Chapter 4

Corporate Savings, Investment and Financial Structure in East Asia: Micro-evidence

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2011

This chapter should be cited as
Corbett, J. and G. Twite (2011), 'Corporate Savings, Investment and Financial Structure in East Asia: Micro-evidence', in Corbett, J. and Y. Xu (eds.), *Achieving Sustainable Growth in East Asia*. ERIA Research Project Report 2010-28, Jakarta: ERIA. pp.59-91.

Chapter 4

Corporate Savings, Investment and Financial Structure in East Asia: Micro-evidence

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This chapter uses micro-data on financial structure from a large sample of firms to show that Asian firms are unusual in raising a large part of their funds externally (not from retained earnings). Although there has been a steady increase in retained earnings for some firms, there are others with negative earnings that have no retentions and are entirely dependent on external finance for survival. Amongst the sources of external finance there has been an increasing role for equity financing. This is unusual in an international context and challenges the conventional view that companies in East Asia are excessively dependent on debt. We show that dividends and cash holdings are not lower and higher, respectively, than what are generally observed internationally. We find that accumulated retained earnings are used for the creation of fixed assets and are not held as inefficiently large cash balances. We conclude there is little evidence that listed firms in the region are hoarding savings. The imbalance between savings and investment seems to be the result of constraints on the investment side, rather than incentives to build up excessive savings. A policy focus on the drivers, determinants and impediments to investment will be a more productive way to respond to global imbalances than a narrow focus on corporate savings.

Keywords: company finance, corporate finance, corporate governance, corporate investment, corporate savings, financial statistics, firm, firm level, East Asia, financial systems

JEL Classifications: G320, G380, G390, O330, O160, K000

1. Introduction

Global current account imbalances are widely acknowledged to reflect internal savings–investment imbalances. Yet it is not always clear which side of the savings–investment ledger is out of line, and a failure to analyse this clearly can lead to mistaken policy advice. Even if correctly identified, it can be quite difficult to explain why those savings imbalances arise. Indeed it is not even straightforward to measure the domestic components of the imbalances and to allocate them accurately between household and corporate sectors though the effort is important for policy analysis, as demonstrated by Bayoumi and Wei (2010).

This chapter draws attention to the role of finance for the corporate sector as a key part of the economic structure that underlies global macroeconomic imbalances. If companies are amassing large savings balances there will be some economic reason for that behaviour. Either firms are building savings in order to invest or they are accumulating excess savings because they are unable (or unwilling) to invest. The first pattern of behavior suggests that firms might be unable to raise funds for investment when needed from the financial system and are forced to rely on their own savings. The second would arise when firms earn profits that they cannot then apply to investment projects and which accumulate inside the firm or are used for the acquisition of financial assets rather than physical capital expenditure. Each of these stories would give rise to distinctive patterns in corporate financial structure.

Our purpose in this chapter is to examine and clarify claims that the current imbalances are largely caused by excessive corporate savings and that these are driven by inadequacies in financial systems. This claim has been made in many quarters, including by the International Monetary Fund (IMF, 2009), and is primarily based on macroeconomic data from national income accounts. We use micro-data from company accounts of listed firms to shed light on these problems. If the claims from the macro-data are correct, they should also be reflected in companies' financial accounts. We examine the evidence of the patterns of retained earnings, dividend payouts and the accumulation of assets and find little support for the idea that there is a build-up of excessive finance in the listed company sector. Not only do firms not retain earnings to

an unusual degree or build up war chests of cash and liquid assets, the internal and external finance available is being used primarily to finance real asset creation. The micro-evidence does not support the macro-claims but does support the alternative hypothesis that more investment could be undertaken with different policy settings and possibly greater development of financial systems.

