

CAPITAL INFLOWS, CREDIT BOOMS, AND MACROECONOMIC VULNERABILITY: THE CROSS-COUNTRY EXPERIENCE

Leonardo Hernández
International Monetary Fund

Oscar Landerretche
Massachusetts Institute of Technology

The turbulence in financial markets in Southeast Asia in 1997-98 and the crisis in Mexico in 1994-95 have renewed interest among policymakers in the issues of capital account liberalization and financial sector reform. In all the East Asian cases and in Mexico, as well as in many other earlier episodes such as that of Chile in the late 1970s, countries that saw a rapid growth in bank credit typically experienced a financial crisis later on. Bank lending booms in these emerging market economies, often financed by a surge in capital inflows, led to overborrowing and asset price inflation, exacerbating financial fragility and macroeconomic vulnerability. This pattern has led several authors to argue in favor of imposing capital controls to avoid the excesses in financial markets that can lead to distress and crisis.

This paper was originally published in *Money Affairs* 12(1): 1-69, 1999, and *Monetaria* 23(1): 85-124, 2000 (in Spanish). Reprinted with permission. At the time of writing, both authors were affiliated with the Central Bank of Chile.

This paper presents the results of an exploratory study aimed at better understanding the links between capital account liberalization and developments in domestic financial markets. Subsequent research should address many issues that arise from the study but are not discussed here. The authors are grateful to Eduardo Fernández-Arias for comments on a previous draft and to Ricardo Mayer for his efficient assistance at an early stage of the research. All remaining errors are our own. The interpretations and conclusions expressed in this chapter are entirely those of the authors and do not necessarily represent the views of the International Monetary Fund.

Banking, Financial Integration, and International Crises, edited by Leonardo Hernández and Klaus Schmidt-Hebbel, Santiago, Chile. ©2002 Central Bank of Chile.

This paper studies the pattern just described across a relatively large sample of country episodes during the 1970s, 1980s, and 1990s, in both developed and developing economies, highlighting those aspects that appear to be most critical from the point of view of policymakers. The aim of the paper is to determine the importance of private capital inflows in leading to situations of financial distress like those occurring in Southeast Asia in recent years. The main motivation of the paper is the contrasting experience of Chile during the 1970s and the 1990s. Whereas the earlier episode of large (private) capital inflows in Chile ended in a financial crisis and a deep recession in 1981-83, the experience during the 1990s led to sustained high economic growth for almost a decade.

Although financial crises can be due to many reasons and factors, we aim to show that private capital inflows have little to do with situations of financial distress. Consistent with the work of others (Gourinchas, Landerretche, and Valdés, 2001), the analysis in this paper suggests that financial fragility may be related more to developments in domestic financial markets than to those in the external accounts. Thus surges in capital inflows should be of concern for policymakers only to the extent that they finance an unsustainable lending boom, but the latter rather than the former should be the main concern of economic authorities in developing countries. The analysis in this paper shows that, although private inflows contribute to lending booms, it is unlikely that they are the source of instability that leads to financial distress and a credit crunch. Most likely the source of financial instability lies in weaknesses in the regulatory and supervisory framework and in the overall environment in which banks operate.

Therefore, given that the domestic banking sector amplifies economic fluctuations through the so-called credit channel, and that poorly regulated banks may lead to a significant increase in macrofinancial fragility, containing lending booms—while strengthening banking sector supervision and monitoring—emerges as the first policy option for policymakers interested in ameliorating the adverse effects of financial liberalization. Putting “sand in the wheels” of international finance may have a small effect on minimizing the risks associated with financial liberalization, but it should not constitute the main course of action for policymakers in developing countries.

The next section of the paper briefly summarizes the relevant literature and describes the mechanisms through which a surge in

private capital inflows can lead to—or may exacerbate—a lending boom, and how the latter can increase macrofinancial fragility, especially in countries with a weak financial sector. Section 2 presents the cross-country evidence that supports this process while, at the same time, seeking to unveil the role played by surges in capital inflows in situations of financial distress. Section 3 summarizes and concludes.

1. THE ROLE OF BANKS IN THE MACROECONOMY: THE CREDIT CHANNEL AND VULNERABILITY

1.1 Closed Economy

Financial intermediaries play a crucial role in economic development and growth by channeling savers' money to more efficient and productive uses. This task is most valuable when savers and potential investors are far apart, a likely situation when the household sector—as opposed to the corporate sector—is the main source of saving in an economy. Financial intermediaries perform the task of efficiently channeling funds by screening and selecting investment projects and transforming assets, usually from short-term deposits to long-term investments, but more generally from illiquid to liquid forms. The fact that banks overcome information asymmetry problems between lenders and borrowers, and facilitate the creation of liquidity, gives them a unique role in the economy. In particular, by facilitating the exchange of goods and services, financial intermediaries contribute to higher levels of aggregate output and growth (King and Levine, 1993; Levine, 1997). However, in performing this task these institutions become vulnerable, subject to runs on their deposits (Diamond, 1984; Ramakrishnan and Thakor, 1984; Diamond and Dybvig, 1983).

Extensive research has been devoted to the role of bank credit in the economy and its importance in propagating and amplifying business cycles; this research is directly linked to the operation of monetary policy (Bernanke, 1983; Bernanke and Blinder, 1988; Bernanke and Gertler, 1989, 1995). The role of the banking sector has attracted the attention of researchers because periods of sharp contraction in bank credit have always been accompanied by slow or negative economic growth. Similarly, periods of rapid expansion in bank credit

seem to go hand in hand with rapid economic growth. However, it has also been noted that these large swings in aggregate output do not appear consistent with the relatively small changes observed in interest rates or with the low estimates obtained for the interest rate elasticity of the different components of aggregate demand (Bernanke and Gertler, 1995). The last observation has led proponents of the credit channel of monetary transmission to argue that it is *bank credit*, and not just monetary balances (broad money) and the interest rate, that affects macroeconomic performance.¹

Two types of credit channel have been proposed, namely, the balance sheet channel and the bank lending channel. In both, bank credit works as an input in the economy's aggregate production function; that is, $Y = g(K; L; CR)$, where Y , K , L , and CR represent output, physical capital, labor, and credit, respectively. The balance sheet channel works because during an economic upturn many potential borrowers become more creditworthy as firms' cash flows rise and asset prices increase. Since bank credit is based on the borrowers achieving certain financial ratios (such as those measuring liquidity, interest coverage, and collateral), during the upturn more credit is made available, which, in turn, allows output to grow faster. In the bank lending channel some kind of market segmentation is assumed, in the sense that good substitutes for bank credit do not exist (bonds, commercial paper, and equities are poor substitutes for bank credit). Thus, additional bank credit allows small firms (those without direct access to capital markets) and households to invest and consume more, inducing faster economic growth. An intuitively simple example in which this type of credit channel operates is the case of a household financing the purchase of a home. Since it would be costly for the household to access the capital markets directly for such a purchase by issuing bonds or stocks, the development of the real estate sector is very often accompanied by the development of the mortgage market by banks. All in all, the credit channel provides a consistent explanation for the observed procyclical behavior of bank credit.

Extensive empirical research has also been undertaken toward understanding and describing the dynamic interactions between the financial and the real sectors and the potential buildup of fragility in the former (Kindleberger, 1978; Hubbard, 1991; Feldstein, 1991).

1. The interest rate mechanism is the one through which monetary policy works in the traditional macroeconomic literature.

The argument goes as follows. A positive development in the real sector that raises expectations about the future will increase firms' willingness to invest, inducing them to borrow more and causing an expansion in bank credit. The lending boom, in turn, enables market participants to increase their level of expenditure and (through the credit channel) accelerates economic growth. The faster economic growth reinforces the entire process by validating economic agents' expectations about the future. The state of euphoria triggered by the initial increase in spending also leads to an increase in asset prices and financial wealth, which further reinforces the process by increasing households' aggregate consumption. The increase in asset prices, in turn, raises collateral values and facilitates the granting of additional bank credit. Meanwhile the economy as a whole becomes more vulnerable to adverse shocks, both because of the increase in the indebtedness of firms and households, and because of the risk of a deflation in asset prices that would reduce borrowers' financial wealth—thereby affecting banks' financial health. Thus, if a negative shock leads economic agents to believe that current conditions are no longer sustainable, and they cut their spending on consumption and investment, economic growth will slow, firms and households will have difficulty servicing their debts, asset prices will plunge, and banks will encounter greater financial problems. All in all, credit booms are associated with the buildup of macrofinancial fragility through the increase in both asset prices and indebtedness.

In sum, not only is bank credit subject to boom-bust cycles during which macrofinancial fragility increases in the economy as a whole, but the banking sector amplifies the magnitude of this macroeconomic cycle (Calomiris, 1995; Calomiris and Gorton, 1991).

