, but the private credit and liquid liabilities indicators showed more dynamism, increasing on average 24 percent and 13.3 percent, respectively. It is important to point out that the three indicators start to slow in 1997. Overall, the average annual growth rate for the 1980–2000 period was 3.9 percent, owing to the solid growth during the eighties (averaging 8.2 percent annually).

Pace of Liberalization in the Banking Sector. Another contribution of the index is the ability to compare the pace of change in banking activity across countries. We have already touched upon the rates for individual countries in the discussion above, but two clear patterns among the five countries are also noteworthy. Charts 9 and 10 show these patterns. The rate of

change in the indices for Argentina, Chile, and Peru shows a remarkable stabilizing trend during the nineties after all three experienced strongly erratic or negative growth in the previous decade. The evolving trend toward stabilization of the growth rate may be a manifestation of maturing banking systems in these countries. These countries also demonstrate lower, and sometimes negative, growth rates, but the pace does not gyrate up and down as occurred throughout the eighties.

In contrast, Brazil and Mexico show a continuous pattern of volatility and irregular growth rates in their indices over the entire twenty-year period. As seen in Chart 10, the line for Mexico is quite erratic in the nineties, both before and after the Peso Crisis. The line for Brazil illustrates the drop in financial depth that accompanied the *Real Plan*. However, like Mexico, the line for Brazil recovered strongly after the shock but fell once again.

The information presented in the above discussion of the index results and the comparative pace of change in banking activity reveals the nature of the bank deepening process in each country. These results demonstrate the evolution of the effect of important changes on banks—arguably the most centrally based sector of the financial system. The section below integrates the major results of a series of econometric estimations on the relationship between economic and banking activity as well as a selection of institutional variables into a discussion on some of the major theoretical debates in this area.

Policy Discussion

In order to better explore the policy-relevant aspects of our study, this section first briefly presents the results of the econometric estimations and then discusses them in relation to some of the major theoretical debates. There has been a long discussion among economists about the importance of the financial system and economic development.⁸ The central question of this debate is the interrelationship between the financial system and the real economy. How does the financial system affect economic activity? And conversely, how does economic activity affect the financial system? This section explores the second part of this debate with a focus on banking activity. Specifically, what is the relationship between economic and banking activity?

Our focus on banks is grounded in Levine (1997), which advocates a functional approach to the question of the relationship between financial structure (i.e., the mix of instruments, markets, and institutions) and financial functioning. This approach differs from McKinnon (1973) in that McKinnon's stress on the relation between finance and growth leads to the distinction between real and financial sector. Instead, Levine's functional approach considers the financial sector as part of the real sector. Thus, the functioning of the financial system is related to economic growth and vice versa.

Levine argues that, in order to lower transaction and information costs, financial systems (comprised of financial intermediaries and stock markets) facilitate the allocation of resources across space and time under uncertainty. This facilitation can be broken down into five separate

⁸ See Levine (1997) for a broad review of this subject.

functions: mobilization of savings; allocation of resources; exertion of corporate control; facilitation of risk management; and the facilitation of the trading of goods, services, and contracts (1997, 691). These functions are performed by financial intermediaries that can be broadly defined as coalitions of agents that combine to provide financial services. In our study, financial intermediaries are commercial banks, central banks, and nonbanking institutions (e.g., insurance companies, investment banks, finance companies, etc.).

In developing economies, financial intermediaries are much less extensive in terms of the type and number of instruments as well as the volume of funds administered. Charts 11 and 12 compare financial structure in the five Latin American economies examined here and our developed economy comparisons. The shallow nature of financial markets in Latin American can be seen in Chart 11, where assets held by financial institutions, private credit held by financial institutions, as well as the total value traded in the stock market are well below the levels in the United States, Canada, and New Zealand.

Chart 11 also demonstrates how the financial structure of our five test countries is dominated by the banking system (i.e., assets and credit), with very small contributions from the stock market (relative to output). In the developed economies (Chart 12), equity markets are also less significant than the banking sector, but the total value of the stock market is much greater than the value of equity traded in Latin America. The lesser relevance of the stock market in Latin America is consistent with the discussion in the Theoretical Background section above and the literature on the critical role played by banks in developing economies (see Morris et al. 1990; Rojas-Suárez and Weisbrod 1995).

Variables. The independent variables for estimating the effect of economic and banking activity were chosen because they reflect some of the major concerns in our five-country selection. Although space considerations do not allow for individual discussion of each independent variable here, we list by category the entire series of nineteen variables that were tested. These were (1) economic activity—the growth rate of real GDP and domestic investment over GDP; (2) international trade—the current account as a percentage of GDP, exports and imports of goods and services over GDP (as an indicator of trade openness), the share of exports over GDP and imports over GDP, and the growth rate of exports and imports; (3) capital account liberalization—foreign direct investment as a percentage of GDP, capital inflows as a percentage of GDP, rate of capital outflows, and capital outflows as a percentage of GDP (measured as the dollar deposits of foreign-based residents in U.S. banks); and (4) institutional (dummy) variables—the introduction of economic reforms, presence of international financial crisis (testing for debt crisis, Peso Crisis, Asian and Russian crises), presence of civilian governments, central bank independence, and executive turnover. Here we describe the results for individual country regressions against the above-mentioned variables. At the end of this section we review a panel data test that was performed for four of the five countries.

The dependent variable is the change in the growth rate of the Index of Banking Activity. As in the index, the data used here cover the period from 1980–2000 except for Brazil, which begins in 1983. These estimations address the effect of economic growth, international trade,

capital flows, and fiscal deficit on the performance of the financial system. These linear regressions were corrected for the presence of first-order autocorrelation using the Hildreth Lu method. Although two regressions were performed for each country, below we briefly describe the tests performed and synthesize the statistically significant results according to their relevance for the larger theoretical debates.

The results contain both expected and surprising findings. We should also note that these findings should be interpreted as preliminary due to the first-stage nature of this research.

Theoretical debates. The index results and the econometric estimations show a great diversity of experience in developing the banking sector in Latin America. These findings reinforce the similar conclusions in the study of financial opening styles in several developing countries by Lukauskas and Minushkin (2000). Furthermore, there is little evidence in our findings that there is a common “Latin American experience” in this area. The diversity of experiences and patterns described below strongly suggests that individual country factors are far more important in determining outcomes than any expected series of relationships. However, despite this diversity, these findings strongly contrast the experiences of Latin American nations to those of the more developed nations. The pattern of financial development in many of the advanced industrial nations seems to have been one of a long but steady march toward greater financial openness (Quinn and Inclán 1997). Our findings suggest a very different if not diverse set of courses for these five Latin American nations.

