

# CORPORATE FINANCIAL STRUCTURE AND FINANCIAL STABILITY

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**Abstract:** Drawing on a unique dataset of extant flow-of funds and balance sheet data, this paper provides evidence on the impact of financial crises on corporate financing and expenditure in a range of countries, both advanced and emerging market economies (EMEs). Investment and inventory contractions are the main contributors to lower GDP growth after crises, although the effect is much greater in EMEs. There is a marked correlation of the debt/equity ratio to investment and inventory declines following crises. Econometric analysis of similar variables suggests that financial crises have a greater and more consistently negative impact on expenditure and finance of corporate sectors in emerging markets than in industrial countries. Industrial countries benefit from the existence of multiple avenues of intermediation, in that bond issuance is shown to pick up in the wake of banking crises. Although companies in EMEs hold more precautionary liquidity, this is evidently not sufficient to prevent a greater amplitude of response of expenditure to shocks. There are important implications for policy, notably a need for a greater focus on the corporate sector per se and its financing in particular during macroprudential analysis.

**Keywords:** Corporate finance, financial instability

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## **CORPORATE FINANCIAL STRUCTURE AND FINANCIAL STABILITY**

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### **I. INTRODUCTION**

This paper examines how corporate financial structure shapes the impact of a financial crisis on the real sector, via its effects on flows of funds and on corporate real expenditures. It is one of the first papers to utilize extensive cross country flow and balance sheet data as well as in examining subcomponents of GDP in the wake of banking and currency crises rather than purely focusing on aggregate GDP. A better understanding of the implications of financial structure for the impact of a crisis on the corporate sector, and thereby real output, would strengthen the case for financial sector reforms, rationalize the assessment of financial breadth in Fund surveillance (FSAPs, Article IVs), and help improve the understanding of the transmission of monetary policy during a financial crisis.

Corporate financing has two dimensions: depth is simply the quantity of overall financing available to the corporate sector, while breadth can be defined as the array of external financing options for corporations, typically including loans, debt securities, equity, trade credit and overseas financing. The implications of corporate financial structure for financial fragility are measured here empirically by examining shifts in the size and composition of financial flows and expenditures by the corporate sector during a crisis, controlling for normal shifts in financing or expenditures that take place over the cycle. The extra shifts in the wake of crises may reflect either supply-effects (credit rationing by the financial sector) or the demand side (balance sheet adjustment by the corporate sector to avoid the risk of bankruptcy).

The analysis of this paper compares and contrasts corporate financing and expenditure patterns during periods of financial crisis in G7 countries, small industrial countries, and emerging market countries. Statistical analysis of the changes in financing patterns and in corporate expenditures around the period of financial turbulence suggests that investment and inventory contractions are the main contributors to lower GDP growth after crises, although the effect is much greater in EMEs. There is a marked correlation of the debt/equity ratio to investment and inventory declines following crises. Econometric analysis of similar variables suggests that financial crises have a greater and more consistently negative impact on corporate sectors in emerging markets than in industrial countries, although even in the latter the impact is not negligible. Industrial countries benefit from the existence of multiple channels of intermediation, in that bond issuance is shown to pick up in the wake of banking crises.

The paper is structured as follows: Section II comprises a review of the relevant theoretical and empirical literature and suggests some testable hypotheses drawn from that literature, Section III outlines the data, and illustrates broad corporate financing patterns and Sections IV and V provide empirical analysis of corporate financial flows during financial turbulence.

### **II. LITERATURE REVIEW**

This paper draws from several disparate financial and economic literatures, beginning with the *general determinants of corporate financial structure*. The first modern theory of the general determinants of corporate financial structure was the proof by Modigliani and Miller

(1958) that under strict conditions (in particular, no taxes and zero costs of bankruptcy), the balance-sheet structure of a firm in terms of debt and equity is irrelevant to the cost of capital and that the cost of external funds is identical to that of internal financing via retentions. However, taking into account the differential microeconomic costs of bankruptcy between equity holders and debt holders would stimulate firms to issue only equity. Conversely, the tax deductibility of interest payments encourages debt finance, with firms consequently absorbing “unnecessary” levels of business cycle risk and raising the risk of default (Gertler and Hubbard 1989). The actual structures observed in the real world reflect a balance of these forces, albeit also influenced by financial structure and financial development in the economy as discussed below.

Another problem with the “irrelevance” of corporate financing is asymmetric information and consequent adverse selection and moral hazard in the context of incomplete contracts, which imply that external financing is costlier than internal, while there is generally rationing of credit. The availability of internal financing may thus impact on real decisions (Fazzari, Hubbard and Petersen 1988) as firms prefer to – or are constrained to - finance themselves by internal funds. Internal funds are more plentiful for large and established firms than in small and new firms, where the latter may be more typical of EMEs. A corollary is that financial systems that cope better with agency costs – such as those in OECD countries - will supply more external financing, *ceteris paribus*.

Given we are analyzing a range of OECD countries and EMEs, it is also worth probing the *literature on economic and financial development*. King and Levine (1993) found that financial variables have a strong relation to capital accumulation, economic growth and productivity growth, even controlling for other influences on growth such as education and government expenditure. Levine and Zervos (1998) sought to extend the analysis to allow for the role of stock market development, finding that stock market liquidity (but not size, international integration or volatility) as well as banking development were related to growth. An implication of this and related papers is that the overall development of financial services is important to growth and not its bias to bank or market financing. Extensions such as Levine (1999) have additionally allowed for the role of certain legal aspects (linked to creditor and investor rights, contract enforcement and accounting standards) in financial development, and found that these are crucial for economic growth more generally. This influence may operate, *inter alia*, by influencing the proportion of firms that have access to external finance (Demirguc-Kunt and Maksimovic 1998, 2000).

Financial systems seem to go through *stages of development* in which corporate sources of financing are mainly: (i) internal, (ii) banks due to information collection efficiencies, (iii) equity issuance for more diversity, and (iv) bonds when information collection costs become sufficiently low. The empirical evidence is broadly supportive of states of development. Demirguc-Kunt and Levine (1999) showed that banks, nonbanks and stock markets are larger, more active and more efficient in richer countries. Furthermore, in OECD countries, stock markets become more active and efficient relative to banks, and there is some tendency for financial systems to become more market oriented as they become richer. The legal system also helps shape the weight of bank versus nonbank financing. Rajan and Zingales (1998b) found a link from financial development to growth via dependence of industries most dependent in external finance. Levine 2000 found little evidence that bank based systems are “better” for overall economic performance.

The “financial accelerator” and “credit channel” approaches to business cycles help set the stage for recent theories for the role of the corporate sector in financial crises. The financial accelerator is the procyclicality of borrower net worth, due to adverse selection and

information asymmetries, amplifies the impact on the economy of changes in the stance of monetary policy by increasing risk premia (Bernanke and Gertler, 1995). An indicator of this “financial accelerator” which applies to debt in general is the debt/equity ratio. Other work on the related “credit channel” has focused on bank credit per se, implying a relevance for the bank loan/debt ratio. For example, Gertler and Gilchrist (1994) found a larger role for bank credit in explaining inventory fluctuations for small firms than large ones, as well as a larger and speedier impact of monetary policy on small firms' expenditure and borrowing. Gertler and Gilchrist (1992) observed a perverse increase in loans for large companies following a monetary tightening, while there is an immediate reduction for small firms. Hoshi et al (1993) showed that in Japan liquidity is more important for the investment by firms that do not have a main bank link during periods of tight money, and find the credit mix is a significant determinant of investment and inventories. There are monetary policy implications since tightening per se will tend to raise the cost of credit for the small firm sector to a disproportionate extent (Kashyap et al (1994), Christiano et al. (1996)). Thus monetary policy will have a composition-of-output effect independent of its effect on the aggregate level of output. This effect will be particularly marked where the substitute channel of credit - from large firms via trade credit - is poorly developed.

This paper also draws from the theories of financial crisis and their application to corporate financial structure. Corporate financial structure had little or no role in the early theoretical crisis literature which began with “first generation” currency crisis models stressing government debt (Krugman, 1979), and “second generation” models (Obstfeld, 1994) which took into account a broader government's objective function. The introduction of banks into more recent models allowed them to cover patterns of liquidity and foreign currency denominated debt (Velasco, 1987; Mishkin, 1996; and Goldfajn and Valdes, 1995). The relatively recent foreign exchange liquidity approach explicitly addresses joint currency and bank crisis dynamics arising from a shortfall of foreign exchange liquidity, including to the corporate sector (Chang and Velasco, 1999).

Many of the more recent and successful theoretical models of crises are rooted in problems associated with the collateral that backs up corporate borrowing. The precursor of this approach is the previously discussed financial accelerator literature. For example, Gertler, Gilchrist and Natalucci, (2000) show that *microeconomic rigidities* can amplify corporate balance sheet channels in an open economy framework. The collateral approach has been extended based on in more recent theoretical models that stress *macroeconomic rigidities* in the form of underdeveloped domestic financial sectors and fragile corporate and financial sector balance sheets. Kiyotaki and Moore, (1997). The dynamic interaction between credit limits and asset prices is a powerful transmission mechanism by which the effects of shocks persist, amplify, and spill over to other sectors. Caballero and Krishnamurthy (1999 and 2000) extend the Kiyotaki/Moore model to use shortfalls of the collateral that is necessary to get domestic and international financing to explain crisis vulnerability. These shortfalls are rooted in weak governance and legal systems. Kim and Stone (1999) model a similar emphasis on wasteful capital sales owing to a drop in collateral value.

The role of *financial breadth*, or the availability of a broad range of financing alternatives to the corporate sector, is generally recognized as helping backstop the impact of a crisis on the real sector, but is only beginning to attract theoretical and empirical analysis. The large output contraction caused by the recent Asian crisis has been attributed in part to the lack of nonbank financing alternatives (Chatu Mongol, 2000), whereas nonbank financing helped limit the impact of the slowdown of American bank lending in 1990 that resulted from a collapse in the value of real estate collateral (Greenspan, 1999). Davis (1995) used flow of funds data to look at post-crisis changes in the composition of corporate financing for industrial countries. Stone

(2000) looked at the implications of corporate leverage on aggregate output for emerging market countries in 1997. There appear to be no cross-country studies utilizing aggregate emerging market country data on empirical indicators of financial breadth such as the size of equity and corporate bond markets compared to bank credit.

This paper is an extension of the small literature on corporate financial structure and *post-crisis output contractions* which we extend to cover disaggregated output and financial flow and balance sheet variables. In earlier work in this field, Bordo et al., (2000) examined output contractions over the past 120 years and concluded that the probability of crisis has increased but intensity has not. They attribute the increased probability to capital mobility and financial safety nets. Hoggarth and Sapporta (2001) explore a variety of measures of output losses, including measures based on benchmarks of pre-crisis trend growth, a forecast based on the absence of a crisis, and comparison with similar countries that did not experience a crisis. Stone (2000) looked at the impact of financial crises on output via the corporate sector and concluded that crisis-induced output contractions are associated with high levels of corporate debt, openness, and exchange rate over-appreciation. Stone and Weeks (2001) found that output contractions are driven by the degree of cutoff of private capital inflows, corporate balance sheet indicators, and to a lesser extent imports to GDP and financial breadth.

The role of private sector balance sheet indicators has been stressed more recently. In their estimate of a monthly “early warning system” Mulder et al. (2001) found that the corporate indicators of leveraged financing, short-term debt to working capital, and shareholders rights help predict crises. Using data from the US, UK, Japan and Canada, Davis (2001) concluded that the existence of active securities markets alongside banks is beneficial to the stability of corporate financing, both during cyclical downturns and during banking and securities market crises. These benefits increase in the similarity of the size of securities market and intermediated financing, and in the proportion of companies with access to both loan and securities markets.