1.2 Open Economy

Despite the extensive literature documenting boom-bust cycles in bank lending and the associated fluctuations in economic activity, these issues have only recently been investigated in the context of an open capital account. Although still preliminary, in general the conclusions that emerge from this new literature appear to be straightforward. First, although the presence of foreign credit may result in larger cyclical fluctuations, the domestic banking sector is ultimately responsible for amplifying the magnitude of the macroeconomic cycle. Second, the domestic banking sector exacerbates vulnerabilities in emerging market economies.

For example, the work by Kaminsky and Reinhart (1996) and Hausmann and Gavin (1996) provides evidence that the boom-bust cycles in domestic bank credit, asset prices, and economic activity resemble and precede those in the external accounts (in particular, the current account deficit). This result suggests that, even in a more financially integrated economy, the domestic banking sector is still partly responsible for cyclical swings. Along the same line, Sachs, Tornell, and Velasco (1996) conclude that the impact of the Mexican peso crisis of December 1994 on other emerging market economies—the “tequila effect”—can be partly explained by the level of private sector debt held by the countries’ banking systems. In other words, those developing countries in which bank credit was growing more rapidly during the most recent surge in private flows were more vulnerable to the shocks associated with the Mexican crisis.

The results above have also been validated on theoretical grounds. For example, Goldfajn and Valdés (1997) show that, in a financially integrated economy, the existence of a domestic banking system exacerbates capital movements from abroad, therefore amplifying the effects of external shocks. This occurs because the domestic banking system transforms illiquid assets into liquid assets, and this in turn motivates foreign investors to lend more to the recipient country. This provision of liquidity, however, makes banks vulnerable to runs, as in the seminal model of Diamond and Dybvig (1983). Similarly, in analyzing the causes of the East Asia crisis, Krugman (1998) argues that, in the presence of a safety net—in the form of an implicit or explicit deposit insurance—that is perceived to protect foreign lenders, the domestic banking system will overborrow from abroad and overlend domestically. In addition, banks will exacerbate inflation in asset prices and amplify the economic cycle.

Finally, Edwards and Végh (1997) use Granger causality tests to study the relationship among international liquidity, bank credit, and aggregate output. Within a theoretical framework fully consistent with the bank lending channel described above, these authors look at the cases of Chile during 1979-93 and Mexico during 1986-95. Using a two-step procedure, Edwards and Végh provide evidence consistent with the credit channel hypothesis in an open capital account context. In particular, they cannot reject the null hypothesis that the conditions in credit markets—measured by interest rates and spreads—Granger-cause aggregate output, while the reverse causality is rejected in both countries. Movements in bank deposits and credit are also consistent with the credit channel hypothesis in both countries.

1.3 Financial Integration

The surge in private capital inflows that usually accompanies the increase in financial integration is explained, in part, by the implementation in the recipient countries of different economic reforms that improve the country's economic prospects.² Thus the increase in private capital inflows usually occurs along with the rise of optimistic expectations about the future. At the same time, the surge in flows provides the additional resources needed to finance an increase in aggregate investment. These two elements together provide the necessary ingredients to trigger a lending boom, especially if the external resources are either directly or indirectly intermediated by the domestic banking industry.

Even if the surge in inflows is due to an exogenous increase in international liquidity, and not to the implementation of economic reforms in the recipient countries, the lower level of interest rates in world capital markets that accompanies such an increase in liquidity makes indebted countries more creditworthy. This effect on its own will trigger a surge in international borrowing and lending (Fernández-Arias, 1994).

Irrespective of the ultimate cause of the increase in international lending, as long as the surge in private inflows is not fully sterilized (which is almost an impossible task), a capital-recipient economy will experience an increase in liquidity, which facilitates a surge in bank credit and a lending boom. In this context, a banking industry operating under suboptimal conditions (in terms of poor incentives and inadequate supervision) may exacerbate the country's macroeconomic vulnerabilities and eventually lead to financial distress or a crisis. In particular, if an increasing flow of funds into a country is intermediated by an undercapitalized and poorly regulated banking sector that is too prone to risk taking—because of, for example, excessive deposit insurance as in Krugman's (1998) model—the economy is likely to consume and import too much, invest too little, and therefore become increasingly vulnerable to shocks. As illustrated by the events in recent years in East Asia, and in Latin America during the 1970s and 1980s (see De Gregorio and Guidotti, 1995), it is not only the amount of total lending that matters, but also the quality of the projects financed by the banking system.

2. These include, for instance, tax, fiscal, and trade reforms and financial liberalization and deregulation.

2. CAPITAL INFLOWS AND CREDIT BOOMS: COUNTRY EXPERIENCES

The experience of different countries, both developed and developing, that have become increasingly integrated with global financial markets shows that a lending boom usually accompanies a surge in private capital inflows (see World Bank, 1997; Asian Development Bank and World Bank, 1998). In this section we analyze the empirical regularities observed in countries experiencing surges in inflows and lending booms, and we try to underline those aspects that are of most concern for policymakers in developing countries seeking greater financial integration.³

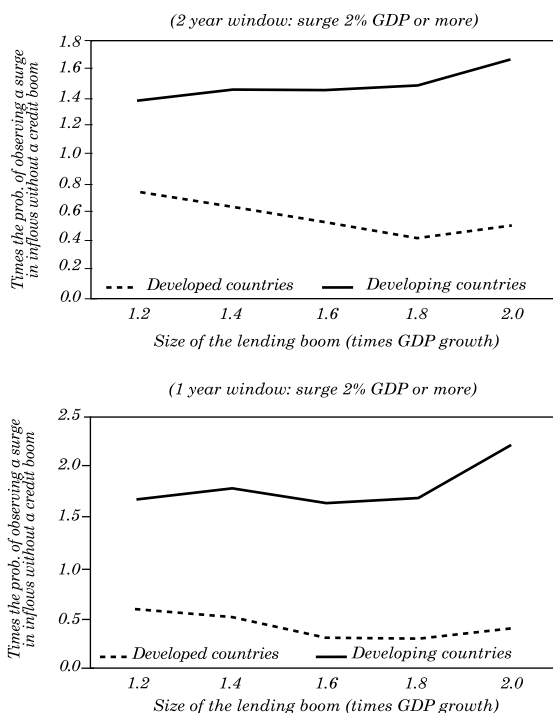
2.1 Credit Booms and Capital Inflows

To corroborate the hypothesis described above, we study whether years of rapid credit growth are preceded or accompanied by years in which private capital inflows rise. The sample comprises a relatively large group of both developed and developing countries for which data were available during 1970-95 (sixty countries in all, although not all countries have a complete data set). The countries are listed in table A5 in the appendix. For each country in every year we measure private capital inflows as a share of GDP (ki) and the growth rate of bank credit to the private sector ($\Delta\%bcps$). Private capital inflows are measured as the current account deficit plus the increase in international reserves, minus debt flows from official creditors (mainly multilateral institutions). All data are from the IMF/World Bank databases. A year of rapid credit growth is defined as one that satisfies the following conditions: growth in bank credit to the private sector is at least X times the growth of GDP, where X is a predetermined value greater than 1, and this rapid growth continues for at least another year (that is, year t qualifies if $\Delta\%bcps \geq X\Delta\%gdp$ for years t and $t + 1$). Next we construct the following test. For a specific country we select all the years that satisfy one or both of the following criteria:

- There is a lending boom as defined above (that is, rapid credit growth in two consecutive years), and
- Private capital inflows (as a share of GDP) are positive and increase in that year or the year before (that is, $\Delta ki_t > 0$, or $\Delta ki_{t-1} > 0$,

3. The results presented in this section are preliminary.

Figure 1. Probability of a Credit Boom Accompanying or Following a Surge in Capital Inflows in Developed and Developing Countries



Source: Authors' calculations.

but excluding those years when capital outflows are decreasing). The increase in capital inflows has to be at least $Z\%$ of GDP.

For each country all the years satisfying both criteria are counted as successes, and all the years satisfying the first but not the second are counted as failures.⁴ Tables A1A and A1B in the appendix present the results for different thresholds of both capital inflow increases and lending booms. Figure 1 summarizes the result (for different sizes of lending booms) for the case of a capital inflow

4. In this exercise each year counts as one episode. Thus, periods of rapid credit growth—and surges in capital inflows—that last for several years will (approximately) count for as many episodes as the number of years they last.

increase of at least 2 percent of GDP. The two panels compare the probability of having a surge in capital inflows that leads to a credit boom with that of having a surge in capital inflows that does not lead to a credit boom (the lines in the charts represent the ratio between these two probabilities).