Relationship between economic and banking activity. One of the main functions of the financial system is the allocation of resources from savings to investments. Banks, in effect, serve as the transmission channel for this allocative process that is thought to support capital accumulation and investment and enable future economic growth. The market mechanism of the financial system promotes specialization and technological innovations that lower transaction and information costs. In turn, these savings promote economic growth. Therefore we expect a direct relationship between the growth of the financial sector and both domestic investment and economic growth. Thus, the positive, synergistic relationship between economic growth and the deepening of banking activity is expected to go in both directions, where economic growth would affect positively the growth in banking activity and vice versa.

In our study, however, economic growth was not automatically positive for banking activity in all cases. Both the actual and lagged one-year value of real GDP growth produced a positive effect on banking activity in only three of the five countries (Argentina, Chile, and Mexico). Mexico’s index responded positively to the current value of real GDP while the index numbers for Argentina and Chile were positively related to the one-year lagged value of real GDP. Also, Chile is the only country where domestic investment is a significant explanatory variable in the performance of the financial system. This shows the interrelation between the private sector and the financial system in Chile from a process of financial liberalization that took place earlier than in any other country of this study. Thus, Chile may benefit from its more mature, developed, and stable banking sector that is closely linked with the private sector—like the ones envisioned by McKinnon and Shaw.

Although the outcomes were mixed among the five countries, it is noteworthy that we could not establish the relationship between economic growth and the performance of banking activity for Peru or Brazil. In Brazil, this may be due to the peculiar nature of inflation-led financial development. The Peruvian case is even more of an enigma. Peru also suffered a period of hyperinflation, but it was shorter-lived than in Brazil. A big difference between these two countries is the growth in the index. Brazil's index increased at twice the rate of Peru's index. But this is clearly not a full explanation because even more modest growth in the index occurred in Argentina, where a positive relationship between economic growth and financial development was present. These unexpected findings beg further investigation as to why these countries reacted so differently. Could, for example, the erratic nature of economic growth in some developing countries mean that they are not stable enough to have the expected positive McKinnon-type effect?

Conversely, there was no evidence in any of the five countries that deepening of banking activity had a significant impact on the growth of economic activity. None of our estimations in any of the five countries showed a significant effect of financial system deepening on economic growth. This finding is counterintuitive to the expected pattern of banking/financial development. One possible explanation for this result is the time frame of the analysis, in which the large fluctuations and instability in Latin American financial systems over the last two decades may simply have slowed the process of banking development. Only in the last ten years have the banking systems in these countries (especially Argentina, Chile, and Peru) presented a pattern of financial stability that could contribute to national development in the medium or long term. Perhaps over time this relationship will become more meaningful and clearly show the contribution of the financial system to economic growth.

Capital outflows. The process of opening the capital account is often one of the first steps in a financial liberalization process. The impact of this step is generally considered quite positive during good economic times. Increases in foreign direct investment and portfolio capital are expected to foster the development of banking activity, capital markets, and financial services overall. However, when uncertainty prevails, both domestic and foreign (especially portfolio funds) capital may exit, causing serious problems for the financial system. These problems can cause balance of payments crises and can be very detrimental to the banking sector as the rapid draining of foreign exchange causes distortions in the amount of locally available capital and generally brings about interest rate increases.

The findings of this research tend to support the conventional wisdom that capital outflows harm financial development, as outflows were important in explaining the performance of banking activity in three countries—Chile, Mexico, and Peru.⁹ According to the results, an increase in capital outflows restricts the performance of the financial system. The importance of this variable in these countries could respond to the deep opening to capital markets that Mexico and Peru underwent during the 1990s, and Chile during the previous decade. The full impact of

⁹ The Panel Data Test described below further substantiates the importance of capital outflows in our country selection.

this variable may be significantly underestimated due to the fact that our data for this variable measure what should be considered only a minimal expression of capital outflows. We measure the growth rate of capital outflows measured by the deposits in U.S. banks of the residents of the respective country. Although these flows are substantial, flows to other countries and off-shore accounts would also be substantial and relevant to banking activity.

This finding highlights the controversial debate over capital controls and the need for countries to somehow “manage” the free flow of funds in an open economy. Large-scale capital outflows create instability, which harms the immediate performance of the financial system and constrains the growth potential. Interestingly, our estimations found no evidence that capital inflows had a significant negative effect on the financial system.

Openness to international markets. The link between international trade and financial systems is also important. The banking sector and the financial system overall support transactions with international markets in many of the same ways that they promote domestic markets and thereby ease the international exchange of goods and services. However, some studies also stress the associated perils of this relationship in promoting crisis in developing countries. Kaminsky and Reinhart (1999) amply demonstrate the relationship between external shocks and financial crisis. The sequencing of trade and financial liberalization also presents the potential for crisis. In this case, the opening or lowering of tariffs spurs import growth, creating problems in the current account and uncertainty that result in capital outflows in a liberalized financial system. Banking activity would be deeply affected by a financial crisis.

Our findings show that the current account played a positive role in the explanation of the dynamism of the financial system in Mexico and Peru. Interestingly, these two countries undertook a deep and generally simultaneous process of trade liberalization *and* financial reform. Furthermore, Mexico is highly dependent on international trade due to its strong trade relationship with the United States. This finding may suggest that economic and financial openness may be mutually reinforcing in these two countries. In Brazil, by contrast, the growth rate of import levels harmed financial sector development. This finding may also suggest that balance of payment concerns there harm the sector’s growth potential.

Fiscal balance. Fiscal balance is expected to play a role in determining banking activity because deficits tend to pressure interest rate increases and thereby undermine the efficient channeling of resources in the private sector. Therefore we expect a negative relationship between the banking sector and fiscal deficits.

It was unexpected that Brazil was the only country in our study in which banking activity was harmed by the presence of a fiscal deficit. Although the index for Brazil showed considerable growth over the entire period, this finding reinforces the thinking that higher deficits impose greater burdens on the financial system overall. The banking system would not be immune from these stresses. At the same time, however, this result may also reflect the particular composition of the index and the continued large presence of the Brazilian public sector in the banking system. Brazil’s comparatively larger public bank presence, along with other constraints in place, may tend to inhibit private banks from greater performance.