The structure of the chapter is as follows. First, we consider how firms raise their finance (that is, in what form) and what they do with the funds raised. We then use the micro-data to see whether they support claims that corporate savings are a large part of the "excess savings" story. Both sides of this coin are important for policy responses to understanding financial needs and to addressing imbalances. Our data bring a micro-perspective to the question of whether the financial system is contributing to a build-up of corporate savings or to low levels of investment, or both. We examine whether firms are financially constrained in investment and what characteristics explain different patterns of retention or accumulation of liquid assets.

Section 2 describes the sources of finance, to show where firms get their funds when raising finance. This section demonstrates that Asian firms are somewhat unusual in raising a large part of their funds externally (not from retained earnings). We also show that although there has been a steady increase in retained earnings for some firms, there are others with negative earnings that have no retention and are entirely dependent on external finance for survival. Amongst the sources of external finance there has been an increasing role for equity financing. This is unusual in an international context and challenges the conventional view that companies in East Asia are excessively dependent on debt. Furthermore, there have been significant changes around crisis events.

We then turn the data around to ask how firms use their finance as between investing in real physical assets and accumulating cash or other financial assets. Since the previous data show only where funds come from and not what they are used for, this section gives an important perspective on whether finance is used to create the real assets that are the source of countries' productive capacity and growth.

From the data in Section 2, we can clarify the role of firms' own funds (retentions from profit) in the creation of real assets and increase the understanding of whether the pattern and scale of corporate savings are unusual in Asia and whether there is a problem of corporations withholding their savings from productive investment. This

leads, in Section 3, to a discussion of whether the micro-data are consistent with the macro-evidence on corporate savings reported in other studies.

Section 4 presents regression results to explain the link between savings and investment and to examine the extent of financial constraints on investment. We link these results to the earlier discussion of whether accumulated assets are being hoarded by firms. Section 5 draws conclusions and policy implications.

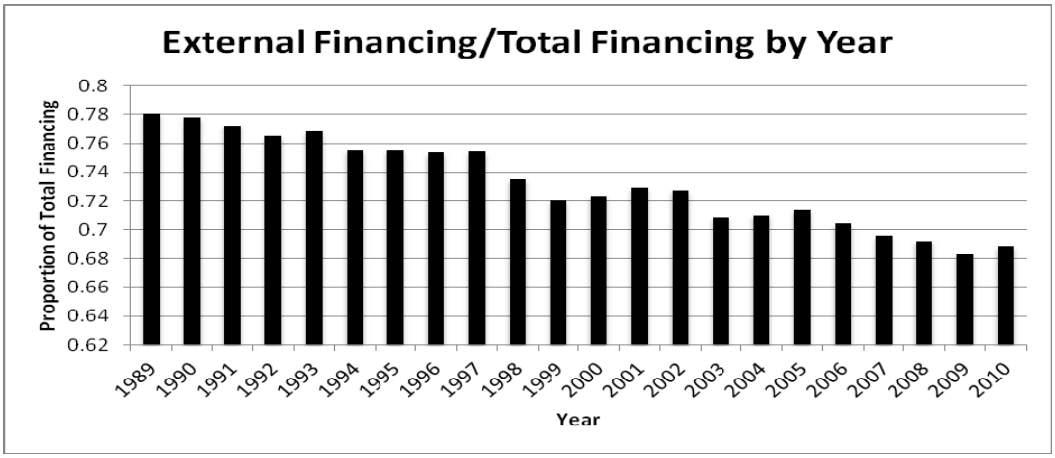
2. Sources of Finance: Where do firms get their funds?

Corbett and Twite (2010) noted several unusual features of corporate finance in the Asian region—in particular, the relatively high dependence on external finance and, within that, a rather large role for common stock as a source. Figures 1 to 6 show that these features have now become even more pronounced in the recent period of global financial turmoil.