### III. THE DATA AND CORPORATE FINANCIAL STRUCTURE

Flow of funds and corporate asset and liability data are available for all the G7 countries, 10 small industrial countries. Flow of funds data are available for five emerging market countries (Czech Republic India, Korea, South Africa, and Thailand) and balance sheets for four (Croatia, Czech Republic, Israel and Korea). The time intervals for the data vary considerably, with data available for most G-7 and emerging market countries since the 1970s, but only in the 1990s for most of the smaller industrial economies. Total corporate liabilities were organized into: (i) loans, (ii) bonds, (iii) equities, (iv) trade credit, and (v) a residual “other” category for some countries. In addition, liquid assets are reported.

The literature suggests a few priors for cross-country patterns in corporate financial structure data. The size of corporate sector balance sheets should be higher for industrial countries owing to their larger and more developed financial sectors. The corporate sectors of emerging market countries are expected to borrow more, especially from banks since firms are on average at an earlier stage of development with less internal cash generation relative to investment needs as well as securities markets being less developed. In addition, emerging market corporate sectors are expected to maintain higher levels of liquidity to offset their greater vulnerability to shocks.

#### **Stock data**

A comparison of corporate balance sheet data is made in Table III.1, with group medians as well as individual country data. The corporate liabilities/GDP ratio serves as a measure of the overall size of the corporate sector balance sheet relative to the overall level of economic activity. Of course, balance sheet size is affected by equity valuations as well as by financing flows per se.

#### *Cross-country comparisons*

The size of corporate balance sheets tends to be highest for G7 countries and lowest for emerging market countries, although there is a fairly wide range across countries (Table III.1). The country groups that are larger and more developed have bigger financial sectors and thus larger corporate sector balance sheets. This pattern holds notwithstanding the combination of bank and market related financial systems included in each sub-group. In other words, the size of corporate balance sheets is determined more by level of development than by whether a country has a bank-based or market-based financial system.

The share of corporate liabilities accounted for by loans is decreasing in the level of economic development, also as expected. G7 countries have only about 20 percent of liabilities as bank loans, versus around 30 percent for the small industrial and emerging market countries. This pattern is consistent with the prior that more developed countries move away from bank financing and toward securities (and internal financing which boosts equity values), again despite the mix of bank and market-based financial systems.

The share of trade credit is also decreasing in the level of economic development. Trade credit accounts for 6 and 8 percent of G7 and small and medium industrial country corporate liabilities and about 20 percent of liabilities for the three emerging market countries with available data. This pattern may reflect the importance of supplier credits for countries with less sophisticated financial markets. Suppliers may have more scope to reduce asymmetric information and exert corporate control more readily than banks in many EMEs.

As a corollary, G7 country balance sheets are dominated by securities (bonds and equities) relative to small industrial countries as well as EMEs. Besides financial development per se, this seems to reflect the development of nonbank financial markets in larger countries which enjoy economies of scale. The surprisingly high share of bond financing for emerging market countries is attributable to the large share of financing in Korea, which dominates the small sample.

Interestingly, there is no strong cross-country pattern for the debt/equity ratio. This ratio is the most common indicator of corporate leverage and distress, and emerging market countries experience the most severe financial crises including in terms of the impact of crisis on the real sector, so one might anticipate a bipolar pattern. In fact, debt/equity is marginally higher for the smaller industrial countries vis-à-vis the G7, and somewhat higher for the emerging market countries although this is largely due to Korea.

Total corporate debt to GDP is highest for small industrial countries. The relatively high level of loans borrowed by small industrial country corporate sectors outweighs their relatively low level of outstanding bonds. The debt to GDP of the three emerging market countries covers a wide range.

The data suggest that emerging market corporate sectors are the most liquid while G7 country corporate sectors are the least liquid. The liquidity ratio captures the extent to which corporate sectors hold liquid assets to offset adverse shocks without having to depend on external

financing. The lower level of liquidity for the G7 would appear to reflect their access to external financing in the event of a shock, which allows them to maintain lower levels of precautionary liquidity.

### *Trends*

The total size of corporate balance sheets scaled by GDP has been expanding sharply in recent years (Table III.2). The analysis of trends must focus on the G7 countries since 1970 and on the small industrial countries mainly during the last half of the 1990s. G7 corporate balance sheets shrank in relation to GDP during the 1970s, but have increased sharply since then, and at an accelerating pace. Considering also the holders of liabilities (households, foreigners, banks and pension funds), these data demonstrate clearly the rapid expansion in the potential impact of corporate finances on the real sector. The corporate balance sheets of small industrial countries during the last half of the 1990s expanded even faster than the G7 countries. As the small industrial countries are in Europe—except for Australia—this expansion may reflect the development of EMU as well as differential patterns of equity prices. Finally, the size of the corporate balance sheets for Israel and Korea also increased sharply since 1980.

Reflecting largely the pattern of equity prices albeit also influenced by flows (see below), equity financing expanded during the 1990s at the expense of bank financing (Table III.3). Banks' share of total liabilities expanded during the 1970s for all but one of the G7 countries. The equity share of financing rose for all of the G7 countries during the 1990s. In a similar vein, all but two of the small industrial countries experienced reductions in bank debt as a share of total corporate liabilities during the 1990s and increases in equity. Bank debt also fell in Korea, the only emerging market country with complete data.

Corporate leverage, as gauged by the debt-equity ratio, has diminished in the past twenty years (Table III.4). During the 1970s, the debt-equity ratio rose sharply in most of the G7 countries. However, the debt-equity ratio fell for several of the G7 countries during the 1980s and declined across all seven countries in the 1990s. Similarly, the debt-equity ratio fell for all the small industrial countries in the late 1990s. For Korea, corporate leverage rose overall during the 1990s, but fell after the crisis of 1997-98. A comparison of changes on equity and debt show that the decline in corporate leverage reflects strong growth in equity outstripping increases in debt.

The growth of corporate debt has levelled off in G7 countries but continues to rise in small industrial countries (Table III.5). Indeed, corporate debt to GDP fell in four G7 countries during the last half of the 1990s. In contrast, corporate debt rose sharply in the small industrial countries, with most recording increases in excess of 15 percent. The accumulation of corporate debt was less pronounced in the emerging market countries.

Interestingly, liquidity increased throughout the past 30 years (Table III.6). Corporations usually are seen to hold cash to offset potential distress arising from adverse shocks that cannot be offset by borrowing from capital markets. The swelling of corporate balance sheets indicates that corporate access to financing increased in recent years. However, with only a few exceptions, the ratio of liquid assets to total assets rose for every country over every decade. One explanation of the increased preference for cash is that the potential risks arising from larger financial positions outweighed the increased access to finance, thereby motivating corporations to hold more rather than less cash. Another possibility is that financial liberalization and money market development is allowing corporations to earn interest on their liquidity, thereby reducing the opportunity cost (Teplin, 2001).

## **Flow data**

The flow data capture the sources of financing for corporate sectors across the country groups and in many cases over an extended time period even in EMEs. The net financing/GDP flows gauges the change in the net financial position of the aggregate corporate sector, which is equivalent to its net cash flow. Typically, corporations are net borrowers because of large investment needs relative to revenue, so that they operate with negative net financing. This is notably the case for small and growing firms typical of EMEs as well as for manufacturing relative to services, where EMEs tend to specialize in the former. Gross financing/GDP measures the overall level of funding to the corporate sector on a gross basis. The level of gross financing indicates the overall access of the corporate sector to outside financing, which may be broken down into components of bank lending, equity financing, bond financing and trade credit. Liquidity accumulation is simply the change in the liquid asset position of the corporate sector. As noted, the accumulation of liquidity will be driven by the need for liquid balances to offset shocks to the financial position, as well as the available rates of return on liquid assets.

### *Cross-country comparisons*

Given the volatility of flows for individual years, it is important to consider period averages. Cross-section data for in most cases 1995-99 indicates how corporate financing patterns differ across countries (Table III.7). Of course, the data will also reflect to some degree country specific shocks that occurred at this time. As expected, almost all countries operate with a negative net financing/GDP flow, especially the emerging market countries as expected. Gross financing flows vary considerably; again, the emerging market countries seem to have the highest levels of gross financing, as expected.

With regard to the share of financing, bonds and equities account for most G7 corporate financing, reflecting their more sophisticated financial systems. The surprisingly large share of bond financing for the emerging market countries can be attributed to the sharp growth in the bond markets of Korea and Thailand after the 1997-98 crisis. Finally, liquidity accumulation is lowest for the G7 countries and highest for the emerging market countries, presumably owing to the relatively higher vulnerability of the latter to financial shocks, especially during the late 1990s.

### *Trends*

Gross financing could be expected to increase over time as markets become more developed, particularly for emerging market countries (Table III.8). However, for G7 countries gross financing seems to be on a trend decline, even after taking out Japan, which is a special case. In contrast, gross financing for the emerging market countries is generally on an upward trend, as expected. These patterns suggest that gross corporate financing could be relatively low at early stages of development, high for middle income countries, before declining again for the most developed countries, as with monetization (Bordo and Jonung, 1987).

On a flow as well as a stock basis, equity is partly replacing loans as a source of corporate financing around the world. The flow of loans relative to GDP declined sharply from the 1980s to the 1990s for all the G7 countries and for Norway (Table III.9). Loans also declined as a source of financing for three of the four emerging market countries with data for the 1980s. Bond financing rose for the US, UK and Japan, and was broadly unchanged for the other countries during the 1980s and 1990s (Table III.10). Note that there are differences in

the overall level of bond financing between countries reflecting bank and market related financial systems. At the same time, the share of equity financing rose from the 1980s to the 1990s for 11 of the 12 countries with available data (Table III.11).

Finally, the accumulation of liquid assets was on a downward trend for industrial countries and an upward trend for emerging market countries (Table III.12). This divergence suggests that these emerging market countries became more vulnerable to shocks, and that they were compelled to hold more cash owing to less insurance provided by their financial sectors.

### **Crises**

The financial crises in this paper encompass bank and currency crises. The source is Eichengreen and Bordo (2002) who define financial crises for a large group of industrial and emerging market countries. In their work, currency crises entail a forced change in parity, abandonment of a pegged exchange rate, or an international rescue. Banking crisis involve bank runs, widespread bank failures and the suspension of convertibility of deposits into currency, or significant banking sector problems that result in the erosion of most or all of banking system collateral. For the 29 countries in this study, 59 crisis episodes occurred during 1977-99 (Table III.13), including 18 banking crises and four twin bank-currency crises. Emerging market countries accounted for 17 of the crises, and 23 of the crises occurred during the 1990s. Corporate balance sheet data are available for 41 of the 59 episodes.

For currency crises, cross checks on the Bordo/Eichengreen list were made with Aziz et al., (2000) and for banking crises with Caprio and Klingebiel (1996), extended in each case by Stone and Weeks (2001). Resulting lists of crises were virtually identical.

## **IV. CORPORATE FINANCIAL STRUCTURE AND FINANCIAL STABILITY – DESCRIPTIVE ANALYSIS**

The descriptive analysis is based on the impact of financial structure on real growth and investment during a systemic financial crisis. The analysis is based on 59 crisis bank and currency crisis episodes chosen using standard methodologies as described above. (The actual number of crises is smaller due to data availability problems?) .