Institutional variables. The use of dummy variables was intended to complement the economic analysis by examining the important role that shocks can play in determining financial performance. We expect that the implementation of an economic reform program would strengthen the financial system because, if successful, it tends to improve confidence and economic performance. Conversely, the financial crisis variable is expected to have a negative effect on the financial system from investors taking assets out of riskier emerging markets. During our period of coverage, elected governments should have a positive effect on financial systems because the institution of democracy tends to promote stability and confidence and may be positively associated with capitalism. Similarly, an independent central bank should demonstrate a positive relationship with financial system growth, as market actors have greater assurance that the economy will not be used for political purposes. Finally, the change in executive indicator is a more idiosyncratic variable because it not only reflects political stability, but also the result will be determined by market expectations about the incoming economic program in each country setting.

The findings for our dummy variables were not conclusive overall, again highlighting the differing political and socioeconomic backgrounds in each country. The presence of a programmatic economic program and the financial crisis variable were relevant for the growth of the index in Mexico but not for any of the other countries. As expected, a well-executed economic program was positive for growth in Mexican banking activity. This result may reflect the staunch and enduring nature of the economic reforms launched in Mexico in 1988 compared to the economic reform plans in the other four countries. Nevertheless, the positive effect of the programmatic economic program was countered by the devastating effect that the 1994 peso devaluation and the subsequent financial crisis had on Mexican banks. In general, however, the performance of the financial crisis variable was puzzling, leading us to hypothesize that the effects of the financial crises were already manifest by negative performance of the different macroeconomic variables, thereby making the financial crisis dummy variable irrelevant.

The change in executive office variable, signifying a change within the calendar year, was positively related to banking activity growth in Argentina but negatively related to Brazil's growth. Given that country-specific factors are very important in determining our outcomes, this variable also needs refinement to investigate the particular characteristics of the executive office holders and whether market expectations were largely about ideological concerns or other factors, or both.

Interestingly, central bank independence was significant for the growth of the index only in Chile. Obviously, we expected this variable to promote banking activity in Argentina, Mexico, and Peru after their central banks were made independent. Further testing is necessary in order to determine whether there is something intrinsic to Chile's banking environment or whether the central bank independence variable may be effectively captured in other countries by other variables (capital outflows, for example).

Panel data test. Finally, we estimated a regression model using a panel data set including Argentina, Chile, Mexico, and Peru. The shorter period of data available for Brazil does not allow us to include Brazil in this exercise. Appendix B shows the results of the estimation. According to

this test, the ratio of capital outflows over GDP of the previous period is the common indicator that negatively affects the performance of the financial system in all four countries.

Although this result was not surprising, it is also noteworthy to again stress that capital outflows are grossly underestimated by the available data. The nature of this simultaneous equation also highlights the importance of capital outflows for Argentina, where this indicator was not statistically significant in our first set of country-level regressions. Furthermore, truer levels of capital outflow data should also have a much greater negative effect on banking activity.

Contribution of the Index

The findings of this panel data test and the country-level regressions pose significant challenges for policymakers. The patterns of financial deepening experienced by the advanced industrial nations may serve more as comparisons than as models or guidebooks. Moreover, the significant amount of diversity among the five Latin American countries here also suggests that initial conditions and the widely varying endowments (both economic and institutional) in each country may be the greatest determinants of outcomes.

The Index of Banking Activity, although still experimental, contributes to our understanding of these diverse initial conditions and factors that determine the varying outcomes by clearly illustrating patterns of development in each country. The findings are useful for policy as a guide to the historical development of each country as well as the discussion of expected trends. The index is also a tool to facilitate comparisons of the pace (i.e., growth rates) of banking activity across countries. Given that the index number expresses the effect of multiple indicators in its result, it provides a more integrated explanation for developments with the banking sector than would single-indicator approaches.

Furthermore, the index helps us to summarize the fluctuations in performance indicators—covering different aspects of the process of deepening banking activity—into a unitary framework. The methodology in the estimation assigns weights and calculates the index number according to a probability model avoiding the pitfalls associated with arbitrary settings. Methodologically, the use of an index as an independent variable, instead of a mixture of indicators, saves degrees of freedom in the estimation process. This is advantageous especially when the collection of information restricts the possibility to build long time series.

Although the index currently measures activity only in the banking sector, we expect to be able to modify it over time in order to capture a broader set of financial system indicators. In this sense, we view the index as a substantive first contribution to measuring the full process of financial liberalization.

Future Research

The index presented here should be seen as a starting point for further experimentation and refinement. Several refinements are planned. In terms of the Index of Banking Activity, we will experiment with the use of other indicators in the index in order to expand the policy content of

the result. Introducing real interest rates rather than the nominal rates should further refine the index's results. Similarly, experimentation with other regressions should expand our understanding of how banking activity responds to macroeconomic stimuli. Estimations incorporating the relationship of the index with inflation and exchange rates are obvious starting points. Further experimentation with institutional variables is also a goal.

Above all, we would like to expand the range of variables included in the research beyond the banking sector to include a broader spectrum of the financial system and its component markets. If successful, we would produce an index capable of measuring financial liberalization in each country setting. Another objective is to increase the number of observations for each country by using a longer annual time series or quarterly data in order to expand the time horizon. Given that the use of the longer time series is problematic where multiple indicators and countries are involved, the move to higher frequency data is more pragmatic. Including other countries in the index is also desirable.

Finally, a future step in the use of this research would be to move to the construction of a leading financial indicators index. Coincidence indices such as this are often used for this purpose.

Appendix A: Explanation of Single Index Model

The procedure to estimate the dynamic single-factor index model is based on Stock and Watson (1989, 1991, and 1993). The model of the estimation procedure by Clayton-Matthews (2001) uses the following structure:

$$(1) \quad \Delta X_t = \beta + \gamma(L)\Delta C_t + \mu_t$$

$$(2) \quad D(L)\mu_t = P(L)\varepsilon_t$$

$$(3) \quad \phi(L)\Delta C_t = \delta + q(L)\eta_t$$

where X_t is a vector of the logarithms of the financial indicators that are hypothesized to move contemporaneously with the overall state of activity in the banking system. In the model, X_t consists of two stochastic components, the common unobserved variable or index, C_t , and a component μ_t , which represents idiosyncratic movements in the series and measurement error. The disturbances ε_t and η_t are assumed to be serially uncorrelated with a diagonal covariance matrix Σ .