While the share of external sources in total finance fell after the Asian Financial Crisis (AFC) of 1997–98, and has continued to fall, it is still about 70 percent for the nine countries considered (Figures 1 and 2). As Figure 3 shows, debt began to decrease significantly as a share of financing after the AFC, while issues of both common stock and the use of retained earnings rose. Countries vary significantly in their use of debt versus equity (Figure 4), with China, India and Korea the high debt users (at 40 percent to 50 percent of total financing sources), followed by Indonesia and Thailand (at more than 30 percent). Japan also uses considerable debt but differs from the other high-debt countries in using more retained earnings than either separate source of external finance.[1]

[1] This replicates the finding in Corbett and Jenkinson (1985) that Japan used a "balance" of sources of financing across retentions, equity and debt.

Figure 1. External Financing/Total Financing by Year



Note: We use book values and drop firms with negative earnings for which the concept of internal finance is not meaningful. This applies to Figures 1–6.

Figure 2. External Financing/ Total Financing by Country (1989-2010)

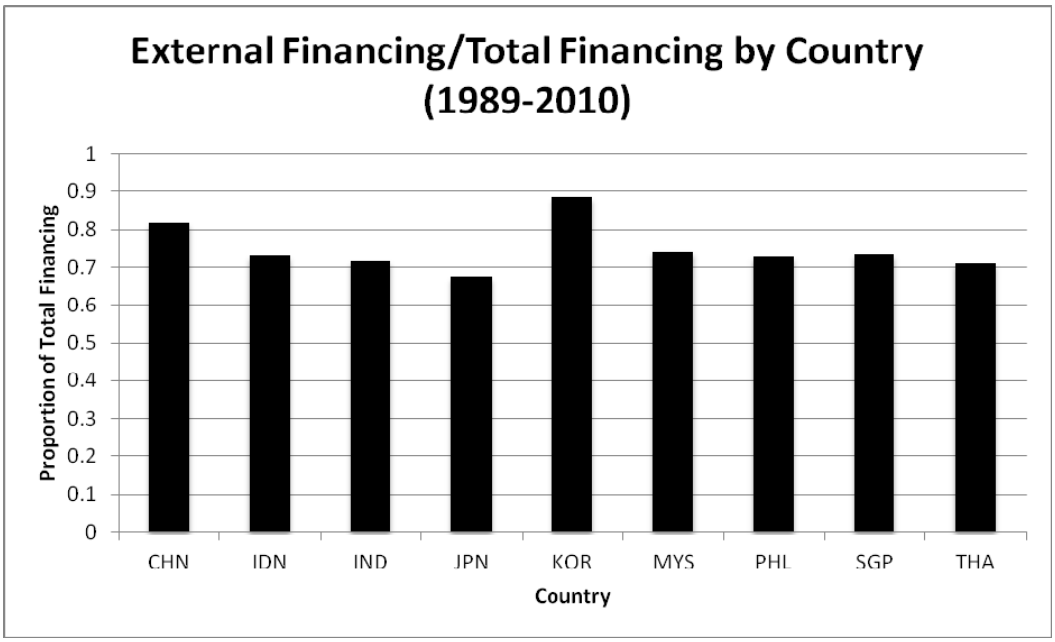


Figure 3. Sources of Financing by Year

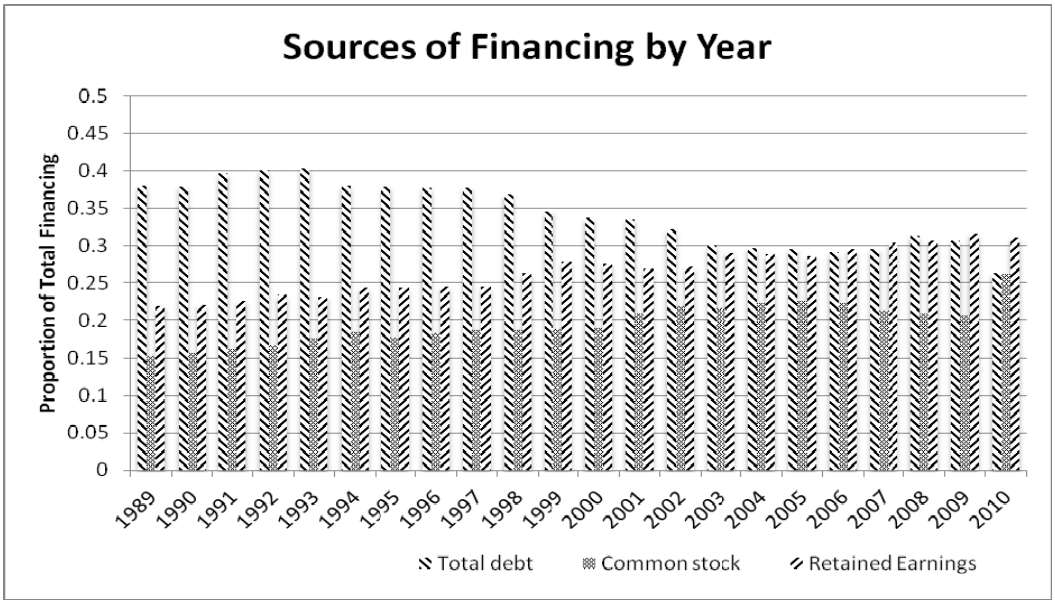
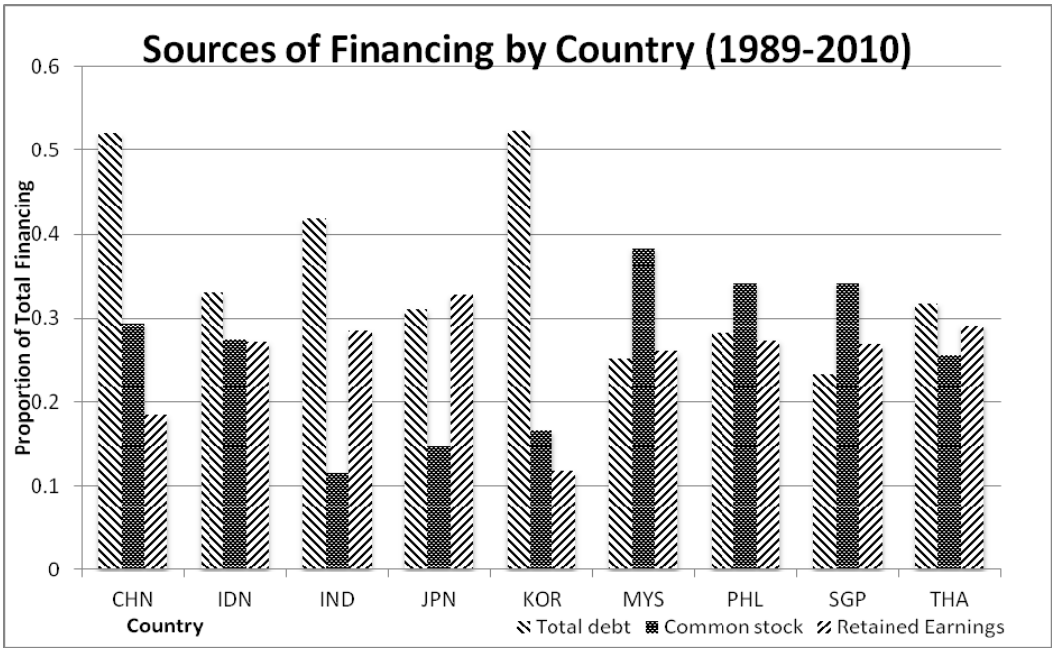


Figure 4. Sources of Financing by Country



Another striking feature is the substantial use of common stock by several countries. For Malaysia, the Philippines and Singapore, common stock issues have been the largest source of finance, accounting for more than either debt or retained earnings.[2] In

[2] Contrary to one frequently repeated view of financing in developed markets (cf. Mishkin, 2009), that view is hard to reconcile with the well-accepted data on debt/equity ratios.