The conclusions that emerge from tables A1A and A1B, and figure 1 are straightforward:

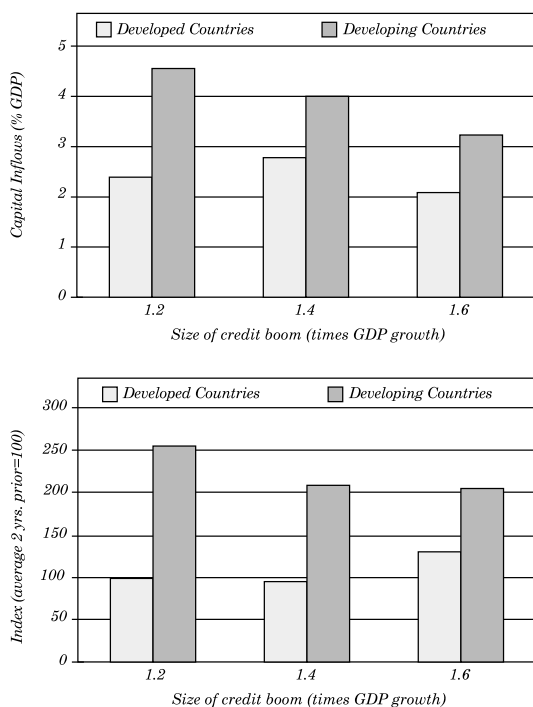
- The probability that a surge in capital inflows will lead to or be accompanied by a lending boom is always higher in developing than in developed countries.⁵
- In the case of developing countries, the probability that a surge in capital inflows will accompany a credit boom is always higher than the probability of observing an increase in inflows without a boom in bank credit. Furthermore, for large capital inflows the probability of having a credit boom is between 1½ and 2 times the probability of not having one.
- For developed countries it is equally likely (and sometimes more likely) to observe a surge in capital inflows *without* a boom in bank credit as to observe a surge in inflows that accompanies a credit boom.

A further conclusion consistent with these emerges when considering each group of consecutive years during which bank credit grows more than X times GDP as a single episode—that is, when different years do *not* count as separate episodes.⁶ Table A2 in the appendix shows the size of capital inflows as a share of GDP in both developed and developing countries, during periods of credit booms and in the two years preceding them. Two conclusions emerge.⁷ First, private capital inflows tend to be larger during credit boom episodes in developing than in developed countries. Second, private capital inflows tend to increase during credit boom periods in developing countries—sometimes they double compared with the years preceding the credit boom. As shown in figure 2, the same is not true for developed countries.

5. Note from tables A1A and A1B that the probability of a surge in capital inflows occurring one year before or simultaneously with a lending boom is *always higher* than the probability of a surge in inflows occurring simultaneously with a lending boom. This result suggests that capital inflows tend to precede lending booms.

6. See footnote 4.

7. We neglect in the analysis those cases where the number of episodes is small (cases of large lending booms in developed countries), considering that they are most likely not representative of the actual mean of the distribution.

Figure 2. Size of Capital Inflows during Credit Booms

Source: IMF and World Bank databases.

In sum, the evidence suggests that private capital inflows play a more important role in credit booms in developing than in developed countries. Alternatively, developing countries are more likely to enter a credit boom cycle triggered by a surge in private capital inflows than are developed countries.

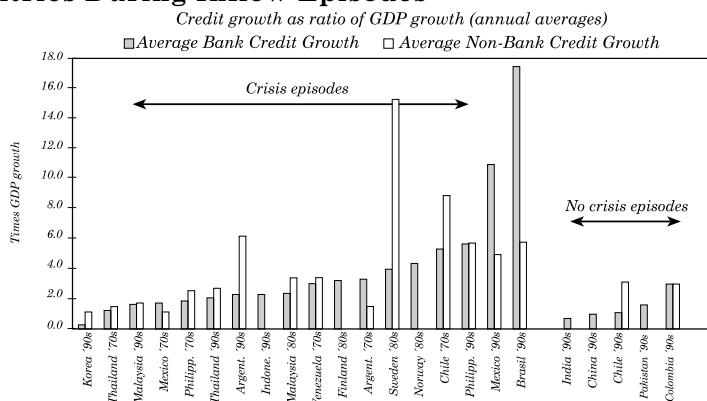
2.2 Capital Inflows, Credit Booms, and Financial Fragility

As for any other industry, periods of rapid (credit) growth may be dangerous for banking. Because of shortages of some important inputs, periods of rapid credit growth tend to create strains in bank staff and management. In particular, because of the limited response in the short run of the supply of adequately trained staff, banks have

limited capacity to screen and select loan applications. Therefore, during a period of rapid credit growth, the quality of banks' portfolios tends to deteriorate. Thus it has been argued that, in order to preserve the quality of banks' portfolios and achieve sustainable growth, as a rough benchmark credit growth should closely follow output growth in economies with mature financial markets. It can be between 1.5 and 2.0 times output growth in developing economies with a low degree of financial deepening. In other words, "... very high loan growth taxes the internal capabilities (to monitor loan portfolios and ensure stable asset quality) and the managerial skills of banks" (Bank for International Settlements, 1997).

Figure 3 shows average annual growth in bank and nonbank credit to the private sector, as a multiple of average output growth, during capital inflow periods for a sample of twenty-three episodes in both developed and developing countries.⁸ As argued above, in most episodes where growth in bank and nonbank lending exceeded the benchmark of around 1.5 to 2.0 times GDP growth, the episode ended in a financial crisis (although its severity varied from country to country).

Figure 3. Growth of Bank and Nonbank Credit in Selected Countries During Inflow Episodes



Source: International Monetary Fund, *International Financial Statistic*; World Bank (1997); Asian Development Bank and World Bank (1998). Inflow periods are defined as in the last two sources.

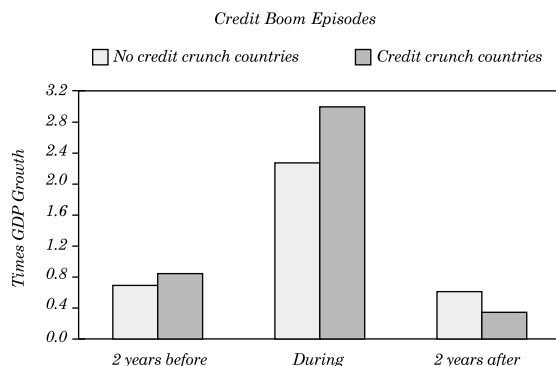
8. The only case among those in the sample in which capital inflows were negligible was Sweden (where they were less than 1 percent of GDP). In all other cases the inflows were 2 percent of GDP or higher (in many cases significantly higher). Inflow periods are defined as in the sources.

A similar conclusion emerges when one compares the size of the lending booms, within the same sample of sixty countries above, in those episodes that ended in a credit crunch and those that did not. For this we use the broadest definition of lending boom possible: we define as lending booms all those periods where bank credit to the private sector grew at least 1.2 times as fast as GDP. In the resulting sample of 133 lending boom episodes, we identified all those that were followed by a credit crunch, defined as a *decrease* in bank lending to the private sector of 4 percent of GDP or more. The results, shown in figure 4, show that growth in bank credit was faster, both during the credit boom and before it, in countries that subsequently suffered a credit crunch than in those that did not.

In sum, figures 3 and 4 and the analysis above suggest that periods of large capital inflows and rapid credit growth very often will lead to periods of financial distress or even crisis. This statement, however, needs to be qualified in at least two respects.

First, capital inflows and rapid growth in bank and/or nonbank credit may increase economic vulnerability but are not always the ultimate reason why a financial crisis occurs. Financial crises are usually caused by exogenous shocks in the real sector, with the financial sector amplifying its effects on the rest of the economy. Also, in some cases, like that of Korea during the 1990s, financial crises occurred even though lending by banks and nonbanks did not show significant growth in the years preceding the crisis. (In the case of Korea the direct external borrowing of the corporate sector is pivotal

Figure 4. Size of Credit Booms in Countries That Suffered and Countries That Avoided a Credit Crunch



Source: IMF and World Bank databases.