L denotes the lag operator, and $\phi(L)$, $\gamma(L)$, $D(L)$, and $P(L)$ are respectively scalar, vector, and matrix lag polynomials. The lag polynomials matrices are assumed to be diagonal, so that μ_t s are contemporaneous and serially uncorrelated with one another.

The output of the system consists of the common component, a time series of the estimated growth in the state of the financial system, $\{\Delta C_{s|T}, s = 1, \dots, T\}$.

The parameters of the model can be expressed as follows:

$$(4) \quad \gamma(L) = [\gamma_1(L), \gamma_2(L), \dots, \gamma_G(L)]'$$

where $\gamma_g(L) = \gamma_{g0} + \gamma_{g1}L + \gamma_{g2}L^2 + \dots$

$$(5) \quad D(L) = \text{diag}[d_1(L), d_2(L), \dots, d_G(L)]'$$

where $d_g(L) = 1 - d_{1g}L - d_{2g}L^2 - \dots$

$$(6) \quad \phi(L) = 1 - \phi_1L - \phi_2L^2 - \dots$$

$$(7) \quad \Sigma = \text{diag}[\sigma_1^2, \sigma_2^2, \dots, \sigma_G^2]$$

$$(8) \quad P(L) = \text{diag}[p_1(L), p_2(L), \dots, p_G(L)]'$$

where $p_g(L) = 1 + p_{g1}L + p_{g2}L^2 + \dots$

$$(9) \quad q(L) = 1 + q_1L + q_2L^2 + \dots$$

Appendix B. Tests for Statistical Significance**Argentina. Estimated coincident index model**

Parameter	Commercial banks' assets as % of total financial assets	Private credit of commercial banks as % of GDP	Liquid liabilities as % of GDP	Nominal interest rates
γ_1	0.704 (0.182)	0.596 (0.177)	0.242 (0.147)	0.858 (0.228)
d_1	-1.347 (0.394)	0.419 (0.233)	0.797 (0.196)	1.065 (0.606)
d_2	-0.584 (0.336)	-0.424 (0.201)	-0.471 (0.191)	-0.391 (0.450)
σ	0.368 (0.175)	0.656 (0.115)	0.726 (0.116)	0.508 (0.265)
Autoregressive coefficients for the state equation		Period of estimation: 1980–2000 Estimated standard errors are in parentheses		
ϕ_1	0.161 (0.288)			
ϕ_2	-0.069 (0.232)			

Brazil. Estimated coincident index model

Parameter	Commercial banks' assets as % of total financial assets	Private credit of commercial banks as % of GDP	Liquid liabilities as % of GDP	Nominal interest rates
γ_1	0.730 (0.200)	0.673 (0.114)	0.542 (0.174)	0.598 (0.449)
d_1	0.497 (0.222)	1.18 (0.065)	0.451 (0.231)	-0.420 (0.473)
d_2	-0.439 (0.217)	-0.870 (0.060)	-0.239 (0.223)	-0.287 (0.358)
σ	0.779 (0.134)	-8.54E-07 (0.077)	0.761 (0.127)	0.914 (0.157)
Autoregressive coefficients for the state equation		Period of estimation: 1980–2000 Estimated standard errors are in parentheses		
ϕ_1	-0.226 (0.223)			
ϕ_2	-0.432 (0.199)			

Chile. Estimated coincident index model

Parameter	Commercial banks' assets as % of total financial assets	Private credit of commercial banks as % of GDP	Liquid liabilities as % of GDP	Nominal interest rates
γ_1	0.35188 0.145632	0.527972 0.096888	0.60667 0.137422	-0.00771 0.080963
D_1	0.243555 0.21771	0.115338 0.434428	0.60667 0.137422	-0.50029 0.204555
D_2	0.158593 0.205042	0.291605 0.283836	0.003041 0.326727	-0.3018 0.220755
σ	0.729028 0.112563	-1.29E-06 0.086401	0.39838 0.072472	0.866979 0.133779
Autoregressive coefficients for the state equation		Period of estimation: 1980–2000 Estimated standard errors are in parentheses		
ϕ_1	0.908886 0.247179			
ϕ_2	-0.22079 0.237905			

Mexico. Estimated coincident index model

Parameter	Commercial banks' assets as % of total financial assets	Private credit of commercial banks as % of GDP	Liquid liabilities as % of GDP	Nominal interest rates
γ_1	0.909 (0.143)	0.069 (0.190)	0.074 (0.180)	-0.842 (0.187)
D_1	-0.783 (0.181)	0.699 (0.237)	0.622 (0.214)	0.124 (0.193)
D_2	-0.782 (0.067)	-0.241 (0.198)	-0.329 (0.209)	-0.167 (0.195)
σ	1.72E-06 (0.118)	0.715 (0.110)	0.844 (0.130)	0.565 (0.096)
Autoregressive coefficients for the state equation		Period of estimation: 1980–2000 Estimated standard errors are in parentheses		
ϕ_1	0.219 (0.227)			
ϕ_2	-0.123 (0.217)			

Peru. Estimated coincident index model

Parameter	Commercial banks' assets as % of total financial assets	Private credit of commercial banks as % of GDP	Liquid liabilities as % of GDP	Nominal interest rates
γ_1	-0.098 (0.129)	0.582 (0.095)	1.018 (0.155)	-0.233 (0.129)
D_1	-0.098 (0.216)	0.400 (0.150)	1.803 (0.055)	-0.051 (0.228)
D_2	-0.163 (0.218)	-0.281 (0.136)	-0.963 (0.050)	-0.228 (0.210)
σ	0.987 (0.152)	0.183 (0.031)	-5.68E-08 (0.039)	0.912 (0.141)
Autoregressive coefficients for the state equation		Period of estimation: 1980–2000 Estimated standard errors are in parentheses		
ϕ_1	0.690 (0.220)			
ϕ_2	0.007 (0.211)			