Thailand, Indonesia and China, they have accounted for more than 25 percent. This might seem surprising given the conventional view that corporate sectors in Asia are heavily bank dependent,[3] but it is consistent with data showing that the listed firms in the region are not dramatically different from global averages in the debt/equity structure of their finance. The average leverage ratio (debt/book value equity) for all countries covered by Compustat data is 31 percent; the United Kingdom is 28 percent and Australia 21 percent. Table 1 shows the average for our sample against relevant comparators.

Table 1

	Mean Book Leverage
Our sample	0.4555
Total other countries in Computstat	0.3028
Developed countries	0.3247
Developing countries	0.3092

Breaking down external sources into more detailed components, Figures 5 and 6 also show the growing sharing of equity and the decline in both long and short-term debt after the AFC. Amongst debt instruments, the most important is now trade credit between companies. Data for individual countries show the consistently important role of trade credit and short-term debt (presumed to be bank debt), but again the striking role of equity issues. Long-term debt has been a generally smaller share and no doubt reflects the underdeveloped corporate bond markets.

[3] It might be partly explained by the fact that we are considering the listed company sector and do not have data for the small and medium firms that are not listed, and which might be more debt financed. As we have argued in the discussion of our data, the listed firm sector is now a significant part of the region's economies and cannot be dismissed as unrepresentative or unimportant, though it is likely true that its financial structure is different from family owned and small and medium firms.

Figure 5. External Sources of Finance by Year

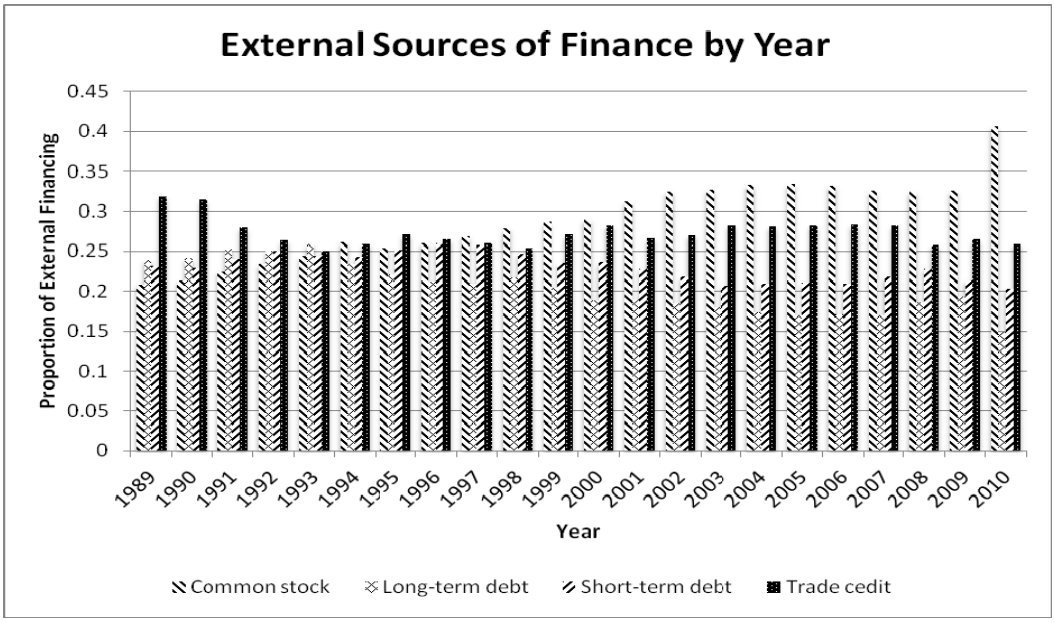
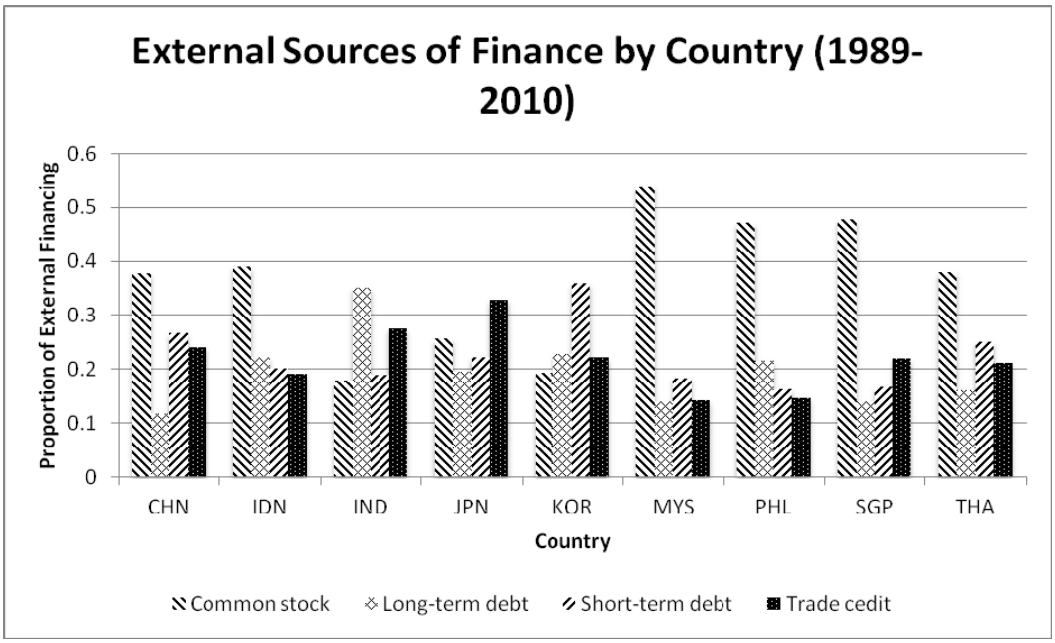