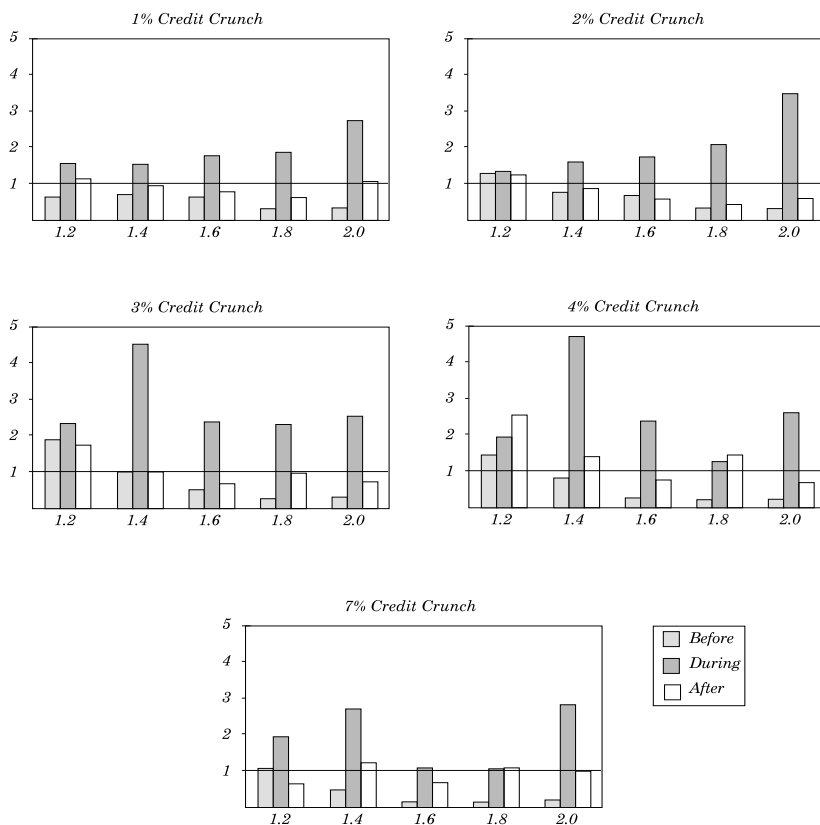
in explaining the extent of the crisis. For a review of the determinants of financial crises see Caprio and Klingebiel, 1997, and Demirgüç-Kunt and Detragiache, 1997.)

Second, and more important, the episodes in which a lending boom is followed by a credit crunch are *not* (on average) those that see the largest capital inflows. On the contrary, countries that do not experience credit crunches are systematically those that receive the largest capital inflows during lending boom periods. This conclusion is drawn from table A3 in the appendix, which shows private capital inflows (as a share of GDP) for two groups of countries: those that suffered a credit crunch after a lending boom, and those that did not. The analysis is done for several sizes of lending booms and credit crunches. Private inflows are shown (averaged) for the two years prior to, for the lending boom period itself, and for the two years after it. A credit crunch is defined as a decrease in financial depth, that is, a fall in bank lending to the private sector as a ratio to GDP. The same conclusion is illustrated in figure 5, which shows the ratio of capital inflows (as a share of GDP) received by the non-credit crunch countries to those received by credit crunch countries. For all sizes of credit crunch, the non-credit crunch countries receive about twice as large an inflow of capital (relative to GDP) during lending boom periods as do credit crunch countries.

Furthermore, credit crunches are *not* (on average) caused by capital *outflows*. Indeed, although private capital inflows are generally smaller during credit boom periods than in the preceding two years for countries suffering a credit crunch, they remain positive during lending boom episodes and afterward (at levels about or above 1.5 percent of GDP). This is true for credit crunches of all sizes (see table A3). Also, it is worth noting that private capital inflows *increase* in the years leading to a lending boom for non-credit crunch countries and the opposite is true for credit crunch countries. This result suggests that foreign private investors start decreasing their exposure to credit crunch countries well before financial difficulties arise.

Overall, private capital flows do not seem to be the reason why countries enter into situations of financial distress. Moreover, based on the evidence above, it could be argued that private capital tends to flow toward countries with stronger financial sectors (among other economic fundamentals—see Hernández and Rudolph, 1997). It would be hard to argue, therefore, that private capital flows cause financial distress because massive inflows occur during lending booms (exacerbating financial fragility) or because large capital outflows *cause* credit crunches.

Figure 5. Capital Inflows in Countries That Suffered and Countries That Avoided a Credit Crunch^a



Source: Authors' calculations.

a. The bars show the capital inflows (as a share of GDP) received by non-credit crunch countries, divided by the capital inflows (as a share of GDP) received by credit crunch countries. The horizontal axis measures size of credit boom (times GDP growth).

2.3 Credit Booms and Financial Fragility

The extent to which rapid credit growth exacerbates macrofinancial fragility depends critically on the strength of the financial sector. The latter, in turn, may be partially determined by whether financial markets are “mature” or not, and by the quality of the regulatory and

supervisory framework in which banks operate. Thus countries with strong financial sectors can experience rapid credit growth for some time without increasing macrofinancial vulnerability. This may have been the case in Chile and Colombia during the 1990s (although the growth in financial sector lending to the private sector in these two countries does not compare to that of, say, the Philippines during the same period). In fact, as shown in figure 6, the two countries were rated, at the onset of the financial crisis in Asia, as having the strongest banking sectors in Latin America—in Chile's case as strong as those in Hong Kong and in some developed countries.

However, the strength of the financial system also depends on the maturity of the market. Using the same sample of sixty countries, we calculated financial depth—measured by total bank credit to the private sector as a ratio to GDP—for all countries prior to a lending boom episode, and we grouped the episodes by whether they ended in a credit crunch or not. The results are presented in table A4 in the appendix. Interpreting financial depth as an indicator of market maturity, the conclusion that emerges from this analysis is that less mature (shallower) markets are more prone to suffer a credit crunch after a lending boom, as figure 7 also shows.⁹

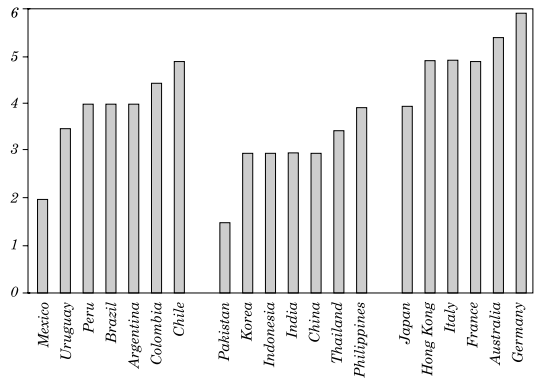
2.4 Credit Booms and Macrofinancial Vulnerability

As the analysis above suggests, it is expected that, *ceteris paribus*, countries where the banking sector intermediates proportionately larger inflows will become more vulnerable to macroeconomic shocks. Vulnerability in this context means the likelihood that a shock will negatively affect market sentiment toward a country, triggering a portfolio shift toward safer (foreign) assets, a reduction in aggregate credit, asset price deflation, and eventually a balance of payments crisis. Nevertheless, a balance of payments crisis may not occur if prices adjust sufficiently, through a large devaluation or a significant fall in prices of stocks or other assets, but it is the ultimate reason why prices change.

There are three main channels through which the financial sector can exacerbate macrofinancial vulnerability in the presence of large capital inflows: by financing a consumption (as opposed to an investment) boom; by financing an investment boom in the “wrong”

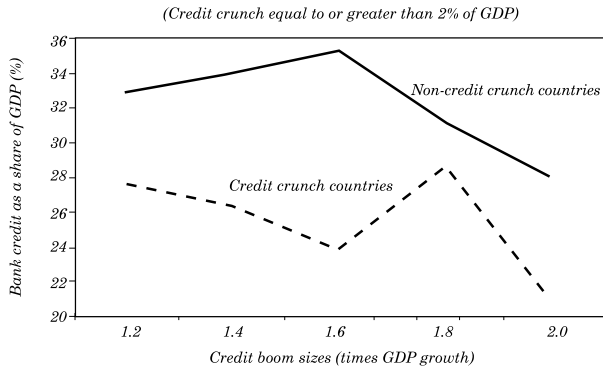
9. In reaching this conclusion we exclude all cases with a small sample, that is, all cases where the credit crunch was equal to or greater than 4 percent (see footnote 7). See table A4 in the appendix.

Figure 6. Ratings of Bank Financial Strength in Selected Countries



Source: Moody's Investor Service, June 1997.

Figure 7. Initial Financial Depth in Countries That Suffered and Countries That Avoided a Credit Crunch



Source: IMF and World Bank databases.

sectors (those that do not increase the repayment capacity of the economy); and by inducing (or enlarging) a bubble in asset prices. However, these channels are all interrelated. For example, when it finances a construction boom, the financial sector indirectly induces an increase in real estate prices. Similarly, when it lends for the purchase of stocks and other securities (margin lending), the financial sector helps to create and sustain a surge in stock prices, indirectly triggering a consumption boom.