### **Investment and output at time of crises**

This section describes the composition of GDP after a financial crisis. We provide average, median and standard deviations for all crises for OECD countries and EMEs. The aim is to ascertain the importance of private investment and inventories for the impact of the crisis on the real sector with a view to motivating the associated role of the corporate financial structure. As noted in Section II above, most extant work focuses solely on the response of GDP itself, so this section provides helpful additional information.

The data for real GDP and its components are expressed in terms of contributions to deviations of growth from trend, rather than as growth per se. The use of growth for cross-country comparisons of crisis severity would be distorted by different levels of country trend growth, see also Hoggarth and Sapporta (2001). Deviation of growth from trend was calculated as follows: (i) data for real GDP and its components was retrieved from the IMF's World Economic Outlook database and in some cases adjusted to ensure that the parts added up to the total, (ii) the data were transformed to the contribution of growth of each component, (iii) the deviation of the contribution to growth of each component was calculated as the difference between the contribution to growth of each component for each year less the

average contribution of the previous eleven years, and (iv) the effect of the crisis on GDP was calculated as the product of the deviation of the contribution to growth for crisis year  $t$  and year  $t+1$ . Data for real GDP and its components are available for 14 emerging market countries and 24 industrial countries.

The data show that financial crises have a bigger impact on the real sector of emerging market countries compared to industrial countries (Table IV.1). The median negative deviation of real GDP growth from trend is 4.4 percent for emerging market compared to just 0.2 percent for industrial countries. The greater real impact of financial crises for emerging market countries shows their greater vulnerability to shocks.

The range of post-crisis output responses is quite wide. Emerging market country crisis GDP output changes range from -13 percent (Korean and Thailand in the late 1990s) to 4 percent (South Africa in 1995). Interestingly, the range for industrial countries is even wider largely due to an outlier for Japan in 1979.

Domestic demand takes the brunt in these crisis-induced recessions for both groups of countries. Indeed, on average foreign demand (exports less imports) positively contributes to growth, probably because the trade balance must shift in a positive direction to offset the sudden cessation of capital inflows that often trigger the crisis.

The change in public sector demand following the crises (the sum of public sector consumption and investment) is broadly neutral for both groups of countries. The signs of the average and median contribution to growth of the public sector are negative for the emerging market countries—perhaps owing to a larger decline in revenues from the impact on growth and lesser ability to expand borrowing given lower creditworthiness of the government.

The post-crisis change in real GDP is dominated by private domestic demand. The contraction in private demand for the emerging market countries is of a large order of magnitude (a median of 2.5% compared to 1.2%). Private investment explains the bulk of the contraction for the limited number of observations available for the emerging market countries (median 3.5%).<sup>2</sup> For the industrial country episodes, private investment is again a key contributor to the crisis-induced contraction (average of 1.1%). The range of investment growth after a crisis is some 10 percent for both groups of countries.

Inventory decumulation is also an important drag on economic activity in the wake of a financial crisis for the emerging market countries. The change in inventory contributes negatively to growth for 11 of the 14 emerging country crisis episodes for an average (median) of -1.5 percent (-0.5 percent) of GDP. Inventory changes are on average negative for the industrial countries, but the average is rather small and the median is zero.

In contrast to these investment effects, consumption is rather robust in the wake of the crises. For EMEs the decline is 1.2% on average, while in OECD countries it is 0.7%. Consumers seek to draw on saving to sustain consumption, while labour income is typically more stable than profits.

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<sup>2</sup> Private investment data that is comparable across countries are not available for several of the emerging market countries prior to the 1990s.

In sum, the changes in the composition of GDP growth induced by a financial crisis raises several important questions regarding corporate financial structure. Post-crisis contractions in GDP are dominated by a downward shift in private domestic demand, which in turn is explained mostly by investment drops and inventory decumulation. Given that most private investment is financed by corporate liabilities, an important question is whether there are cross-country differences in corporate financial structure shown in Section III that could help explain the wide range in the severity of crisis-induced recessions.

### **Investment, output and financial structure at time of crises**

As a first pass the relationship between crisis-induced contractions in GDP and corporate financial structure can be examined by simple scatter charts and correlations of GDP contractions relative to trend and financial structure. This section discusses the correspondence between key balance sheet measures of the corporate financial structure and GDP contractions and its key components.

The size of the corporate balance sheets does not have a relationship with contractions in GDP. Regressions of the corporate liabilities to GDP ratio on overall contraction in GDP growth, contributions of private fixed investment, or of inventory investment do not suggest a strong negative relationship. This result suggests that large corporate liabilities do not in and of themselves induce large crisis-induced declines in output; this is as expected since the size of balance sheets is largest in the most stable economies of the G-7.

In contrast, corporate leverage does correspond to larger GDP declines. The simple correlation coefficient between the GDP contraction itself and the debt-equity ratio is a weak -0.22. However, the correlation between debt-equity ratio and the deviation from the trend contribution to GDP of private fixed investment across the crises is -0.47 (Figure 1), and the correlation between inventory accumulation and the debt-equity ratio is -0.42 (Figure 2).

On the other hand, GDP declines do not exhibit strong correlations with corporate liquidity or the loan to liability ratio. The data do not generate the expected positive correlation could be expected between liquidity and GDP declines or a negative correlation between loan dependency and a crisis-induced contraction.

Complementing Table 4.1, we show in Table 4.2 the average change in financial flows as a proportion of GDP during the year of the crisis, for years where data are available. This gives an idea of the financing changes which underlie the expenditure shifts by the corporate sector. Note that since flow/GDP data are not likely to be trended, they do not require to be measured relative to trend as is the case for GDP components – but bear in mind that there could be adjustment for “normal” cyclical changes that might have occurred (we address this issue in the econometric results in Section 5). Because of limitations on the flow of funds data we can only use a subset of the 59 crises set out in Table III.13.

Although based on simple calculations, the results are of considerable interest. The Table IV.2 shows total external finance and its main components (bank loans, bond issues and equity issues) as well as trade credit and the change in corporate liquidity. For the 27 crises for which the flow data are available, the average fall in external finance was equivalent to -0.6% of GDP, with the bulk being from bank loans (-0.5%). Liquidity also fell markedly, by -0.7% of GDP on average. There are slight declines in equity issues and trade credit while bond issues rise. There are interesting contrasts between the OECD and Emerging market economies. The fall in external finance is much greater for the latter, at -1.4% of GDP, which is wholly accounted for by bank lending. There is also a very sharp fall in liquidity of -1.6%

of GDP for EMEs and a -1% of GDP fall in trade credit. In contrast, OECD countries witness on average only slight falls in external finance, largely due to equity issues, and a sharp rise of 0.5% of GDP in trade credit. These results show the much greater vulnerability of EMEs to financial instability. OECD countries corporate sectors on average are not required to draw heavily on liquidity while trade credit performs an interesting stabilising function.

Further and more precise results can be obtained by dividing between banking crises and currency crises (there is one twin crisis). For banking crises, results are similar in sign for OECD countries and EMEs, but different in magnitude. In each case there is a fall in total external financing; the fall is on average -2% of GDP, but with only -0.5% for the OECD and no less than -3.4% for EMEs. In each case the fall is more than accounted for by the decline in bank lending which is -2.2% on average, -0.6% on the OECD and -4.3% in EMEs. On the other hand, there is everywhere a rise in bond issuance of 0.3% of GDP, showing the benefits of “multiple avenues of intermediation”. Liquidity shrinks in each case. There are some contrasts for equity issues, which fall in OECD countries but rise in EMEs, while trade credit rises in the OECD and falls for EMEs. Again trade credit is stabilising in the OECD, substituting to some extent for bank credit.

Looking finally at currency crises, these are clearly far more serious in terms of financing for EMEs – in OECD countries total external financing rose in the year of crisis. In EMEs, external financing falls -1.8% of GDP in the crisis year, corresponding to declines in all subcomponents - bank lending, bond issuance and equity issuance - as well as trade credit and liquidity. This pattern may reflect inter alia the common withdrawal of foreign bank finance in the wake of EME currency crises.

Direct comparison of these data with the expenditure components in Table IV.1 is not possible, since the expenditures are defined relative to trend GDP growth. However, given that for both OECD countries and EMEs, trend growth is positive, it can be suggested that the falls in external finance as well as trade credit and liquidity may account for a substantial part of the fall in corporate expenditures. This is notably the case for the EMEs, where falls in investment of over 4% relative to trend could easily be accounted for largely by a 1.4% fall in external finance.

## **V. CORPORATE FINANCIAL STRUCTURE AND FINANCIAL STABILITY – ECONOMETRIC ANALYSIS**

The approach in the econometric work using the above data is to estimate specifications that capture normal cyclical behaviour in the variables of interest, before testing whether crises had additional effects over and above the cycle. Clearly, this approach is essential in order to distinguish crisis effects from cyclical or policy-induced changes that would occur in the absence of the crisis. The econometric work is in two main parts. First we undertook estimation of equations for key corporate sector expenditure components, namely fixed investment and inventory accumulation. In each case we tested for the significance of dummies for currency and banking crises as shown in Table III.12. We then went on to test in a similar vein for effects of crises on corporate sector flow of funds variables. Did crises affect the flow of loans, bond issuance, equity issuance or trade credit relative to GDP, and was an impact detectable on liquidity also? We made estimates for the full sample of countries and data for which information was available, before focusing more closely on emerging market economies and OECD countries, respectively.

The estimates were made using a cross-section weighted GLS unbalanced panel, with fixed effects for each country and cross section weights. The cross-section weights allow for the common disturbances that affect the panel, such as world economic growth, growth in world trade, share prices and global bond yields. We considered this more appropriate than the alternative seemingly unrelated regressions (SUR) given there is a clear relation between equations. The fixed effects should deal with the inevitable heterogeneity between countries in the panel, in terms of levels of the variables concerned. The standard errors are White heteroskedasticity consistent.

The first variable to be addressed was private fixed investment. Note that this is a broader concept than business investment, as it includes also residential investment. However, since the latter is typically undertaken largely by construction companies, and its variability is considered to be an important effect of financial crises, we considered this aggregation an appropriate one. Note that only this breakdown is available for emerging market economies.

Our preferred specification is one with a valuation ratio as a key independent variable. As discussed in Ashworth and Davis (2001), Tobin (1969) and Brainard and Tobin (1968) maintain that investment should be an increasing function of the ratio of the capitalised financial value of the firm relative to the replacement (purchase) cost of the unit of capital. In principle, the key variable is *marginal Q*, the ratio of the future marginal returns on investment, relative to the current marginal costs of investment. Marginal Q is unobservable; however Hayashi demonstrated that when the production and adjustment cost functions adhere to certain homogeneity conditions (implying inter alia that there is no market power) then marginal and average Q are equal. So in line with other empirical researchers we have included measures of average q (logged and lagged) in the investment equation. Other variables included are the growth in income and lagged growth in investment, to allow for dynamics, and a lagged ratio of investment to output as an error correction term.

As shown in Table V.1A, results were generated for all countries and OECD countries only. This is because we only have the equity and capital stocks for two EMEs. All the variables are significant at 95% with the expected signs and magnitudes. Investment is highly sensitive to output, with a first period elasticity of 2.3. 14% of the disequilibrium between output and investment is removed each year. A 1% rise in q leads to a 1.1% rise in the level of investment in the long term. The banking and currency crisis dummies were entered as a lag, given the logic that gestation lags in investment mean changes in plans take time to come to fruition. They both have a significant effect on investment, with an average impact of around 3% (for all countries ) and 2% (for OECD countries – although in the basic equation the banking crisis dummy was not significant).