Figure 6. External Sources of Finance by Country (1989-2010)



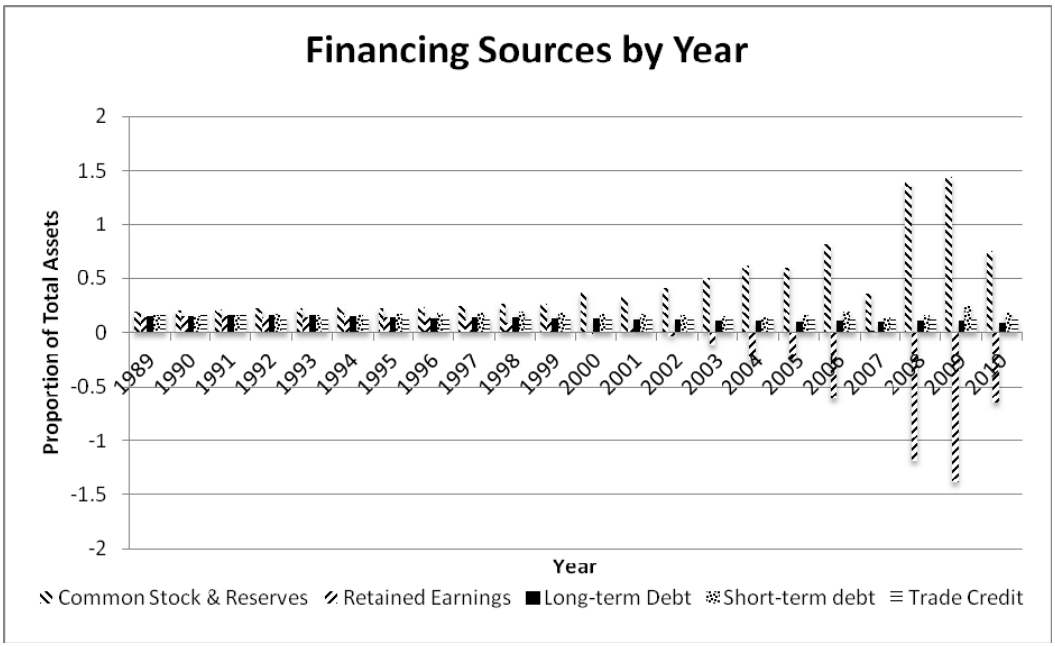
Figures 3 and 4 also indicate the steady increase over time in the role of retained earnings in financing, albeit at fairly low levels. Across countries, retentions generally vary between 20 percent and 30 percent as a share, with the remainder of financing coming from external sources. This contrasts with one widely held view in corporate finance that retained earnings are generally a larger source of finance than external