Many pieces of empirical evidence support this chain of events, although they fall short of establishing causality in a rigorous manner. For our purposes, nevertheless, it is enough to show that lending booms tend to occur simultaneously with increases in aggregate consumption, investment in “wrong” sectors, or increases in asset prices, since all of these are symptoms of increased macrofinancial fragility. In other words, by containing a lending boom in a country with a poorly regulated banking sector, the authorities can ameliorate macrofinancial fragility, whatever the ultimate cause of the surge in lending—and irrespective of whether bank credit and capital inflows are exogenous or endogenous (whether they are caused, for example, by the implementation of economic reforms). In the rest of this paper we present some evidence that supports, albeit partially, this story. We cannot pursue a more rigorous approach because the necessary data are scant and difficult to obtain.

Consumption Booms

Empirical evidence suggests that, for a given amount of private capital inflows, countries experiencing a larger lending boom also tend to experience larger current account deficits, overconsumption, and underinvestment—all symptoms of greater vulnerability (World Bank, 1997). Similarly, Montiel (1997) concludes from a sample of forty-eight consumption boom episodes that around 75 percent occur simultaneously with a lending boom. Most important, this percentage increases to 86 percent in the case of developing countries, which, as is well established (figure 6), have more fragile and more poorly regulated and supervised banking systems (World Bank, 1997).

Consistent with these results, Butelmann and Landerretche (1998) show that consumption credit behaves pro-cyclically with respect to output, contradicting the permanent income hypothesis,¹⁰ and supporting the view that households are credit constrained when they attempt to consume more. In particular, using a Hodrick-Prescott filter to identify the cyclical components of aggregate output and consumption credit, Butelmann and Landerretche show that these two series are positively correlated in six out of the seven countries included in their sample. Table 1 and figure 8 show their results.

10. According to this hypothesis, consumption credit should behave countercyclically, to help economic agents smooth their consumption over time.

Table 1. Correlations between Cyclical Components of Aggregate Output and Consumption Credit in Selected Countries

<i>Country</i>	<i>Correlation coefficient</i>
Germany	+0.54
Canada	+0.73
Chile	+0.49
Italy	-0.17
Japan	+0.63
United Kingdom	+0.53
United States	+0.63

Source: Butelmann and Landerretche (1998).

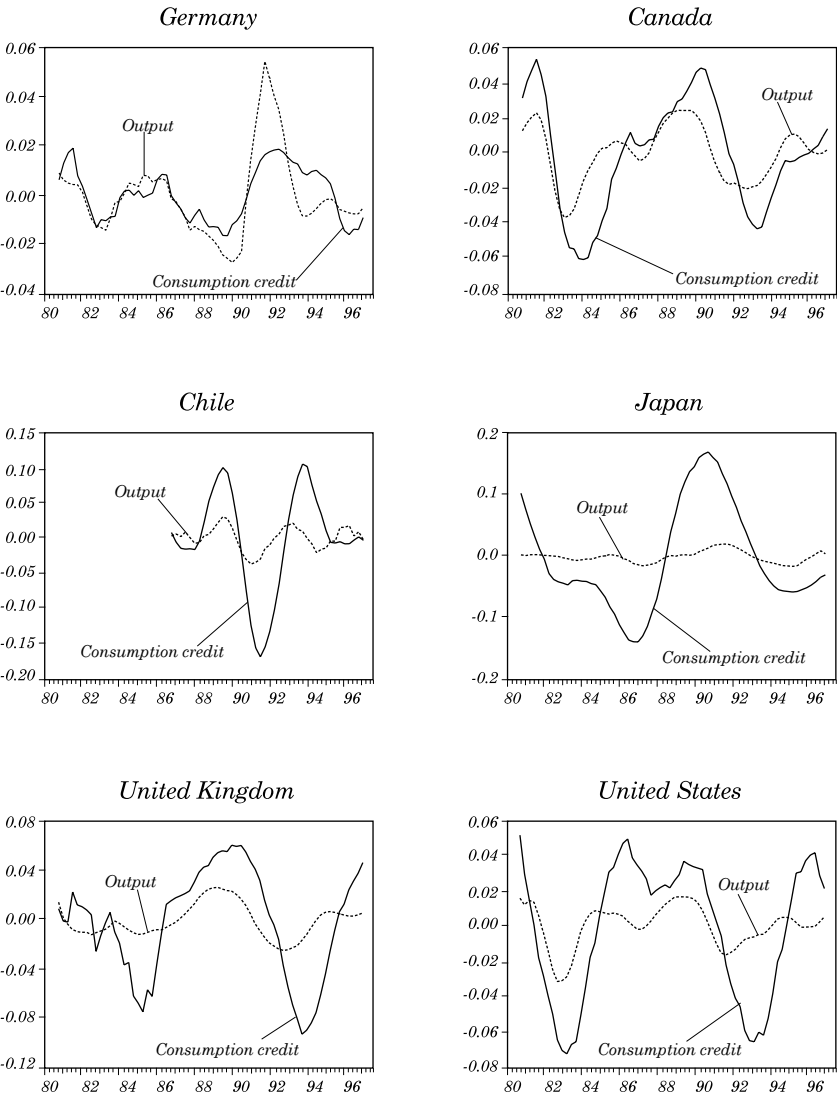
Real Estate Booms

As argued earlier, another way in which poor financial intermediation may exacerbate macroeconomic vulnerability in the context of increased financial integration is by overlending for investment in the “wrong” sectors. This has been vividly illustrated by the real estate booms experienced in most East Asian countries in the 1990s, a development that has two negative implications for the economy. First, it allows the expansion of a sector that is labor intensive, therefore adding extra pressure for a real appreciation of the currency and reducing the competitiveness and debt repayment capacity of the economy. Second, it exposes the banking sector to large losses due to fluctuations in real estate prices,¹¹ thereby jeopardizing the continuity of normal flows of credit to support other economic activities in the future.

Regarding the first of these implications, systematic evidence is scant. However, because of the high costs involved in issuing bonds or equity, it is possible to argue that homebuyers in most countries have very limited access to sources of funds other than bank loans. Therefore, in a manner similar to the case of consumption credit discussed above, the real estate business is very likely to depend on bank credit for its growth. In an attempt to validate this point—the credit channel hypothesis—we ran a regression, using high-frequency (monthly) data, of new investment in construction in the Philippines

11. Given the nature of the real estate business, assets are typically used as collateral for bank loans.

Figure 8. Aggregate Output and Consumption Credit in Selected Countries (Cyclical Component)



Source: Butelmann and Landerretche (1998).

(measured in constant 1990 Philippine pesos) on two lags of private capital inflows, four lags of new bank credit to the private sector, and four lags of the increase in the money supply (M1). Both credit and money are expressed in changes, whereas capital inflows are measured in absolute value.

The results, shown in table 2, show that the coefficients on money supply (M1) changes alternate sign more often than do those on changes in bank credit. Most important, the test results for the null hypothesis that the sum of all the coefficients associated with one particular variable is zero (the Wald test) indicate that this hypothesis is rejected at standard confidence levels in the case of credit, but cannot be rejected in the case of the monetary aggregates. Moreover, when all the variables are put in the same regression, the sum

Table 2. Relationship of New Construction Investment to Capital Inflows, Bank Credit, and Money Supply Growth in the Philippines^a

Independent variable	No. of lags	1985.8 – 1996.1			1990.12 – 1996.1		
		(1)	(2)	(3)	(1)	(2)	(3)
Capital flows	1	0.016	0.007	0.014	0.026	0.010	0.025
	2	0.001	0.006	0.011	-0.004	-0.004	0.006
Change in new bank credit to private sector	1	0.035	...	0.021	0.091*	...	0.032
	2	0.045*	...	0.057**	0.057	...	0.0142**
	3	0.014	...	0.022	0.064	...	0.057
	4	0.017	...	0.009	0.041	...	-0.011
Change in money supply (M1)	1	...	0.023*	0.014	...	0.059**	0.031
	2	...	-0.008	-0.016	...	-0.004	-0.049
	3	...	0.007	0.011	...	0.036	0.032
	4	...	0.012	0.015	...	0.031	0.040
Lagged dependent variable (AR)	1	0.275**	0.350**	0.296**	0.085	0.245	0.144
	2	0.339**	0.382**	0.013**	0.161	0.290	0.147
Summary statistic							
Adjusted R^2		0.343	0.354	0.351	0.111	0.149	0.153
Wald test for sum of coefficients on change in new bank credit		3.96**	...	2.94*	6.82**	...	4.32**
Wald test for sum of coefficients on change in money supply		...	0.99	0.45	...	2.02	0.03

Source: Authors' calculations.

a. The dependent variable is new investment in construction in the Philippines (measured in constant 1990 Philippine pesos). * and ** denote statistical significance at the 5 percent and the 10 percent level, respectively.

of the coefficients for changes in bank credit does not lose its statistical significance.¹²

Also, available information shows that a construction boom occurred in several of the East Asian crisis economies. But this phenomenon has also occurred elsewhere. As is well known, it played a very important role in the crises of Japan during the early 1990s and in that of Chile in the early 1980s. Figure 9 shows the construction booms experienced by a few East Asian economies in recent years, as well as that in Chile in the years surrounding the 1982-83 crisis. All these countries had a surge in capital inflows and a lending boom during those years.