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CHART 1: United States

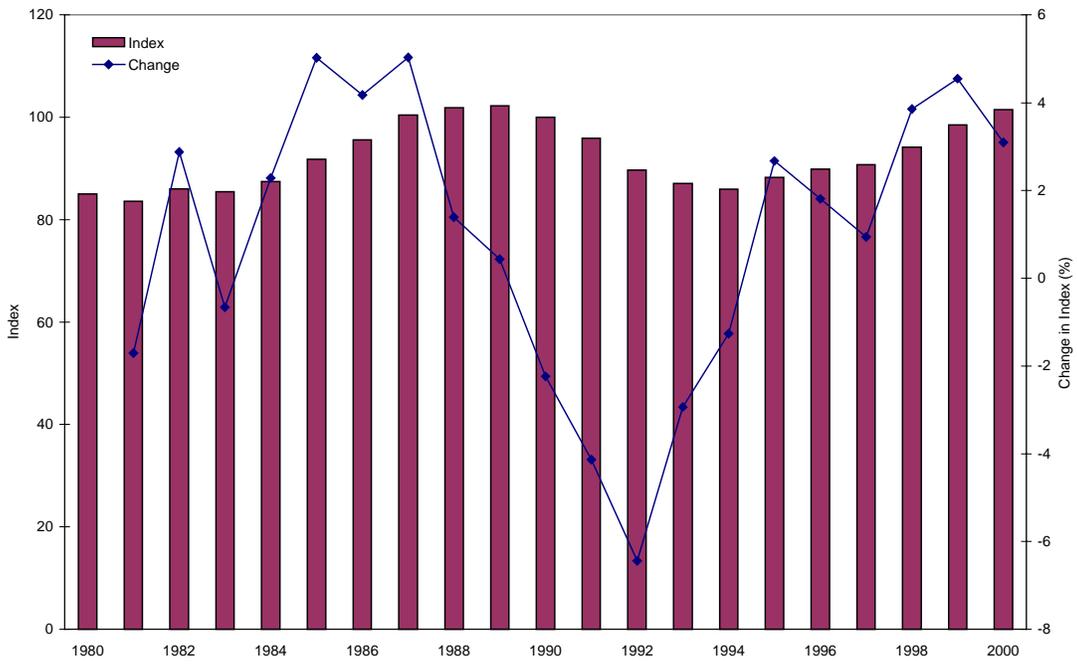


CHART 2: Canada

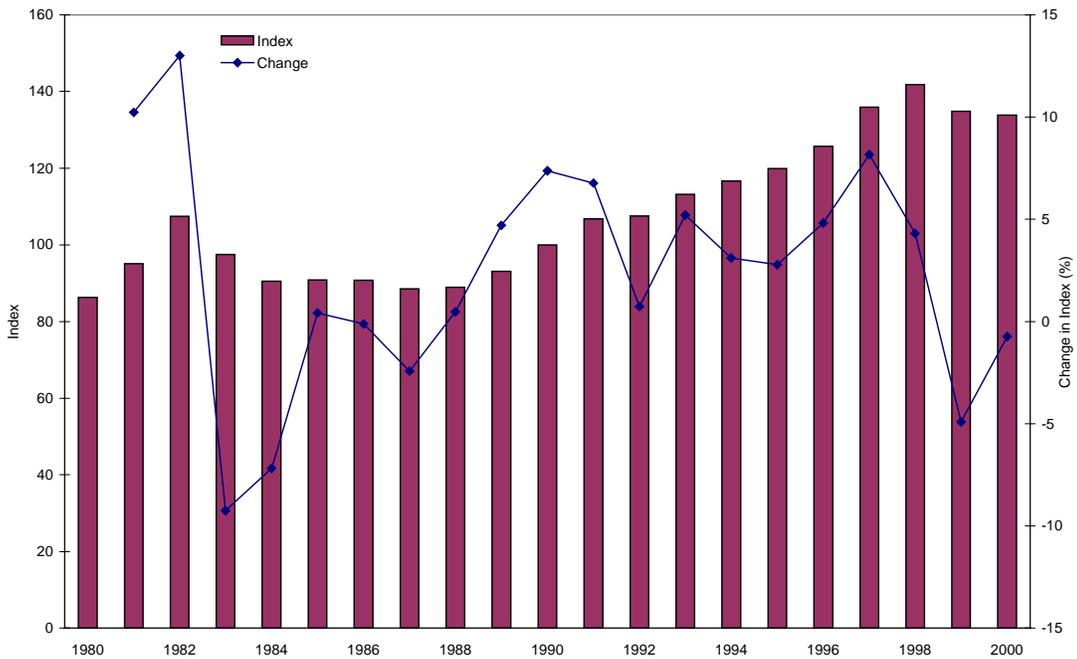


CHART 3: New Zealand

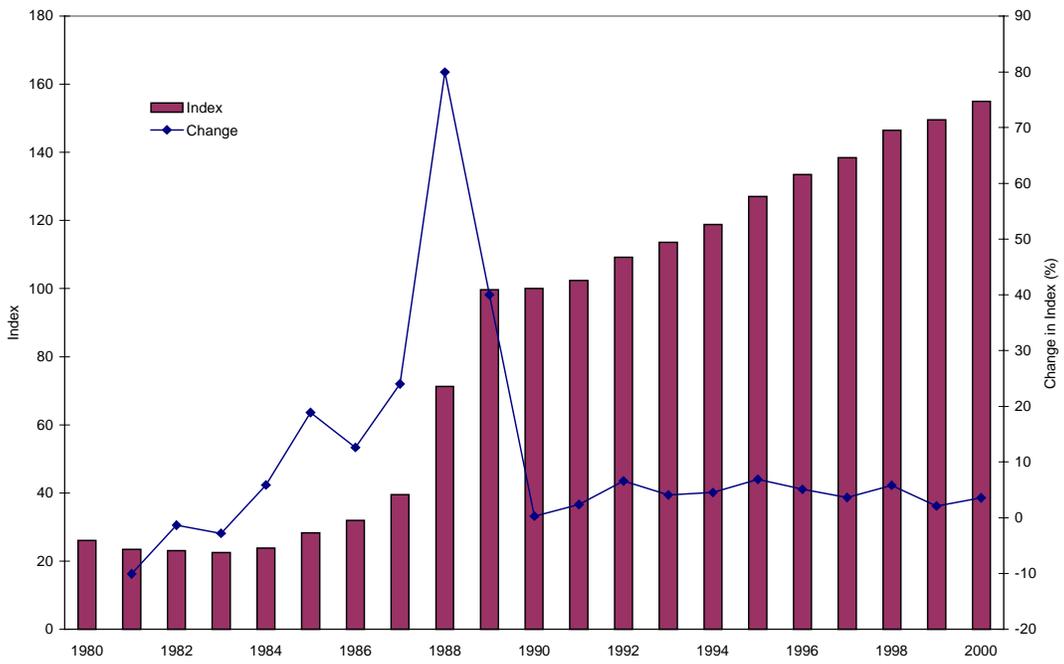