We sought to extend the basic equation with corporate balance sheet variables, respectively the debt equity ration (the balance sheet channel) and the bank loan/total debt ratio (the credit channel). In practice the latter was dominant. It can be seen that a rise in bank debt as a share of the total has a significant positive effect on investment, consistent with the “special ness” of bank credit. Since there are fixed effects, we are not merely capturing cross-country differences. In the presence of this variable, all of the crisis effects are significant, and somewhat larger (3-4%). A final experiment with these equations was to test for additional interaction effects between the credit channel and the crises. If there is already a high level of bank lending in debt, does a subsequent crisis have greater or lesser impact. There is tentative evidence that a banking crisis has a worse effect in this case, although the result only comes through for the panel including two EMEs.

Given the data limitations for balance sheet variables, we estimated an alternative investment specification that would enable us to use more of our data, and in particular including the EME countries as a separate group. The specification is that of the neo-classical model first proposed by Jorgensen (1963), where the simple accelerator model is augmented to include the effects of relative price variables, specifically a proxy for the user cost of capital. By assuming either that net investment is determined as a distributed lag process of changes in the desired capital stock, or that there are explicit costs of adjustment, a specification is suggested where investment depends on distributed lags of output and itself, as well as a cost of capital term. Consistent with Bean (1981), Driver and Moreton (1991) and Darby, Hughes-Hallet, Ireland and Piscitelli (1999), we also include one long-run term ensuring homogeneity between investment and output as implied by the CES production function.

Results are shown in Table V.1B. Here our full sample of 517 observations can be used rather than 258 for the Tobin specification. Note that we have used the simplest possible cost of capital variable, which is the money market rate. In many of these countries, long-term bonds are not in existence. Again, the key variables are significant and correctly signed. We have both a long and a short run negative effect from the cost of capital, along with dynamic and error correction terms similar to those in the Tobin specification. In this context, the bank and currency crisis effects are both significant and negative for the full panel and for the OECD countries, while for the EMEs it is the banking crisis affect that is significant. The effect of a banking crisis on investment is much greater in EMEs, with a 7.3% fall instead of around 2% in the OECD countries (the OECD effect is itself comparable to that in the Tobin equation, despite an additional 200 observations).

We again tested for balance sheet variables in the Jorgensen framework – although this means that many observations are lost, with the sample comprising mainly OECD countries. Here the results were favourable to the impact of a high debt equity ratio for companies on investment. It had a significant negative effect on investment over the full sample, but also interaction terms with the bank and currency crisis dummies were significant. A higher debt equity ratio at the onset of a crisis significantly worsens the impact on investment in each case. We also investigated the bank lending to total debt ratio as above. It was again significant in itself but not interacting with the dummies. When we entered both together the debt equity ratio and its interaction terms remained significant while the bank lending ratio became significant for banking crises only. Overall, these regressions underline the need to take balance sheet conditions of the corporate sector into account, since adverse effects can significantly worsen the impact of a financial crisis. Note that we also attempted to estimate the equation with the flow variables total external finance to GDP and bank lending to GDP, but neither they themselves nor their interactions with the dummies were significant.

We then went on to estimate a simple inventory adjustment function, where the dependent variable is the change in inventories as a proportion of GDP (Table V.2). The independent variables are a lagged dependent variable and terms in GDP growth, the change in the interest rate (showing monetary tightening) and the level of the interest rate. The coefficients indicate that more rapid growth increases inventory accumulation, and there is also a lagged effect (a positive or negative adjustment tends to take several years to complete). The interest rate effects are positive. While this may seem surprising, it is consistent with the results of Christiano et al (1996) who found that after a monetary tightening, net funds raised increase for a year or so, and attributed this to inability to cut expenditures immediately, with inventories being a case in point. As regards crisis effects, the aggregate and OECD equations suggest that there is a positive effect of a banking crisis on inventories (as shown in Table IV.1, the median response is zero). This may be consistent with the immediate impact of a crisis being on aggregate activity, which leads to involuntary inventory accumulation. Note

however that in EMEs there is an immediate negative effect, suggesting a banking crisis there leads to inventory cuts via credit rationing.

We again tried to estimate inventory functions with the bank lending/debt ratio and the debt equity ratio and their interaction with the crisis dummies. In this case the results (not reported in detail) were much poorer than for the investment function, suggesting balance sheets have less impact on inventory accumulation than on fixed investment. Again, this was also true for the external finance and bank lending flow/GDP ratios and their interactions with the dummies.

We now move to equations for the determination of corporate sector flows of funds. What shifts in flows accompanied the declines in investment and inventories? Note that the results do not prove that rationing of finance caused the fall in expenditure since there may be supply and demand side influences on a given flow. But the results are suggestive, as well as being of interest in themselves. The variables concerned are bank lending to companies, bond issuance, equity issuance, and trade credit and, on the asset side, the flows to liquidity. All are defined as linear variables (as they can be negative) and relative to GDP. Accordingly, in each equation we have as a dependent variable the change in the flow relative to GDP, while independent variables are the lagged flow/GDP ratio, economic growth terms, changes in the interest rate and the lagged interest rate. Together these seek to capture demand for funds and portfolio balance effects in each case. We then add the level and lag of the crisis. Note that the data for flows are more comprehensive than for stocks, and accordingly although we have fewer observations than for the Jorgensen investment function and the inventories equation, we have 100 more than for the Tobin investment function. The coverage of EMEs by flow data is sufficiently good (Over 100 observations covering 6 countries) to warrant separate estimation for them.

The first equation shown in Table 3 is for bank lending, which in most countries is the most important source of funds for corporations. All of the independent variables are significant. The bank lending/GDP ratio rises when there is economic growth and contracts in recession, consistent with a cyclical pattern of external financing. The interest rate effect is positive, consistent with the Christiano et al (1996) result cited above, and possibly also with the increased obligations on firms when interest rates rise and their debt is floating rate, and the lower sensitivity to credit quality of banks than other sources of funds. The crisis dummies are consistently negative and significant, both at level and lag, for EMEs, and also for all countries other than the level dummy for currency crises. In contrast, for OECD countries, the impact of a crisis on bank lending only comes with a lag. The overall impact if a banking crisis is around 3 times greater for EMEs than for OECD countries, with a fall of 3% in lending relative to GDP in the former and only 1% in the latter. Note that since GDP itself typically falls after a crisis, the absolute fall in bank lending is likely to be much larger. Also since the levels of bank lending/GDP are often fairly low, the change of 3 percentage points may change from expansion to contraction.

As regards bond issuance (Table V.4) this is evidently less cyclical than bank lending, as noted also in Davis (2001). A rise in interest rates tends to cut bond issuance, notably in OECD countries, consistent with a greater sensitivity to credit quality of bond markets than on the part of banks. On the other hand, there is strong evidence for OECD countries, which carries over to the full sample, that banking crises lead to increases in bond and other securities issuance. This is consistent with the idea of effective “multiple channels of intermediation” as cited in Greenspan (1999), whereby a shock to banks, which does not impact on the credit quality of firms, can be compensated by availability of securities finance.

Note that this effect does not apply during a currency crisis in OECD countries or EMEs, effects of which on bond issuance are negative.

Equity issuance is shown in Table V.5. There is some evidence for OECD countries that equity flows are counter cyclical, with a negative sign on GDP growth, whereas in EMEs the corresponding variable has a positive sign. This may be consistent with more efficient equity markets, where purchasers of new issues are willing to look ahead for profits growth, although it could also reflect distress-driven rights issues, which are common in recessions. There is a negative interest rate effect on equity issuance – which entails a lower discount rate on future profits. The only crisis effects to be significant are in the OECD countries, where there is a negative effect on equity issuance from both banking and currency crises. The effect is larger for banking crises (a 4% fall in the equity flow/GDP ratio) than for currency crises (1%). One possible explanation is the loss of beneficial information spillovers from bank lending to equity pricing (James 1987).

Turning to trade credit, results would be expected to be poorly determined given that this is one of the more difficult variables for statisticians to identify. There remain some plausible coefficients, with credit increasing in OECD countries during the cycle, while for all countries, it is raised when interest rates increase. This may reflect rationing from regular sources of fund for firms at the margin, as well as possible substitution from more expensive sources. Crisis effects only become significant for the full sample, when there is lower trade credit one period after a crisis. Since this result does not carry over to either of the subsamples, it should be viewed with caution.

Besides the subcomponents, it is relevant to assess determination of total external financing. This is shown in Table 9. It can be seen that total financing is strongly cyclical, and also has a positive relation to interest rates in the short run. The effect of crises for the full sample is restricted to the lagged effect, with the effect of a banking crisis being three times larger than that of a currency crisis. There are contrasts between the subgroups, with the emerging market result showing a significant first period effect, which persists into the second period for banking crisis episodes. In contrast, the industrial country result is in line with the full sample, with only the lag showing significant effects.

Finally, we examined the behaviour of liquidity accumulation. When do firms build up or reduce their short-term financial assets? Cyclical effects are only significant for the EMEs. There is a negative effect of monetary tightening in OECD countries, suggesting that the inflexibility of expenditure requires firms to cut liquidity as well as borrowing from banks. Crisis effects arise significantly only for OECD countries in the wake of currency crises. It may be that even after a banking crisis, debt securities and trade credit are sufficient to leave firms able to maintain their precautionary liquidity.

Table 9 summarises the results from the above analysis in respect of the significant dummy variables. There is a preponderance of negative effects on expenditure and financing in the wake of crises, as would be expected, going beyond the normal behaviour of the variables in question (as captured by the rest of the equation). This is particularly the case for EMEs, where all the significant dummies are negative, while the coefficients for the EMEs are also generally larger. This illustrated the more adverse impact of crises, both from the currency or banking side, for EMEs than OECD countries. That said, the effects in OECD countries are not negligible. Investment, bank lending and equity issuance are consistently reduced by banking and currency crises. On the other hand the positive sign for bond issuance in the wake of banking crises shows the helpful effect of “multiple avenues of intermediation”, absent for EMEs.

Finally Table 10 provides background information on the number of crisis episodes covered by the respective datasets. Generally, the coverage is better for OECD countries than for emerging markets, partly reflecting the lesser number of EMEs covered. The best level of coverage is for inventories and the Jorgensen investment function, with the total number of crises being around 50, of which two thirds are currency crises. Three quarters of the crises covered are in OECD countries. The number of crises is less for the flow of funds equations, reflecting the lesser data availability for the flows. For all countries, we now have thirty crises, although these are helpfully distributed fairly evenly between EMEs and OECD countries. Finally for the Tobin investment function we have 15 crises for OECD countries.

## VI. CONCLUSION

This paper has provided evidence on the impact of financial crises on corporate financing and expenditure in a range of countries, both advanced and emerging markets. We find that the average level of corporate financing differs markedly between country groups, with emerging market corporate sectors being more dependent on external finance, and also more dependent on banks. Stylized differences are also present in balance sheets, with the corporate sector in emerging markets having a higher debt-equity ratio but also smaller corporate liabilities (including equity) than in industrial countries.

Statistical analysis of the changes in financing patterns and in corporate expenditures around the period of financial turbulence suggests that investment and inventory contractions are the main contributors to lower GDP growth after crises, although the effect is much greater in EMEs. There is a marked correlation of the debt/equity ratio to investment and inventory declines following crises. Econometric analysis of similar variables suggests that financial crises have a greater and more consistently negative impact on corporate sectors in emerging markets than in industrial countries, although even in the latter the impact is not negligible. Industrial countries benefit from the existence of multiple channels of intermediation, in that bond issuance is shown to pick up in the wake of banking crises.

Broad policy implications of international corporate financing patterns with regard to economic and financial development include that since external financing is so important to EMEs, the development of sound financial markets is all the more important. Trade credit and the banking sector are the main avenues for financing, implying a need to focus on their improvement.