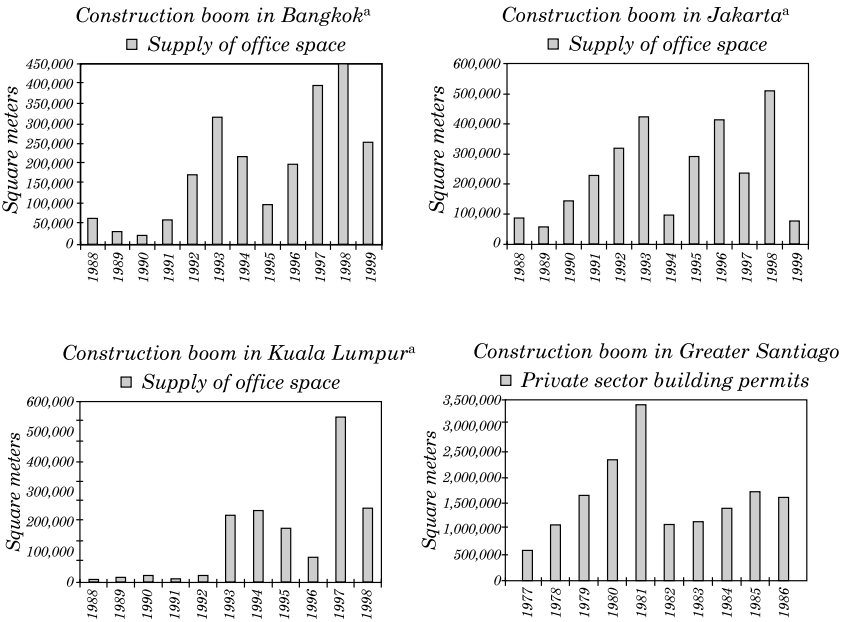
Finally, many case studies provide evidence regarding the second implication above, namely, that during construction booms the banking sector becomes more exposed to the construction business, therefore increasing the risk of suffering large losses should real estate prices fluctuate. Indeed, in addition to the recent experiences in Asia (including, as mentioned above, Japan and several emerging market economies), real estate booms occurred in the United States before the financial crisis of the early 1980s, in the Nordic countries during the late 1980s and early 1990s (after domestic financial deregulation got under way there), and in Chile during the first capital inflows episode in the late 1970s. In all these cases, as well as in Malaysia during the 1980s and Mexico during the 1990s, the banking sector became highly exposed to the construction business. This is shown in figure 10 for several countries for which data were available (data for the non-Asian countries refer to the first year of their banking crisis, for consistency with the Asian country episodes shown in the figure).

Asset Price Bubbles

Capital inflows and lending booms may also exacerbate economic vulnerability by inducing an increase in asset prices. This is a common outcome in most country episodes in which domestic and external

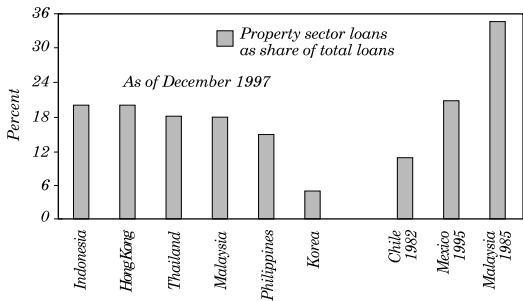
12. In trying to explain the high sensitivity of housing expenditure in the United States to small changes in interest rates, Bernanke and Gertler (1995) use Boldin's (1994) "mortgage burden" measure—the ratio of mortgages payments to income for new homebuyers—and show that it is highly correlated with the federal funds rate. If one believes in Bernanke and Gertler's balance sheet transmission mechanism of monetary shocks, their evidence can be interpreted as indirectly giving full support to the argument above, that is, that banks can cause overinvestment in real estate when interest rates fall.

Figure 9. Construction Booms in East Asia in the 1990s and Chile in the 1980s



Sources: Data for Asian countries are from Jones Lang Wootton (1998). Data for Chile are from Central Bank of Chile (1989).

Figure 10. Exposure of the Banking Sector to the Property Sector in Selected Countries^a

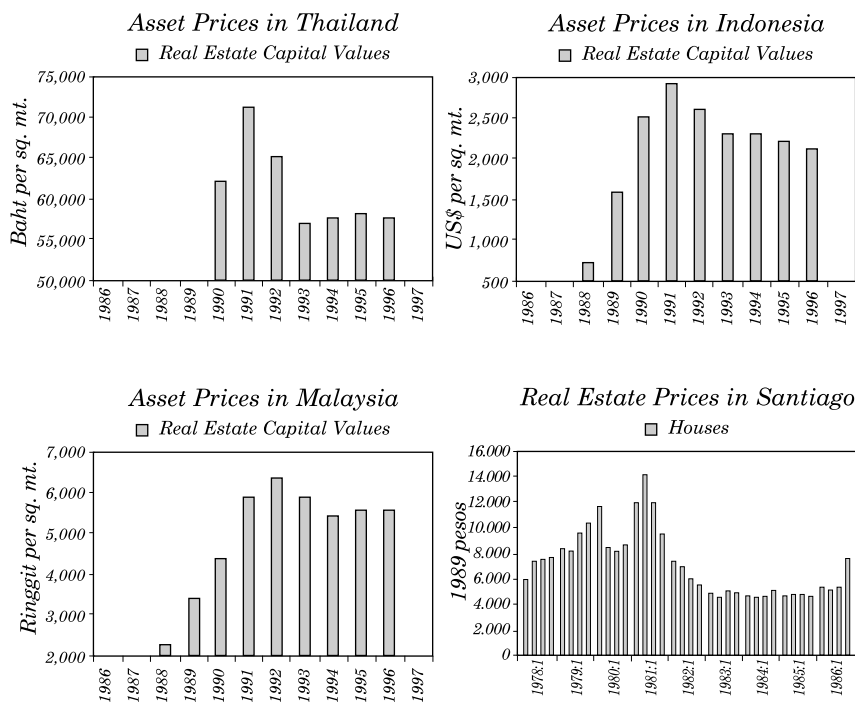


Sources: Goldman Sachs (1997), and country reports.

a. Data for Chile comprise banks and financial companies.

financial sector liberalization has occurred, and its most clear manifestation is through the prices of stocks and real estate. The rise in asset prices exacerbates vulnerability because it increases financial wealth, thereby raising households' indebtedness and consumption. Indeed, households increase their borrowing by using their assets as collateral for new loans (which, in turn, reinforces the lending boom). If the surge in prices proves unsustainable, which is also a common outcome (see figure 11), the economy will need to adjust to a lower level of aggregate spending, and losses—usually very large—will be realized. Most important, banks' nonperforming assets may rise if households start defaulting on their debts, and in many cases the value of assets used as collateral will be insufficient to cover the banks' losses. This applies to loans granted for the purchase of real assets (real estate lending)

Figure 11. Real Estate Prices in Asia in the 1990s and Chile in the 1980s



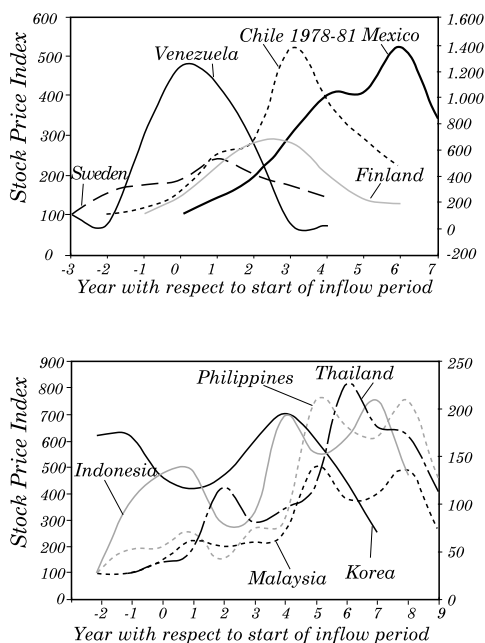
Sources: Data for Asian countries are from Jones Lang Wootton (1998). Data for Chile are from Morandé and Soto (1992).

and financial assets (margin lending). In sum, the plunge in asset prices leaves banks in a weaker financial situation and may even lead to crisis.

A well-documented recent case where this occurred is that of Japan: real estate prices in Tokyo grew by a factor of four between 1985 and 1991, only to plunge and return to their original values five years later. A similar pattern was observed in the case of Chile during the early 1980s, and more recently in some of the crisis countries in Asia. Thus, preliminary evidence shows that real estate prices reached their peaks in 1991-92 in Indonesia, Malaysia, and Thailand and fell thereafter, especially in Thailand (figure 11).