CHART 4: Argentina

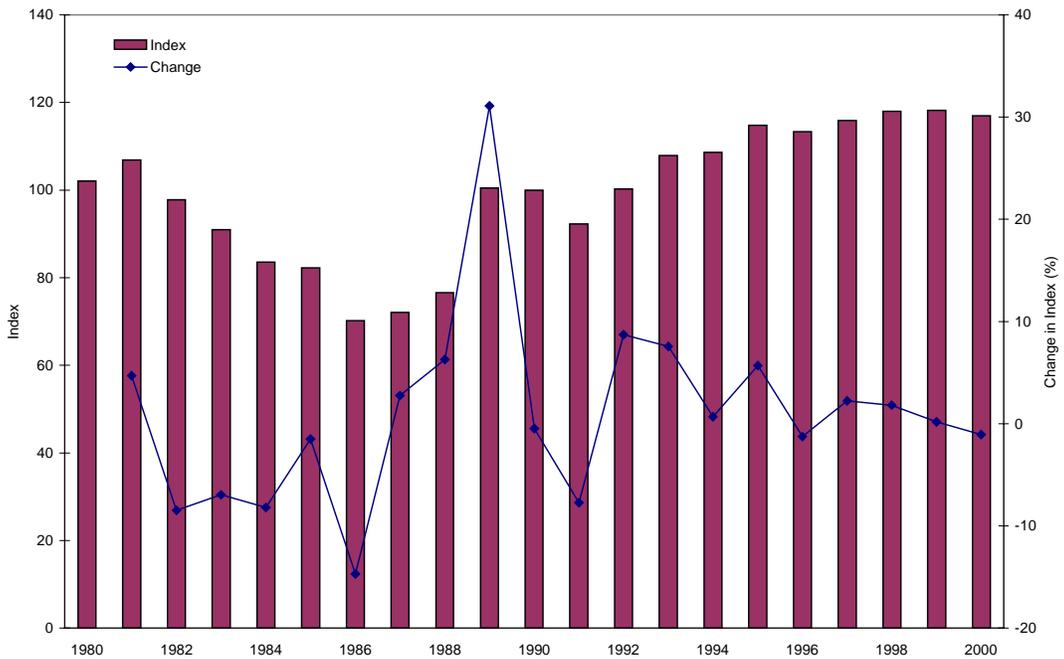


CHART 5: Brazil

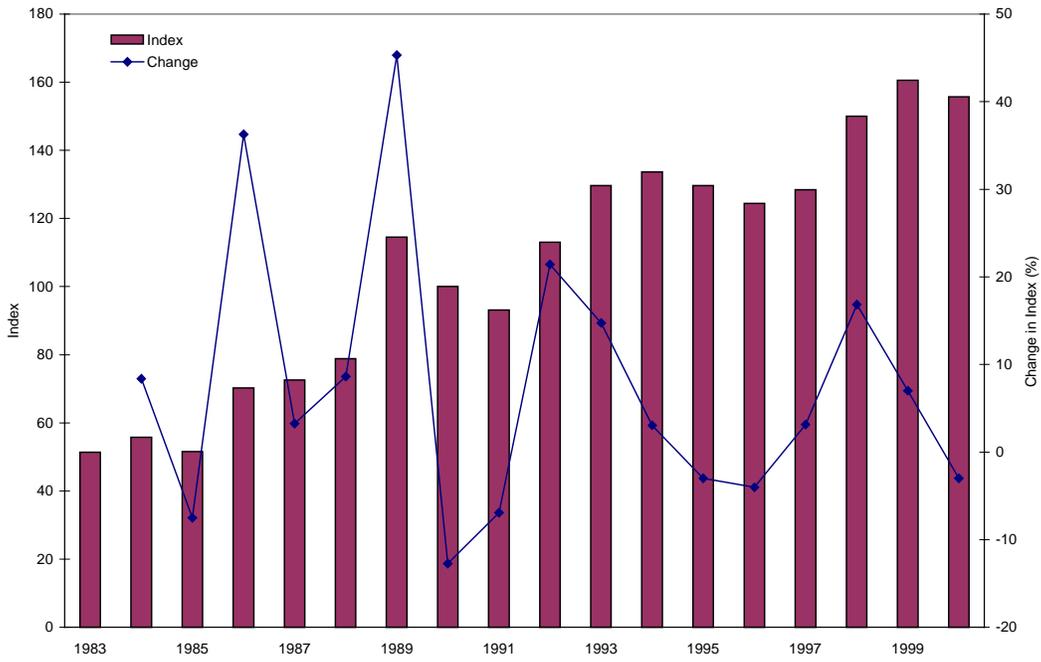


CHART 6: Chile

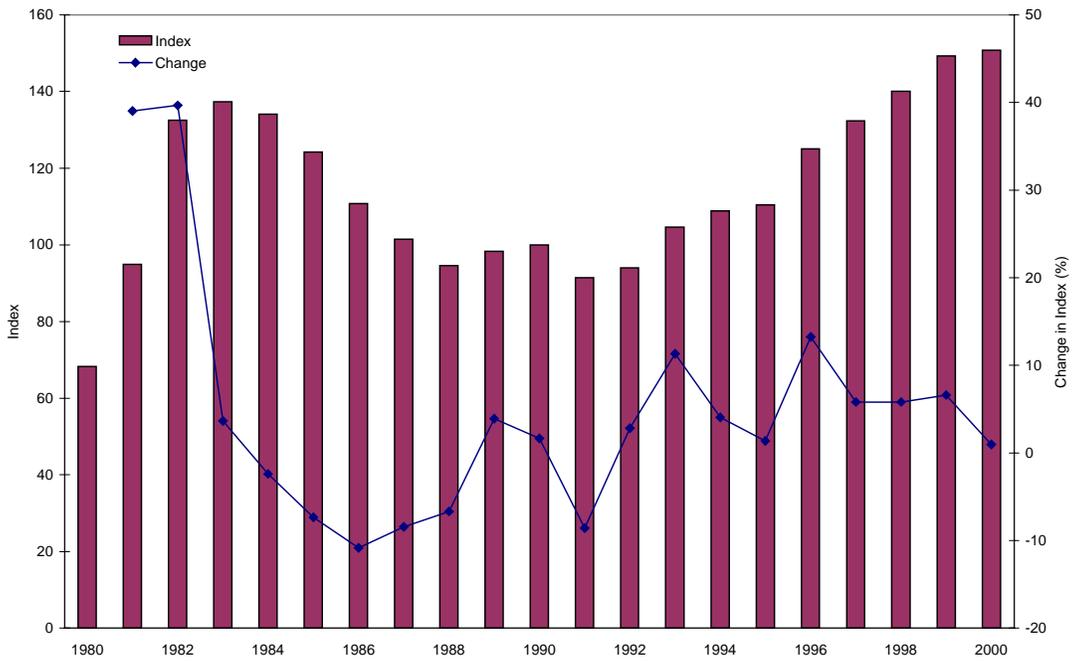


CHART 7: Mexico

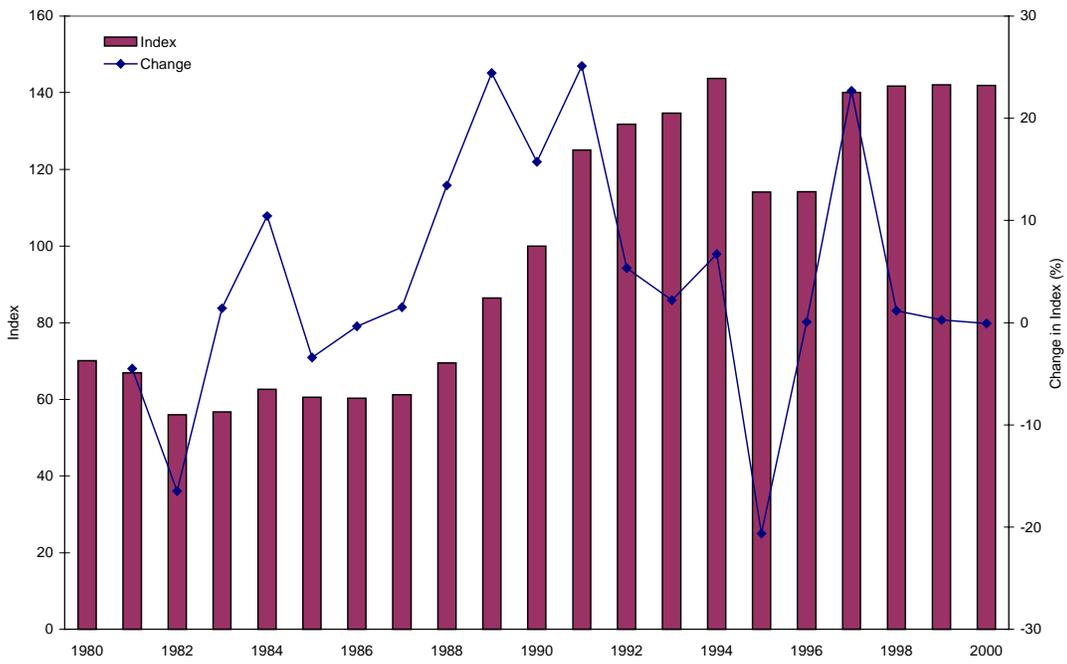