Broad policy implications of international corporate financing patterns with regard to crisis prevention and mitigation spring from the fact that investment and inventory accumulation are the key areas of contraction in an economy following financial instability. The results suggest that the existence of bond markets mitigates the impact of financial crises on overall corporate financing. Bank lending and equity issuance tend to decline in the wake of a crisis, while bond issuance rises. Accordingly development of bond markets is recommended, while it needs to be borne in mind that only larger firms with a reputation will be able to take advantage of such facilities.

Implications for Fund surveillance and international financial architecture are the need for a closer focus on the corporate sector's performance in macroprudential surveillance rather than solely on the banking sector. The state of the corporate sector and corporate finance is crucial in determining the overall response of the economy to a shock. Macroprudential indicators should include corporate sector balance sheet and flow indicators as a priority (an "essential"

set of indicators) and the corporate sector not left as a solely “encouraged” field of analysis (as in Sundarajan et al (2002)). In order for this to be operational there is a need to encourage countries to produce flow of funds and sectoral balance sheet data. Meanwhile further analysis of the components of expenditure in the wake of crises as well as financial flows is recommended.

**Table III.1 Key Aggregate Corporate Balance Sheet Indicators, 1999 or latest**

	Total corporate liabilities to GDP	Shares of corporate liabilities				Debt-equity ratio	Liquidity ratio	Debt-GDP ratio
		Loans	Bonds	Equity	Trade			
<i>Median</i>								
G7 countries	2.48	0.23	0.08	0.63	0.06	0.59	0.21	0.50
Small industrial countries	1.96	0.30	0.04	0.57	0.08	0.61	0.26	0.76
Emerging market	1.75	0.27	0.21	0.40	0.14	0.73	0.42	0.66
<i>Standard deviation</i>								
G7 countries	0.80	0.15	0.06	0.16	0.07	0.52	0.39	0.21
Small industrial countries	1.00	0.15	0.03	0.16	0.04	1.05	0.07	0.13
Emerging market	0.51	0.17	0.16	0.23	0.42	1.59	0.50	0.37
<i>G7 countries</i>								
Canada (2000)	1.63	0.21	0.16	0.51	0.12	0.72	0.17	0.50
France (1997)	3.43	0.12	0.02	0.75	0.10	0.19	0.21	0.48
Germany (1998)	1.37	0.53	0.02	0.42	0.03	1.29	0.26	0.63
Italy (1999)	1.43	0.36	0.01	0.63	0.00	0.59	0.13	0.50
Japan (2000)	2.54	0.38	0.12	0.31	0.20	1.60	1.20	1.03
UK (1999)	2.95	0.23	0.08	0.64	0.06	0.47	0.27	0.73
USA (1999)	2.48	0.09	0.12	0.74	0.05	0.28	0.08	0.46
<i>Small and medium industrial countries</i>								
Australia (98)	1.78	0.24	0.12	0.57	0.07	0.62	0.19	0.63
Austria	1.06	0.69	0.07	0.20	0.04	3.87	0.17	0.81
Belgium	2.18	0.31	0.05	0.60	0.04	0.60	0.35	0.79
Denmark	1.44	0.44	0.02	0.53	0.01	0.87	0.27	0.66
Finland	4.57	0.12	0.01	0.85	0.02	0.16	0.15	0.61
Netherlands	3.05	0.30	0.02	0.58	0.10	0.54	0.31	0.97
Norway	1.84	0.38	0.07	0.45	0.10	0.98	0.25	0.82
Portugal	1.99	0.32	0.06	0.52	0.11	0.72	0.35	0.74
Spain	1.93	0.28	0.02	0.61	0.09	0.50	0.20	0.58
Sweden	2.79	0.30	0.03	0.57	0.10	0.59	0.30	0.93
<i>Emerging market countries</i>								
Croatia (2000)	1.49	0.13	0.21	0.52	0.14	0.66	0.02	0.50
Czech Rep.	2.27	0.27	0.02	0.40	0.31	0.73	0.20	0.66
Israel	1.15							
Korea	2.01	0.38	0.33	0.20	0.09	3.46	0.64	1.21

**Table III.2: Total corporate liabilities to GDP, Percent Changes, 1970-99**

	79/70	89/80	99/90	99/95
<i>Median</i>				
G7 countries	-8.9	18.4	23.5	31.6
Small industrial countries				39.4
<i>G7 countries</i>				
Canada	-0.7	-0.3	15.4	8.8
France	-24.5	114.0	60.8	31.6
Germany	3.3	11.6	21.6	26.2
Italy	-17.8	18.4	23.5	34.4
Japan	3.5	24.9	3.6	-1.6
United Kingdom	-34.4	113.8	64.3	39.4
United States	-8.9	16.5	86.9	47.4
<i>Small and medium industrial countries</i>				
Australia			31.3	11.5
Austria				22.0
Belgium				47.6
Denmark				15.4
Finland				145.3
Netherlands				47.5
Norway			29.5	31.3
Portugal				10.9
Spain				78.7
Sweden				56.3
<i>Emerging market countries</i>				
Israel	-3.3	86.5	28.7	19.6
Korea		2.8	34.2	20.6

**Table III.3: Loans/liabilities, Percent Change**

	79/70	89/80	99/90	99/95
<i>Median</i>				
G7 countries	6.1	-3.3	-20.7	-15.6
Small industrial countries				-11.8
<i>G7 countries</i>				
Canada	46.7	-3.3	-20.7	-12.3
France	13.8	-49.0	-44.9	-28.6
Germany	3.9	-5.2	-9.2	-9.6
Italy	-0.4	-8.1	-17.3	-25.2
Japan	6.1	11.5	-3.3	-5.4
United Kingdom	111.8	99.5	-38.9	-15.6
United States	5.2	13.5	-51.5	-21.6
<i>Small and medium industrial countries</i>				
Australia			-36.6	-8.0
Austria				-7.6
Belgium				-15.5
Denmark				-6.0
Finland				-61.2
Netherlands				-21.1
Norway			-8.7	0.2
Portugal				15.5
Spain				-26.7
Sweden				-28.8
<i>Emerging market country</i>				
Korea		11.4	-11.8	-14.1

**Table III.4: Debt Equity Ratio, Percent Change**

	79/70	89/80	99/90	99/95
<i>Median</i>				
G7 countries	64.5	-16.4	-41.0	-31.3
Small industrial countries				-24.9
<i>G7 countries</i>				
Canada	52.1	13.8	-13.9	-9.2
France	114.8	-71.1	-54.6	-36.2
Germany	-1.2	-45.2	-41.0	-31.3
Italy	-18.5	-24.0	-35.2	-44.7
Japan	84.6	-8.9	-19.7	-16.9
United Kingdom			-49.6	-21.3
United States	76.9	13.1	-66.5	-37.3
<i>Small and medium industrial countries</i>				
Australia			-57.1	-5.6
Austria				-21.4
Belgium				-21.6
Denmark				-28.2
Finland				-71.2
Netherlands				-38.2
Norway			-30.1	-9.2
Portugal				20.7
Spain				-48.9
Sweden				-45.9
<i>Emerging market countries</i>				
Czech Rep.				20.2
Korea		5.4	8.2	-15.2

**Table III. 5Loans plus Bonds to GDP,  
Percent Change**

	1979/70	1989/80	1999/90	1999/95
<i>Median</i>				
G7 countries	16.9	14.6	2.9	3.3
Small industrial countries				17.0
<i>G7 countries</i>				
Canada	30.4	13.5	1.0	3.3
France	34.0	15.6	-8.0	-4.7
Germany	-25.5	7.2	9.5	12.2
Italy	-26.8	6.1	-2.4	-1.6
Japan	75.7	50.2	2.9	-4.6
United Kingdom			14.1	21.7
United States	3.4	34.6	6.8	17.6
<i>Small and medum industrial countries</i>				
Australia			-16.0	7.0
Austria				16.8
Belgium				31.1
Denmark				0.8
Finland				-2.2
Netherlands				16.7
Norway			15.4	32.5
Portugal				28.9
Spain				27.2
Sweden				17.1
<i>Emerging market countries</i>				
Czech Rep.				-1.8
Korea		42.2	37.8	9.1

**Table III.6: Liquidity Ratio, Percent Change**

	79/70	89/80	99/90	99/95
<i>Median</i>				
G7 countries	9.1	23.8	17.0	8.3
Small industrial countries				17.4
<i>G7 countries</i>				
Canada	42.7	38.5	31.4	21.4
France	49.1	32.3	27.3	7.9
Germany	22.3	23.2	13.3	15.7
Italy	-9.3	17.4	-0.1	16.1
Japan	9.1	23.8	-15.0	-9.8
United Kingdom	7.3	113.0	17.0	8.3
United States	-1.8	6.6	23.9	8.0
<i>Small and medium industrial countries</i>				
Australia			20.5	9.7
Austria				-10.2
Belgium				39.8
Denmark				8.3
Finland				-16.7
Netherlands				31.6
Norway			18.2	25.0
Portugal				51.7
Spain				26.9
Sweden				0.8
<i>Emerging market countries</i>				
Croatia				
Czech Rep.				-20.8
Israel	74.0	-33.5	24.1	30.4
Korea		74.4	28.9	-1.0

**Table III.7: Aggregate Corporate Flow of Funds, 1995-99**

	Net financing	Gross financing	Share of total financing			Liq accum
	to GDP	to GDP	Loans	Bonds	Equities	to GDP
<i>Median</i>						
G7 countries		3.4	34.5	24.0	41.2	0.6
Small industrial countries	-0.2	5.3	54.3	10.1	35.8	1.2
Emerging market countries	-11.7	18.6	44.9	21.5	26.9	1.7
<i>G7 countries</i>						
Canada		5.8	21.2	24.0	41.2	1.9
France (1995-97)		4.9	10.5	6.2	59.4	0.6
Germany (1995-98)		3.2	75.7	3.5	17.8	1.5
Italy		3.4	52.7	-1.4	48.7	0.2
Japan		0.2	54.2	24.4	14.3	0.6
United Kingdom		5.5	21.9	26.3	48.2	1.2
United States		2.9	34.5	76.1	-39.9	0.6
<i>Small and medium industrial countries</i>						
Australia	-2.9	8.0	25.2	18.1	41.5	1.8
Austria	-0.3	0.6	55.1	12.8	28.6	0.1
Belgium	-0.1	0.3	35.0	12.8	47.2	0.1
Denmark	1.6	2.9	100.6	-46.7	42.2	0.6
Finland	0.5	4.3	33.0	-0.4	84.5	0.4
Netherlands	1.6	10.1	58.0	3.5	24.5	2.6
Norway	-4.7	13.9	37.1	10.1	46.8	2.3
Portugal	-3.0	12.7	53.5	10.2	30.1	3.5
Spain	-0.1	1.4	57.7	-0.8	25.4	0.3
Sweden	-0.3	6.3	57.1	13.7	2.9	2.0
<i>Emerging market countries</i>						
Czech Rep.		23.2	38.5	5.3	24.9	1.7
India (1990-97)	-0.4	0.7	51.2	18.4	29.1	0.0
Korea	-11.7	16.5	31.6	32.0	28.8	5.1
Thailand	-19.3	20.8	58.7	24.6	15.5	1.7