Whereas data on real estate prices are scarce and difficult to obtain, stock prices are more widely available. Figure 12 shows that

Figure 12. Stock Prices During Periods of Capital Inflows in Selected Countries in the 1980s and 1990s^a



Source: IMF and World Bank databases.

a. Inflow periods are defined as in World Bank (1997) and Asian Development Bank and World Bank (1998). Some indices are shown on the right-hand-side axis.

surges in stock prices have also proved unsustainable and that, in general, significant falls in stock prices (and wealth losses) have occurred a few years after a surge in capital inflows (and lending booms) began.

3. CONCLUSIONS

This paper provides evidence supporting the idea that surges in capital inflows, which usually follow the implementation of reforms that improve economic prospects in the recipient countries, tend to finance a lending boom. Although the lending boom by banks (and by nonbank financial institutions) may occur without a surge in foreign inflows, mainly because of financial reforms that liberalize domestic financial markets, the most common case among developing countries may be one in which surges in capital inflows and lending booms occur simultaneously. This is so because the opening of the capital account usually accompanies the implementation of other economic reforms, which in turn make countries more attractive to foreign investors.

Since banks in developing countries tend to be poorly monitored and supervised, and their banking sectors are generally weaker than those in more advanced economies, a lending boom often exacerbates financial vulnerabilities and leads to banks taking excessive risks. This often takes the form of overlending for consumption purposes, a consumption boom, underinvestment in the tradable goods sector, overlending to real estate developers, and asset price bubbles in real estate and financial assets, all of which add to macrofinancial fragility. This has been vividly illustrated recently by the East Asian economies but has also been the case in many other countries in the past, such as Chile and other Latin American countries during the early 1980s. Most important, all these developments make the economy more vulnerable to a significant slowdown (or a recession) if a negative shock occurs in the real sector (for example, an external shock in the form of a decline in the terms of trade or the depreciation of a trading partner's currency). Since the banking sector amplifies real shocks through the credit channel, the loss in aggregate output and potential growth in the case of developing countries may be quite significant.

Overall, it appears that periods of rapid growth in credit (granted either by banks or by nonbank financial institutions) should be avoided,

or at least watched closely by the economic authorities, in emerging market economies, especially when the supervisory and regulatory framework is inefficient and outdated. However, from the analysis of the sample of countries used in this paper, it appears that surges in capital inflows play less of a role in credit boom episodes that prove (ex post) to be unsustainable than in those that do not end up in a credit crunch. Thus, the buildup of financial fragility seems to be related more to domestic factors than to surges in inflows of foreign capital.

This result is consistent with the view that periods of large capital inflows may be less of a problem in countries with more mature financial markets, or where banking supervision is more adequate and market discipline stronger. This may be the case in many developed countries and in some developing countries (such as Chile during the 1990s) where the banking regulatory and supervisory framework has been recently updated and follows international standards closely. However, policymakers in developing countries should focus more on strengthening the domestic financial system than on regulating international capital movements.

APPENDIX

Table A1A. Probability of a Lending Boom Occurring with an Increase in Capital Inflows, Contemporaneously or Starting the Year Before

Percent

<i>Countries</i>	<i>Size of lending boom (ratio to GDP growth)</i>					
	<i>No boom^a</i>	<i>1.2</i>	<i>1.4</i>	<i>1.6</i>	<i>1.8</i>	<i>2.0</i>
<i>Increase in capital inflows ≥ 0.5 percent of GDP</i>						
Developed	47.0	52.9	52.4	51.8	48.0	51.4
Developing	50.8	59.8	59.5	59.1	58.1	63.2
<i>Increase in capital inflows ≥ 1 percent of GDP</i>						
Developed	41.0	44.4	42.1	38.8	34.0	35.1
Developing	45.8	54.9	55.7	54.8	53.2	60.5
<i>Increase in capital inflows ≥ 2 percent of GDP</i>						
Developed	37.3	27.6	24.1	20.0	16.0	18.9
Developing	34.6	48.2	50.6	50.5	51.6	57.9

Source: Authors' calculations.

a. Ratio of lending boom to GDP growth is 1 or less.

Table A1B. Probability of a Lending Boom Occurring Contemporaneously with an Increase in Capital Inflows

Percent

<i>Countries</i>	<i>Size of lending boom (ratio to GDP growth)</i>					
	<i>No boom^a</i>	<i>1.2</i>	<i>1.4</i>	<i>1.6</i>	<i>1.8</i>	<i>2.0</i>
<i>Increase in capital inflows ≥ 0.5 percent of GDP</i>						
Developed	32.8	32.9	34.5	32.9	34.0	32.4
Developing	29.6	42.0	43.0	40.9	40.3	44.7
<i>Increase in capital inflows ≥ 1 percent of GDP</i>						
Developed	28.4	25.8	26.2	22.4	26.0	27.0
Developing	25.1	38.0	39.9	36.6	35.5	44.7
<i>Increase in capital inflows ≥ 2 percent of GDP</i>						
Developed	25.4	15.1	13.1	8.2	8.0	10.8
Developing	19.0	32.1	34.2	31.2	32.3	42.1

Source: Authors' calculations.

a. Ratio of lending boom to GDP growth is 1 or less.

Table A2. Size of Capital Inflows during and before Credit Booms

Size of credit boom (times GDP growth)	Developed countries		Developing countries		Ratio of B to A
	Percent of GDP (A)	N	Percent of GDP (B)	N	
During credit booms					
1.2	2.4	48	4.6	60	1.9
1.4	2.8	42	4.0	54	1.4
1.6	2.1	28	3.3	43	1.6
1.8	3.2	20	2.5	34	0.8
2.0	3.8	15	2.7	26	0.7
					Average: 1.3
During 2 years preceding credit booms					
1.2	2.4	48	1.8	60	0.8
1.4	2.9	42	1.9	54	0.7
1.6	1.6	28	1.6	43	1.0
1.8	1.7	20	3.1	34	1.8
2.0	1.1	15	2.8	26	2.5
					Average: 1.4

Source: Authors' calculations.

Table A3. Capital Inflows in Credit Crunch and Non-Credit Crunch Countries before, during, and after Credit Booms

Percent of GDP

Size of credit boom (times GDP growth)	Non-credit crunch countries			Credit crunch countries		
	Before	During	After	Before	During	After
<i>Credit crunch ≥ 1 percent of GDP</i>						
1.2	1.6	4.4	1.5	2.6	2.8	1.3
1.4	2.0	4.0	2.3	2.9	2.6	2.4
1.6	1.3	3.2	1.3	2.0	1.8	1.6
1.8	1.7	3.2	1.7	4.8	1.7	2.6
2.0	1.5	3.6	1.1	4.1	1.3	1.0
Average	1.6	3.7	1.6	3.3	2.0	1.8
<i>Credit crunch ≥ 2 percent of GDP</i>						
1.2	2.2	4.0	1.5	1.7	3.0	1.2
1.4	2.1	3.9	2.2	2.8	2.4	2.5
1.6	1.4	3.2	1.1	2.0	1.8	1.9
1.8	1.7	3.2	1.4	5.3	1.5	3.3
2.0	1.5	3.6	0.9	4.5	1.0	1.5
Average	1.8	3.6	1.4	3.3	1.9	2.1
<i>Credit crunch ≥ 3 percent of GDP</i>						
1.2	2.3	4.3	1.6	1.2	1.8	0.9
1.4	2.3	4.2	2.3	2.3	0.9	2.3
1.6	1.3	3.2	1.3	2.6	1.3	1.9
1.8	1.8	3.1	2.1	6.4	1.3	2.1
2.0	1.6	3.4	1.0	5.2	1.3	1.3
Average	1.9	3.6	1.7	3.5	1.3	1.7
<i>Credit crunch ≥ 4 percent of GDP</i>						
1.2	2.1	4.0	1.6	1.4	2.0	0.6
1.4	2.2	3.9	2.5	2.6	0.8	1.7
1.6	1.1	3.0	1.4	4.0	1.2	1.7
1.8	1.8	2.8	2.3	6.4	2.1	1.5
2.0	1.5	3.3	1.0	6.2	1.2	1.3
Average	1.7	3.4	1.8	4.1	1.5	1.4
<i>Credit crunch ≥ 7 percent of GDP</i>						
1.2	2.0	3.8	1.3	1.8	1.9	1.9
1.4	2.1	3.1	2.4	4.5	1.1	1.9
1.6	1.1	2.8	1.4	8.1	2.5	1.9
1.8	1.7	2.7	2.1	10.8	2.5	1.9
2.0	1.5	3.2	1.1	8.2	1.1	1.1
Average	1.7	3.1	1.7	6.7	1.8	1.7

Source: Authors' calculations.