CHART 8: Peru

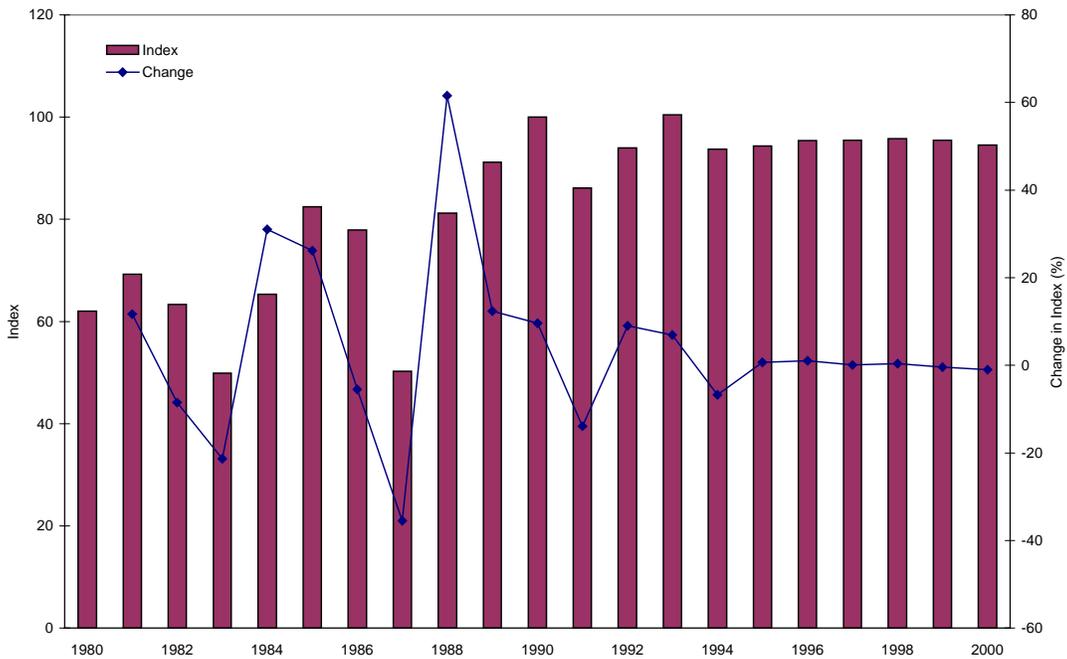


CHART 9: Change in Banking Activity, Argentina, Chile and Peru

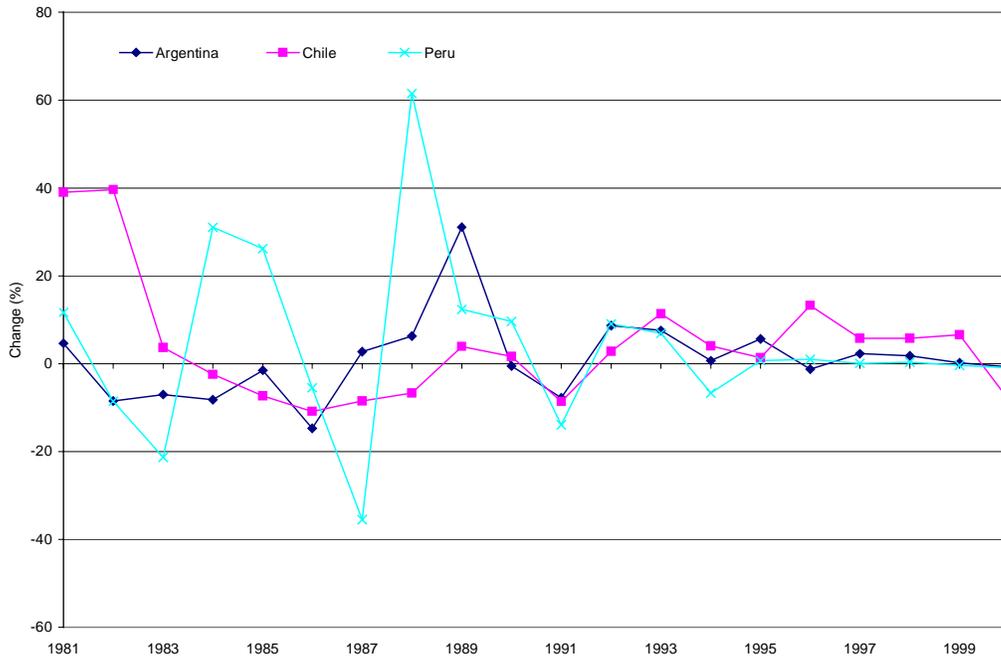


CHART 10: Change in Banking Activity, Brazil and Mexico