**Table III.8: Gross Financing to GDP, 1970-99**

	1970-79	1980-89	1990-99	1995-99
<i>Median</i>				
G7 countries	8.3	7.0	4.5	3.4
Small industrial countries				5.3
Emerging market countries	6.3	6.3	18.3	18.6
<i>G7 countries</i>				
Canada	8.3	7.0	5.3	5.8
France (1995-97)	9.8	8.8	6.3	4.9
Germany (1995-98)	4.2	3.2	4.6	3.2
Italy	9.3	7.7	4.5	3.4
Japan	12.7	10.4	3.5	0.2
United Kingdom	6.3	6.6	4.1	5.5
United States	5.3	3.3	2.2	2.9
<i>Small and medium industrial countries</i>				
Australia				8.0
Austria				0.6
Belgium				0.3
Denmark				2.9
Finland				4.3
Netherlands				10.1
Norway			9.1	13.9
Portugal				12.7
Spain				1.4
Sweden				6.3
<i>Emerging market countries</i>				
Czech Rep.			25.7	23.2
India (1990-97)	0.1	0.3	0.7	
Korea	18.8	18.5	19.7	16.5
South Africa	6.0	4.9	8.5	10.4
Thailand	6.6	7.7	18.3	20.8

**Table III.9: Loan Share of Total Financing, 1970-99**

	1970-79	1980-89	1990-99	1995-99
<i>Median</i>				
G7 countries	53.0	62.1	36.8	34.5
Small industrial countries				54.3
Emerging market countries	51.8	43.9	37.8	35.9
<i>G7 countries</i>				
Canada	37.3	33.9	24.3	21.2
France (1995-97)	53.0	41.3	17.9	10.5
Germany (1995-98)	87.1	80.9	75.4	75.7
Italy	76.7	73.3	56.8	52.7
Japan	86.0	74.3	62.0	54.2
United Kingdom	47.5	58.4	30.9	21.9
United States	35.3	62.1	36.8	34.5
<i>Small and medium industrial countries</i>				
Australia				25.2
Austria				55.1
Belgium				35.0
Denmark				100.6
Finland				33.0
Netherlands				58.0
Norway			42.7	37.1
Portugal				53.5
Spain				57.7
Sweden				57.1
<i>Emerging market countries</i>				
Czech Rep.			37.8	38.5
India (1990-97)	56.7	58.5	51.2	
Korea	46.9	43.8	32.5	31.6
South Africa	58.5	40.4	33.2	33.4
Thailand	44.2	44.0	56.0	58.7

**Table III.10: Bond Share of Total Financing, 1970-99**

	1970-79	1980-89	1990-99	1995-99
<i>Median</i>				
G7 countries	4.4	7.1	19.3	24.0
Small industrial countries				10.1
Emerging market countries	15.0	20.7	18.4	14.9
<i>G7 countries</i>				
Canada	27.5	32.9	24.3	24.0
France (1995-97)	2.7	5.9	7.0	6.2
Germany (1995-98)	2.1	6.3	3.7	3.5
Italy	5.4	3.7	-0.8	-1.4
Japan	4.4	14.2	19.3	24.4
United Kingdom	1.1	7.1	23.6	26.3
United States	27.9	60.3	75.3	76.1
<i>Small and medium industrial countries</i>				
Australia				18.1
Austria				12.8
Belgium				12.8
Denmark				-46.7
Finland				-0.4
Netherlands				3.5
Norway			8.4	10.1
Portugal				10.2
Spain				-0.8
Sweden				13.7
<i>Emerging market countries</i>				
Czech Rep.			5.0	5.3
India (1990-97)	15.6	17.2	18.4	
Korea	14.4	24.1	31.8	32.0
South Africa	10.6	8.5	5.3	4.9
Thailand	26.4	30.1	26.8	24.6

**Table III.11: Equity Share of Total Financing, 1970-99**

	1970-79	1980-89	1990-99	1995-99
<i>Median</i>				
G7 countries	8.8	14.1	38.7	41.2
Small industrial countries				35.8
Emerging market countries	21.6	23.1	28.0	26.9
<i>G7 countries</i>				
Canada	14.0	24.3	38.7	41.2
France (1995-97)	8.8	23.0	52.2	59.4
Germany (1995-98)	10.7	9.9	17.7	17.8
Italy	17.9	23.0	44.0	48.7
Japan	7.0	9.0	10.5	14.3
United Kingdom	7.8	14.1	41.6	48.2
United States	6.3	-43.3	-41.5	-39.9
<i>Small and medium industrial countries</i>				
Australia				41.5
Austria				28.6
Belgium				47.2
Denmark				42.2
Finland				84.5
Netherlands				24.5
Norway			41.7	46.8
Portugal				30.1
Spain				25.4
Sweden				2.9
<i>Emerging market countries</i>				
Czech Rep.			24.6	24.9
India (1990-97)	13.2	20.7	29.1	
Korea	17.0	21.8	28.0	28.8
South Africa	30.0	55.5	59.6	58.5
Thailand	26.2	24.5	16.2	15.5

**Table III.12: Accumulation of Liquid Assets, 1970-99**

<i>Median</i>	1970-79	1980-89	1990-99	1995-99
G7 countries	1.9	1.7	1.0	0.6
Small industrial countries				1.2
Emerging market countries	1.6	3.0	3.6	2.8
<i>G7 countries</i>				
Canada	2.1	1.0	1.4	1.9
France (1995-97)	1.7	1.4	1.3	0.6
Germany (1995-98)	1.9	1.8	2.0	1.5
Italy	3.8	2.8	0.3	0.2
Japan	4.6	3.7	0.2	0.6
United Kingdom	1.8	1.7	1.0	1.2
United States	0.7	0.6	0.5	0.6
<i>Small and medium industrial countries</i>				
Australia				1.8
Austria				0.1
Belgium				0.1
Denmark				0.6
Finland				0.4
Netherlands				2.6
Norway			1.4	2.3
Portugal				3.5
Spain				0.3
Sweden				2.0
<i>Emerging market countries</i>				
Czech Rep.			3.2	1.7
India (1990-97)				
Korea	6.2	6.2	7.8	5.1
South Africa	1.6	3.0	4.1	3.8
Thailand	1.0	0.9	2.8	1.7

**Table III.13: Crisis Episodes**

	Banking	Currency
<i>G7 countries</i>		
US	1984	1985
UK		1976, 1982, 1992
Canada		1981, 1986
France	1994	1992
Italy	1990	1976, 1992, 1995
Japan	1992	1979
<u>Germany</u>	<u>1977</u>	
Total	5	11
<i>Small and medium industrial countries</i>		
Australia	1989	1976, 1983, 1985
Austria		
Belgium		1982*
Denmark	1987*	1976*, 1992*, 1993*
Finland	1991*	1986*, 1991*, 1993*
Netherlands		
Norway	1987	1986
Portugal		1976*, 1978*, 1983*
Spain	1977*	1976*, 1982*, 1992*, 1995
<u>Sweden</u>	<u>1991*</u>	<u>1992</u>
Total	6	20
<i>Emerging market countries</i>		
Croatia		
Czech		
India	1994	1991
Israel	1977	1977
Korea	1998	1980, 1998
South Africa	1977, 1985	1975, 1981, 1988, 1992, 1995
<u>Thailand</u>	<u>1983*, 1998</u>	<u>1998</u>
Total	7	10
TOTAL 2/	18	41

**TABLE IV.1 CUMULATIVE CHANGE IN EXPENDITURE COMPONENTS RELATIVE TO TREND IN BANKING AND CURRENCY CRISIS YEARS T AND T+1**

Country	Year	GDP	Total domestic demand	Total Public Domestic Demand	Private Domestic Demand				Foreign balance
					Total	Private consumption expenditure	Gross private fixed capital formation	Changes in inventories	
		1(=2+8)	2(=3+4)	3	4(=5+6+7)	5	6	7	8
<u>Emerging market countries</u>									
Israel	1977	-2.5	-4.1	-5.9	1.4	2.9	-1.4	-0.1	1.6
Korea, Rep.	1980	-10.8	-13.6	-1.0	-12.7	-4.0	-7.2	-1.4	2.8
South Africa	1981	1.0	4.2	1.5	2.7	8.0		-5.3	-1.8
Portugal	1983	-8.6	-13.2	0.1	-13.4	-4.4	-5.8	-3.2	4.6
Thailand	1983	-3.1	-3.6	0.2	-4.1	0.2		-4.3	0.8
South Africa	1985	-4.5	-1.8	0.9	-2.7	-1.7		-0.9	3.4
South Africa	1988	4.6	5.1	-0.3	1.6	1.8		-0.2	-0.5
India	1991	-5.4	-6.9	-0.7	-2.1	-2.2	0.0	0.1	1.5
Portugal	1992	-6.1	-6.1	-0.7	-5.4	-1.7	-3.5	-0.2	0.1
South Africa	1992	-4.4	-4.3	0.0	-2.3	-3.4		1.1	-0.1
India	1994	3.0	5.3	-0.4	3.2	1.1	0.0	2.1	-2.3
South Africa	1995	4.0	5.0	-0.7	3.0	3.7		-0.7	-0.9
Korea, Rep.	1997	-13.0	-26.6	0.4	-27.0	-9.4	-10.4	-7.2	13.6
Thailand	1998	-12.5	-22.7	-0.2	-8.2	-8.1		-0.1	10.2
Average		-4.2	-6.0	-0.5	-4.7	-1.2	-4.1	-1.5	2.4
Median		-4.4	-4.2	-0.2	-2.5	-1.7	-3.5	-0.5	1.1
Range		17.6	31.8	7.4	30.2	17.4	10.4	9.2	15.8
<u>Industrial Countries</u>									
Australia	1976	-1.0	-1.0	-1.4	0.3	-0.8	0.4	0.7	0.1
Italy	1976	3.1	2.7	-0.1	3.2	1.6	1.1	0.5	0.4
UK	1976	1.8	0.2	-0.9	1.1	-1.6	0.6	2.1	1.7
Spain	1977	-0.3	-2.1	0.5	-2.0	-0.2	-0.2	-1.6	1.8
Japan	1979	7.0	6.4	3.7	2.8	1.0	1.6	0.2	0.5
Canada	1981	-5.6	-7.2	0.5	-7.6	-2.8	-1.5	-3.3	1.4
Sweden	1981	-2.9	-4.2	-0.5	-3.8	-0.4	-1.2	-2.2	1.3
Spain	1982	-1.1	-2.3	-0.5	-2.7	-1.7	-1.1	0.1	1.2
UK	1982	0.7	1.7	1.4	0.3	-0.5	-0.4	1.2	-1.0
Australia	1983	-0.2	-0.5	1.3	-1.7	-1.0	-1.8	1.1	0.3
Australia	1985	0.5	-1.2	0.6	-1.8	-0.4	0.0	-1.4	1.7
US	1985	1.5	1.8	1.1	0.9	1.8	0.3	-1.2	-0.5
Canada	1986	2.2	3.1	-0.6	3.8	1.6	2.1	0.0	-1.0
Finland	1986	2.7	3.9	0.7	3.3	2.0	0.9	0.4	-1.3
Norway	1987	-3.7	-6.5	0.1	-6.6	-3.3	-0.2	-3.1	2.8
Australia	1989	0.9	1.3	1.3	0.1	2.6	-2.1	-0.4	-0.6
Finland	1991	-13.1	-16.0	-0.8	-15.2	-5.8	-8.0	-1.5	2.9
France	1992	-3.7	-4.5	0.7	-5.2	-1.4	-2.2	-1.6	0.8
Italy	1992	-3.9	-7.7	-1.1	-6.5	-3.5	-2.3	-0.8	3.8
Japan	1992	-4.4	-4.9	1.4	-6.3	-0.7	-5.0	-0.6	0.5
Norway	1992	0.0	0.8	0.0	0.7	0.1	0.1	0.5	-0.8
Spain	1992	-6.0	-8.9	-0.6	-8.3	-3.2	-4.5	-0.6	2.9