Table A4. Initial Financial Deepening in Countries That Suffered and Countries That Avoided a Credit Crunch

<i>Size of credit boom (times GDP growth)</i>	<i>Non-credit crunch countries</i>		<i>Credit crunch countries</i>	
	<i>Mean</i>	<i>N</i>	<i>Mean</i>	<i>N</i>
<i>Credit crunch ≥ 1 percent of GDP</i>				
1.2	31.5	58	30.6	49
1.4	34.4	62	27.4	37
1.6	35.4	50	26.0	26
1.8	30.8	43	30.5	18
2.0	28.3	33	22.8	12
<i>Credit crunch ≥ 2 percent of GDP</i>				
1.2	32.9	70	27.6	37
1.4	34.1	69	26.4	30
1.6	35.4	54	24.0	22
1.8	31.3	47	28.7	14
2.0	28.2	36	21.2	9
<i>Credit crunch ≥ 3 percent of GDP</i>				
1.2	31.6	81	29.4	26
1.4	32.6	78	28.7	21
1.6	34.0	60	24.9	16
1.8	30.8	51	30.4	10
2.0	27.7	38	22.3	7
<i>Credit crunch ≥ 4 percent of GDP</i>				
1.2	31.0	93	30.9	14
1.4	31.7	87	32.4	12
1.6	32.7	66	27.9	10
1.8	30.2	53	34.1	8
2.0	27.3	39	23.6	6
<i>Credit crunch ≥ 7 percent of GDP</i>				
1.2	31.0	101	31.0	6
1.4	31.2	93	40.1	6
1.6	32.0	72	34.5	4
1.8	30.1	57	40.1	4
2.0	26.9	41	26.0	4

Source: Authors' calculations.

Table A5. Countries in the Full Sample

Developed countries (25)	Developing countries (35)
Australia	Argentina
Austria	Brazil
Belgium	Chile
Canada	Colombia
Cyprus	Costa Rica
Denmark	Dominican Rep.
Finland	Ecuador
France	Egypt, Arab Rep.
Germany	El Salvador
Greece	Guatemala
Iceland	Honduras
Ireland	India
Israel	Indonesia
Italy	Jamaica
Japan	Jordan
Netherlands	Kenya
New Zealand	Korea, Rep. of
Norway	Madagascar
Portugal	Malaysia
Singapore	Mauritius
Spain	Mexico
Sweden	Morocco
Switzerland	Pakistan
United Kingdom	Paraguay
United States	Philippines
	Poland
	South Africa
	Sri Lanka
	Syrian Arab Rep.
	Thailand
	Tunisia
	Uganda
	Uruguay
	Venezuela
	Zimbabwe

REFERENCES

- Asian Development Bank and World Bank. 1998. "Managing Global Financial Integration in Asia: Emerging Lessons and Prospective Challenges." Unpublished paper (March).
- Bank for International Settlements. 1997. *67th Annual Report*. Basle.
- Bernanke, B. 1983. "Nonmonetary Effects of the Financial Crisis in Propagation of the Great Depression." *American Economic Review* 73(3): 257-76.
- Bernanke, B., and A. Blinder. 1988. "Is it Money or Credit, or Both or Neither?" *American Economic Review Papers and Proceedings* (May): 435-39.
- Bernanke, B., and M. Gertler. 1989. "Agency Costs, Net Worth, and Business Fluctuations." *American Economic Review* 79(1): 14-31.
- . 1995. "Inside the Black Box: The Credit Channel of Monetary Policy Transmission." *Journal of Economic Perspectives* 9(4): 27-48.
- Boldin, M. 1994. "Econometric Analysis of the Recent Downturn in Housing: Was it a Credit Crunch?." Unpublished Paper. Federal Reserve Bank of New York.
- Butelmann, A., and O. Landerretche. 1998. "Evolución e Importancia del Crédito de Consumo en Chile." Unpublished Paper. Santiago: Central Bank of Chile (May).
- Calomiris, C. 1995. "Financial Fragility: Issues and Policy Implications." *Journal of Financial Services Research* 9(3-4): 241-57.
- Calomiris, C., and G. Gorton. 1991. "The Origins of Banking Panics: Models, Facts, and Bank Regulation." In *Financial Markets and Financial Crises*, edited by R. G. Hubbard. Chicago: University of Chicago Press.
- Caprio, G., and D. Klingebiel. 1997. "Bank Insolvency: Bad Luck, Bad Policy, or Bad Banking?" In *Annual World Bank Conference on Development Economics 1996*, edited by M. Bruno and B. Pleskovic. Washington: World Bank.
- Central Bank of Chile. 1989. *Indicadores económicos y sociales 1960-1988*. Santiago (November).
- De Gregorio, J., and P. Guidotti. 1995. "Financial Development and Economic Growth." *World Development* 23(3): 433-48.
- Demirgüç-Kunt, A., and E. Detragiache. 1997. "The Determinants of Banking Crises: Evidence from Developing and Developed

- Countries." IMF Working Paper 106. Washington: International Monetary Fund (September).
- Diamond, D. W. 1984. "Financial Intermediation and Delegated Monitoring." *Review of Economic Studies* 51(3): 393-414.
- Diamond, D. W., and P. H. Dybvig. 1983. "Bank Runs, Deposit Insurance, and Liquidity." *Journal of Political Economy* 91(3): 401-19.
- Edwards, S., and C. Végh. 1997. "Banks and Macroeconomic Disturbances under Predetermined Exchange Rates." NBER Working Paper 5977. Cambridge, Mass.: National Bureau of Economic Research (March).
- Feldstein, M., ed. 1991. *The Risk of Economic Crisis*. Chicago: University of Chicago Press.
- Fernández-Arias, E. 1994. "The New Wave of Private Capital Inflows: Push or Pull?" Policy Research Working Paper 1312. Washington: World Bank.
- Goldfajn, I., and R. Valdés. 1997. "Capital Flows and the Twin Crises: The Role of Liquidity." IMF Working Paper 97. Washington: International Monetary Fund (March).
- Goldman Sachs. 1997. *Emerging Markets Biweekly, Economic Research*. New York: Goldman, Sachs & Co. Several Issues.
- Gourinchas, P.-O., O. Landerretche, and R. Valdés. 2001. "Lending Booms: Latin American and the World." *Economía* 1(2): 47-89.
- Hausmann, R., and M. Gavin. 1996. "The Roots of Banking Crises: The Macroeconomic Context." In *Banking Crises in Latin America*, edited by R. Hausmann and L. Rojas-Suárez. Washington: Inter-American Development Bank.
- Hernández, L., and H. Rudolph. 1997. "Sustainability of Private Capital Flows to Developing Countries: Is a Generalized Reversal Likely?" *Cuadernos de Economía* 102 (August): 237-66 .
- Hubbard, R. G., ed. 1991. *Financial Markets and Financial Crises*. Chicago: University of Chicago Press.
- Jones Lang Wootton. 1998. *Asia Pacific Property Digest*. Various Issues.
- Kaminsky, G., and C. Reinhart. 1996. "The Twin Crises: The Causes of Banking and Balance of Payments Problems." International Finance Discussion Paper 544. Washington: Board of Governors of the Federal Reserve (March).
- Kindleberger, C. P. 1978. *Manias, Panics, and Crashes*. New York: Basic Books.
- King, R., and R. Levine. 1993. "Finance and Growth: Schumpeter Might Be Right." *Quarterly Journal of Economics* 108(3): 717-38.

- Krugman, P. 1998. "What Happened to Asia?" Unpublished paper. Cambridge, Mass.: Massachusetts Institute of Technology.
- Levine, R. 1997. "Financial Development and Economic Growth: Views and Agenda." *Journal of Economic Literature* 35(2): 688-726.
- Montiel, P. 1997. "Consumption Booms." Unpublished paper. Williamstown, Mass.: Williams College (December).
- Morandé, F., and R. Soto. 1992. "Una nota sobre la construcción de series de precios de activos reales: tierra y casas en Chile." *Revista de Análisis Económico* 7(2): 169-77.
- Ramakrishnan, R. T. S., and A. V. Thakor. 1984. "Information Reliability and a Theory of Financial Intermediation." *Review of Economic Studies* 51(3): 415-32.
- Sachs, J., A. Tornell, and A. Velasco. 1996. "Financial Crises in Emerging Markets: The Lessons from 1995." *Brookings Papers on Economic Activity*, 1: 147-215.
- World Bank. 1997. *Private Capital Flows to Developing Countries: The Road to Financial Integration*. New York: Oxford University Press.