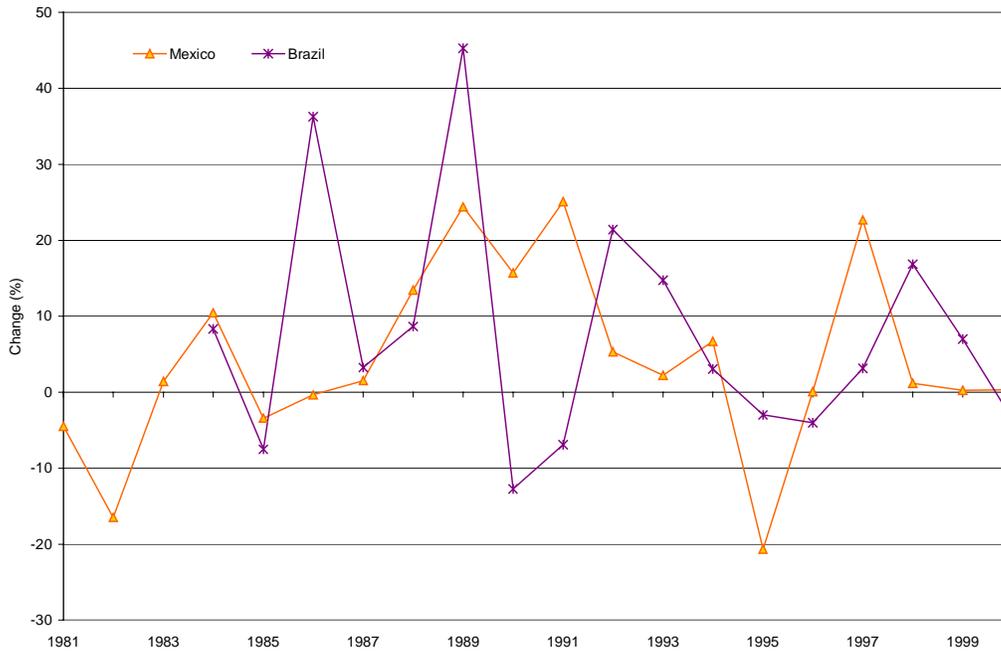


CHART 11: Financial Structure in Argentina, Brazil, Chile, Mexico, and Peru, 1992

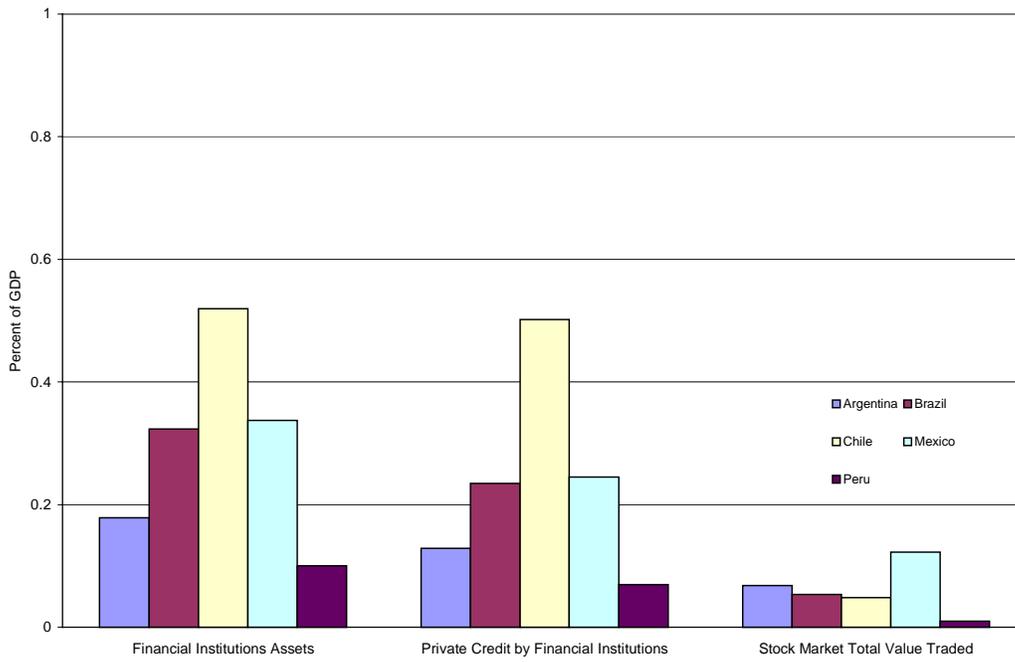


CHART 12: Financial Structure in the United States, Canada, and New Zealand, 1992