Sweden	1992	-6.6	-8.8	-0.1	-8.7	-3.6	-5.8	0.7	2.3
UK	1992	-2.1	-2.1	0.2	-2.3	-1.1	-2.0	0.8	-0.1
Denmark	1993	1.7	2.6	0.9	1.7	1.8	-0.2	0.2	-0.9
France	1994	-0.1	0.3	-0.9	1.2	-0.5	0.2	1.5	-0.5
Italy	1995	0.8	0.0	0.0	0.0	-0.3	0.6	-0.3	0.8
Spain	1995	-0.2	-0.5	-0.5	-0.7	-0.7		0.0	0.2
Average		-1.2	-1.9	0.2	-2.1	-0.7	-1.1	-0.3	0.7
Median		-0.2	-0.8	0.1	-1.2	-0.6	-0.2	0.0	0.5
Range		20.1	22.4	5.0	19.0	8.4	10.1	5.4	5.0

**Table IV:2: Change in flow of funds/GDP in year of crisis**

All crises (27)

	External finance	Bank loans	Bond issues	Equity issues	Trade credit	Liquidity
Average	-0.6	-0.5	0.1	-0.1	-0.1	-0.7
OECD	-0.1	0.0	0.1	-0.2	0.5	-0.1
EME	-1.4	-1.4	0.0	-0.1	-1.0	-1.6

Banking crises (9)

	External finance	Bank loans	Bond issues	Equity issues	Trade credit	Liquidity
Average	-2.0	-2.2	0.3	0.2	0.1	-1.7
OECD	-0.5	-0.6	0.3	-0.3	1.7	-0.1
EME	-3.4	-4.3	0.3	0.6	-1.5	-3.6

Currency crises (19)

	External finance	Bank loans	Bond issues	Equity issues	Trade credit	Liquidity
average	-0.7	-0.4	-0.1	-0.2	-0.4	-0.8
OECD	0.1	0.3	0.0	-0.1	0.1	0.0
EME	-1.8	-1.4	-0.1	-0.3	-1.2	-1.9

**TABLE V.1A TOBIN'S Q INVESTMENT FUNCTION**

Dependent variable: difference of log of real private investment  
Fixed effects, GLS, cross section weights, White standard errors

	All		
DLY	2.3 (0.11)**	2.3 (0.11)**	2.3 (0.11)**
DLY(-1)	-0.38 (0.16)**	-0.41 (0.15)**	-0.42 (0.15)**
DLIP (-1)	0.26 (0.049)**	0.29 (0.05)**	0.28 (0.05)**
LIY(-1)	-0.14 (0.02)**	-0.16 (0.023)**	-0.16 (0.023)**
LTOBIN(-1)	0.016 (0.0024)**	0.017 (0.003)**	0.019 (0.003)**
BDUM(-1)	-0.027 (0.014)*	-0.033 (0.015)**	-0.18 (0.09)**
CDUM(-1)	-0.028 (0.009)**	-0.033 (0.008)**	-0.022 (0.013)*
LBDEBT(-1)		0.056 (0.024)**	0.051 (0.024)**
BDUM*LBDEBT(-1)			-0.207 (0.12)*
CDUM*LBDEBT(-1)			0.015 (0.03)
Adjusted R2	0.77	0.74	0.74
SE	0.041	0.039	0.039
Observations	258	227	227
Countries	19	18	18

	OECD		
DLY	2.27 (0.12)**	2.26 (0.11)**	2.27 (0.11)**
DLY(-1)	-0.41 (0.16)**	-0.3 (0.15)**	-0.34 (0.15)**
DLIP (-1)	0.25 (0.05)**	0.29 (0.05)**	0.28 (0.05)**
LIY(-1)	-0.141 (0.023)**	-0.2 (0.022)**	-0.193 (0.02)**
LTOBIN(-1)	0.016 (0.003)**	0.017 (0.003)**	0.019 (0.003)**
BDUM(-1)	-0.02 (0.015)	-0.036 (0.016)**	-0.18 (0.11)*
CDUM(-1)	-0.026 (0.01)**	-0.036 (0.009)**	-0.019 (0.02)
LBDEBT(-1)		0.126 (0.027)**	0.114 (0.027)**
BDUM*LBDEBT(-1)			-0.214 (0.156)
CDUM*LBDEBT(-1)			0.024 (0.04)
Adjusted R2	0.72	0.73	0.73
SE	0.037	0.034	0.034
Observations	233	215	215
Countries	17	16	16

Key: DLY, change in log of real gross domestic product, DLIP change in log of real private fixed investment, LIY log of investment less log of GDP, LTOBIN, log of the ratio of the stock of corporate equity to the capital stock, BDUM dummy for banking crisis, CDUM dummy for currency crisis, LBDEBT log of the ratio of corporate bank borrowing to total debt.

**TABLE V.1B JORGENSEN INVESTMENT FUNCTION**

Dependent variable: difference of log of real private investment  
Fixed effects, GLS, cross section weights, White standard errors

	All	EME	OECD
DLY	2.4 (0.112)**	3.2 (0.25)**	2.11 (0.13)**
DLY(-1)	-0.23 (0.14)*	0.26 (0.44)	-0.27 (0.16)*
DLIP(-1)	0.26 (0.04)**	0.16 (0.095)*	0.23 (0.05)**
LIY(-1)	-0.144 (0.014)**	-0.203 (0.03)**	-0.127 (0.015)**
DIRD	-0.0004 (8E-5)**	-0.00027 (7.6E-5)**	0.0006 (0.0008)
IRD(-1)	-0.0006 (0.0002)**	-0.0005 (8.3E-5)**	-0.0028 (0.0006)**
BDUM(-1)	-0.02 (0.009)**	-0.073 (0.035)**	-0.016 (0.0085)*
CDUM(-1)	-0.025 (0.006)**	-0.0074 (0.018)	-0.027 (0.0068)**
Adjusted R2	0.69	0.77	0.69
SE	0.06	0.08	0.05
Observations	517	105	412
Countries	23	6	17

Key: DLY, change in log of real gross domestic product, DLIP change in log of real private fixed investment, LIY log of investment less log of GDP, DIRD change in the domestic money market interest rate, IRD level of the domestic money market rate, BDUM dummy for banking crisis, CDUM dummy for currency crisis

	All	All	All
DLY	2.4 (0.11)**	2.23 (0.11)**	2.33 (0.107)**
DLY(-1)	-0.388 (0.153)**	-0.236 (0.14)*	-0.27 (0.15)*
DLIP(-1)	0.239 (0.054)**	0.25 (0.053)**	0.214 (0.059)**
LIY(-1)	-0.133 (0.024)**	-0.187 (0.027)**	-0.162 (0.026)**
DIRD	0.0005 (0.0009)	0.0006 (0.001)	0.0012 (0.001)
IRD(-1)	-0.0014 (0.0008)*	-0.0023 (0.0007)**	-0.0013 (0.0008)**
BDUM(-1)	-0.026 (0.013)**	-0.143 (0.102)	-0.178 (0.082)**
CDUM(-1)	-0.036 (0.01)**	-0.003 (0.02)	-0.026 (0.02)
LDER(-1)	-0.0092 (0.0032)**		-0.015 (0.004)**
BDUM*LDER(-1)	-0.02 (0.01)**		-0.0176 (0.01)*
CDUM*LDER(-1)	-0.034 (0.013)**		-0.038 (0.011)**
LBDEBT(-1)		0.115 (0.029)**	0.115 (0.03)**
BDUM*LBDEBT(-1)		-0.17 (0.04)	-0.214 (0.118)**
CDUM*LBDEBT(-1)		0.05 (0.04)	0.028 (0.031)
Adjusted R2	0.74	0.76	0.78
SE	0.04	0.04	0.038
Observations	255	237	237
Countries	19	18	18

Key: as above with LDER log of debt equity ratio, LDBT log of bank debt/total debt ratio

**TABLE V.2 INVENTORY ADJUSTMENT FUNCTION**

Dependent variable: change in inventories/GDP

Fixed effects, GLS, cross section weights, White standard errors

	All	EME	OECD
DLY	0.06 (0.008)**	0.17 (0.04)**	0.049 (0.007)**
IY(-1)	0.46 (0.13)**	0.38 (0.28)	0.5 (0.108)**
DIRD	2.1E-5 (1.2E-5)**	1.9E-5 (1.1E-5)*	0.00011 (3.4E-5)**
IRD(-1)	2.4E-6 (1.3E-5)**	8.6E-6 (1.4E-5)	-1.2E-7 (2E-5)
BDUM	0.0002 (0.0007)	-0.02 (0.008)**	0.001 (0.0006)*
CDUM	-9.7E-6 (0.0003)	0.0006 (0.003)	-4.2E-5 (0.0003)
BDUM(-1)	0.0008 (0.0004)**	0.004 (0.009)	0.00036 (0.00036)
CDUM(-1)	-5.9E-6 (0.0003)	-0.0027 (0.003)	-5E-5 (0.0003)
Adjusted R2	0.49	0.49	0.53
SE	0.009	0.018	0.006
Observations	569	108	461
Countries	23	6	17

Key: DLY, change in log of real gross domestic product, DLIP change in log of real private fixed investment, IY ratio of real inventory accumulation to GDP, DIRD change in the domestic money market interest rate, IRD level of the domestic money market rate, BDUM dummy for banking crisis, CDUM dummy for currency crisis

**Table V.3: Bank lending function**

Dependent variable: difference of bank lending/GDP

Fixed effects, GLS, cross section weights, White standard errors

	All	EME	OECD
DLY	0.21 (0.028)**	0.13 (0.054)**	0.203 (0.032)**
DLY(-1)	0.078 (0.024)**	0.045 (0.032)	0.077 (0.04)*
BLY(-1)	-0.47 (0.046)**	-0.71 (0.117)**	-0.38 (0.052)**
DIRD	0.0014 (0.00016)**	0.0015 (9.8E-5)**	0.0017 (0.0004)**
IRD(-1)	0.0008 (0.0003)**	0.0013 (0.00027)**	0.00022 (0.00027)
BDUM	-0.0084 (0.0036)**	-0.019 (0.008)**	-0.0016 (0.0032)
CDUM	-0.0015 (0.0025)	-0.011 (0.0049)**	0.002 (0.0032)
BDUM(-1)	-0.0093 (0.0015)**	-0.013 (0.0028)**	-0.01 (0.0025)**
CDUM(-1)	-0.0039 (0.0011)**	-0.0046 (0.0028)*	-0.0057 (0.002)**
Adjusted R2	0.47	0.63	0.44
SE	0.025	0.032	0.019
Observations	362	120	242
Countries	23	6	17

Key: DLY, change in log of real gross domestic product, BLY ratio of flow of bank lending to companies to GDP, DIRD change in the domestic money market interest rate, IRD level of the domestic money market rate, BDUM dummy for banking crisis, CDUM dummy for currency crisis

**TABLE V.4: BOND ISSUANCE FUNCTION**

Dependent variable: difference of bond issuance/GDP

Fixed effects, GLS, cross section weights, White standard errors

	All	EME	OECD
DLY	0.007 (0.006)	-0.0004 (0.017)	0.02 (0.01)**
DLY(-1)	0.032 (0.011)**	0.03 (0.035)	0.044 (0.008)**
BOY(-1)	-0.48 (0.08)**	-0.34 (0.14)**	-0.55 (0.096)**
DIRD	-0.00014 (6.3E-5)**	0.00022 (0.00029)	-0.00029 (6.6E-5)**
IRD(-1)	8.4E-5 (3.8E-5)**	0.00021 (0.00016)	0.00012 (5.1E-5)
BDUM	0.0014 (0.0007)**	0.0009 (0.0015)	0.0023 (0.0009)**
CDUM	-0.0009 (0.0005)*	-0.0037 (0.002)*	-0.00023 (0.0006)
BDUM(-1)	0.001 (0.0015)	-0.0032 (0.0057)	0.0021 (0.001)**
CDUM(-1)	-0.0015 (0.0005)**	-0.0042 (0.004)	-0.0008 (0.0002)**
Adjusted R2	0.22	0.14	0.27
SE	0.009	0.011	0.008
Observations	346	104	242
Countries	22	5	17

Key: See Table V.3, BOY ratio of flow of bond issuance by companies to GDP

**Table V.5: Equity issuance function**

Dependent variable: difference of equity issuance/GDP

Fixed effects, GLS, cross section weights, White standard errors

	All	EME	OECD
DLY	-0.003 (0.005)	0.03 (0.017)*	-0.022 (0.005)**
DLY(-1)	0.0004 (0.005)	-0.015 (0.022)	0.002 (0.004)
EQY(-1)	-0.45 (0.057)**	-0.53 (0.13)**	-0.37 (0.052)**
DIRD	-0.0003 (9.3E-5)**	-0.0002 (0.0003)	-0.0006 (0.0001)**
IRD(-1)	-0.00013 (8.2E-5)	-3.8E-5 (0.00032)	-0.00027 (8.6E-5)**
BDUM	-0.0017 (0.0012)	0.00025 (0.0034)	-0.004 (0.0028)
CDUM	-0.0007 (0.0008)	-0.00014 (0.0034)	-0.0006 (0.001)
BDUM(-1)	0.0005 (0.0016)	0.0044 (0.0045)	-0.0042 (0.001)**
CDUM(-1)	0.0011 (0.0011)	0.0072 (0.0054)	-0.001 (0.00032)**
Adjusted R2	0.17	0.23	0.24
SE	0.01	0.01	0.009
Observations	339	104	235
Countries	22	5	17

Key: See Table V.3, EQY ratio of flow of equity issuance by companies to GDP

**TABLE V.6: TRADE CREDIT FUNCTION**

Dependent variable: difference of trade credit/GDP  
Fixed effects, GLS, cross section weights, White standard errors

	All	EME	OECD
DLY	0.01 (0.003)**	0.0085 (0.012)	0.013 (0.006)**
DLY(-1)	-0.00049 (0.0018)	-0.001 (0.0067)	0.00046 (0.0042)
TCY(-1)	-0.76 (0.066)**	-0.76 (0.11)**	-0.76 (0.09)**
DIRD	9.5E-5 (3.9E-6)**	9.9E-5 (5.4E-6)**	0.0003 (0.00011)**
IRD(-1)	8.4E-5 (1.1E-5)**	9.3E-5 (1.7E-5)**	-8.1E-5(7E-5)
BDUM	-8.7E-5 (0.0005)	-0.0012 (0.0019)	0.0014 (0.0017)
CDUM	-0.00041 (0.0003)	-0.0019 (0.0023)	-0.00013 (0.0009)
BDUM(-1)	-0.00075 (0.00024)**	-0.0015 (0.0009)	-0.0008 (0.001)
CDUM(-1)	-0.00048 (0.00015)**	6.7E-5 (0.0011)	-0.00046 (0.00043)
Adjusted R2	0.4	0.5	0.32
SE	0.01	0.009	0.01
Observations	350	120	230
Countries	23	6	17

Key: See Table V.3, TCY ratio of flow of trade credit to companies to GDP

**TABLE V.7: EXTERNAL FINANCING FUNCTION**

Dependent variable: difference of external financing/GDP  
Fixed effects, GLS, cross section weights, White standard errors

	All	EME	OECD
DLY	0.21 (0.048)**	0.12 (0.067)*	0.278 (0.097)**
DLY(-1)	0.057 (0.024)**	0.022 (0.035)	0.117 (0.048)**
EXTY(-1)	-0.38 (0.05)**	-0.37 (0.097)**	-0.386 (0.057)**
DIRD	0.013 (0.0003)**	0.0017 (0.00047)**	0.001 (0.0006)*
IRD(-1)	0.00012 (0.00025)	0.0003 (0.0005)	0.0003 (0.0005)
BDUM	-0.0072 (0.006)	-0.018 (0.01)*	0.0005 (0.0057)
CDUM	-0.0025 (0.0039)	-0.0187 (0.008)**	0.0039 (0.0047)
BDUM(-1)	-0.012 (0.0027)**	-0.0125 (0.005)**	-0.018 (0.004)**
CDUM(-1)	-0.0044 (0.0014)**	0.00085 (0.0006)	-0.0084 (0.0026)**
Adjusted R2	0.29	0.21	0.32
SE	0.028	0.033	0.025
Observations	324	104	220
Countries	22	5	17

Key: See Table V.3, EXTY ratio of flow of external financing to companies to GDP

**Table V.8: Liquidity accumulation function**

Dependent variable: difference of liquidity accumulation/GDP  
 Fixed effects, GLS, cross section weights, White standard errors

	All	EME	OECD
DLY	0.038 (0.019)**	0.097 (0.048)**	0.024 (0.018)
DLY(-1)	0.0082 (0.012)	0.033 (0.022)	0.016 (0.015)
LIQY(-1)	-0.6 (0.06)**	-0.48 (0.09)**	-0.67 (0.076)**
DIRD	-0.00015 (0.00012)	6.9E-5 (0.00035)	-0.0005 (0.00017)**
IRD(-1)	-0.00012 (9.9E-5)	-0.00032 (0.00036)	-0.0001 (0.00015)
BDUM	-0.0034 (0.0029)	-0.0086 (0.0064)	0.0004 (0.00032)
CDUM	-0.0016 (0.0021)	-0.005 (0.007)	-0.00067 (0.0025)
BDUM(-1)	-0.002 (0.002)	-0.0032 (0.00035)	-0.0036 (0.0041)
CDUM(-1)	0.00025 (0.0007)	0.0067 (0.0052)	-0.0017 (0.0008)**
Adjusted R2	0.26	0.24	0.30
SE	0.014	0.017	0.013
Observations	346	104	242
Countries	22	5	17

Key: See Table V.3, LIQY ratio of flow of liquidity to companies to GDP

**TABLE V.9: SUMMARY TABLE OF SIGNIFICANT DUMMY VARIABLES**

Equation	All	EME	OECD
Tobin	-0.033 BDUM(-1)	n.a.	-0.036 BDUM(-1)
	-0.033 CDUM(-1)	n.a.	-0.036 CDUM (-1)
Jorgensen	-0.02 BDUM(-1)	-0.073 BDUM(-1)	-0.016 BDUM (-1)
	-0.025 CDUM(-1)		-0.027 CDUM (-1)
Inventories			0.001 BDUM
		-0.02 CDUM	
	0.0008 BDUM(-1)		
Bank lending	-0.0084 BDUM	-0.019 BDUM	
		-0.011 CDUM	
	-0.0093 BDUM(-1)	-0.013 BDUM(-1)	-0.01 BDUM(-1)
	-0.0039 CDUM(-1)	-0.0046 CDUM(-1)	-0.0057 CDUM(-1)
Bond issuance	0.0014 BDUM		0.0023 BDUM
	-0.0009 CDUM	-0.0037 CDUM	
			0.0021 BDUM(-1)
	-0.0015 CDUM(-1)		-0.0008 CDUM(-1)
Equity issuance			-0.0042 BDUM(-1)
			-0.001 CDUM(-1)
Trade credit	-0.00075 BDUM(-1)		
	-0.00048 CDUM(-1)		
External financing		-0.019 BDUM	
		-0.019 CDUM	
	-0.012 BDUM(-1)	-0.013 BDUM(-1)	-0.018 BDUM(-1)
	-0.004 CDUM (-1)		-0.008 CDUM(-1)
Liquidity			-0.0017 CDUM(-1)

**TABLE V.10: NUMBER OF CRISES FOR EACH EQUATION**

		All	EME	OECD
Tobin	Bank	5	n.a.	4
	Currency	12	n.a.	11
Jorgensen	Bank	14	5	9
	Currency	36	7	29
Inventories	Bank	15	5	10
	Currency	40	8	31
Bank lending	Bank	10	5	5
	Currency	20	8	12
Bond issuance	Bank	10	5	5
	Currency	20	8	12
Equity issuance	Bank	9	5	4
	Currency	20	8	12
Trade credit	Bank	9	5	4
	Currency	20	8	12
External finance	Bank	8	5	3
	Currency	20	8	12
Liquidity	Bank	10	5	5
	Currency	20	8	12

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Chart 1, Private Fixed Investment Deviation from Trend Growth and Debt-Equity Ratio, Crisis Years

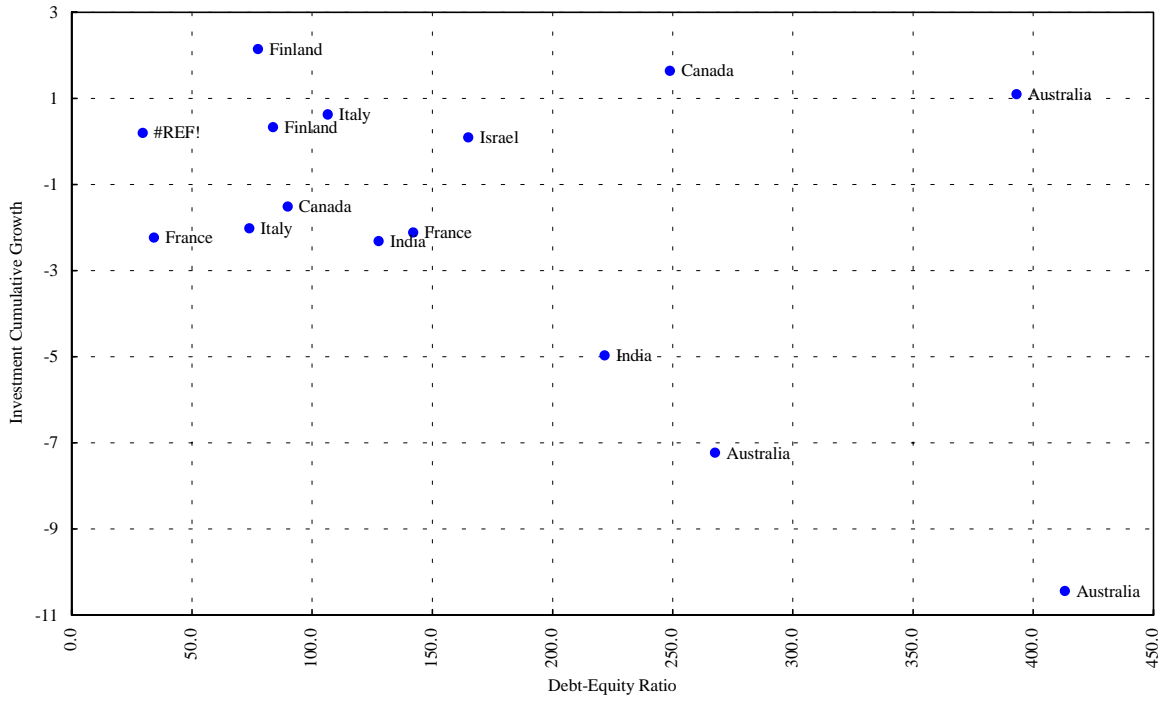


Chart 2, Private Fixed Inventory Deviation from Trend Growth and Debt-Equity Ratio, Crisis Years