sources. Even in Japan—the country in our sample with the largest share for retentions—external sources combined are a larger share of total financing. China—contrary to the view that companies are building up large savings (further discussed below)—is much more dependent on external sources than on internal ones.

For the sample of companies with positive earnings, we conclude that at the time of the AFC, as external finance began to drop, retentions were used to keep the total amount of financing from dropping significantly. This trend has continued, bringing these firms closer to international norms in their reduced dependence on external finance. In some countries, they have increasingly used equity as the larger source of external financing.

Once we include the firms with negative earnings, however, the role of retentions is quite different, with large negatives recorded since 2000 and an increasing share of equity finance offsetting falling internal sources (with particularly large declines in retentions in 2002 and 2005) (Figure 7). For the corporate sector as a whole, therefore, external finance has remained very important.

Figure 7. Financing Sources by Year



While this implies that, on the positive side, some external finance is available to act as a buffer when corporate profits plunge, it also means that as a result of crisis periods the

corporate sector becomes more dependent on external finance at the margin. If these changes in the finance mix could be achieved rapidly at times of crisis, without a large drop in the overall quantity of finance, the impact of crisis on capital expenditure (investment) would be less than if finance were not available, and this is an important function of the financial sector.

The puzzle identified by Corbett and Twite (2010)—that there is no impact from the mix of financial sources on investment—might be partly tempered by the emerging picture. Given the patterns described, we might not expect to observe a close contemporaneous correlation between the mix of finance and the creation of real assets. Yet, at times of crisis, the ability to source new finance does matter and it might result in significant changes in the mix, as firms replace difficult sources with more readily available ones. An inability to replace declining sources of finance with alternative sources would have an impact on the amount of investment carried out. The question to ask is not whether having more debt or more equity allows firms to invest more but whether the ability to change the funding mix reduces constraints on investment.

Another perspective on the role of different types of finance and their ability to acquire assets comes from focussing on the uses of firms' finance rather than the sources.

2.1. The Uses of Funds

If firms are uncertain about the reliability of external financing sources, we might observe a build-up of cash and other liquid assets either because firms want a war chest from which to fund planned investment in future or because they become more conservative generally and want to hoard cash against future financing shortages, even if they have no plans for investment. In the former case, we should observe that, even if cash holdings are large, or rise at times of crisis, they will be used for capital expenditure. In the latter case, we might see large cash build-ups that do not result in the formation of assets. To understand this behaviour, we look at the share of different types of asset acquisition in the total assets of firms.

A pattern of acquisition of accumulated cash and liquid asset sources could help to explain earlier results (Corbett and Twite, 2010) showing the irrelevance of financial structure to investment (with only country characteristics mattering for investment

performance). While consistent with other studies, it seemed a surprising result for Asia since it seemed to imply that improving access to particular types of finance (for example, strengthening the corporate bond market or the stock market) would have little effect on companies' investment behaviour. This seemed to mean that increasing the breadth and depth of financial markets would not increase investment, though macroeconomic studies typically show that financial depth improves investment and growth. It seems more likely that the financial mix does affect the investment behaviour of firms but that econometric exercises might not detect the effect because of the ability to disconnect current investment from current financing by using accumulations of liquid assets.[4] If markets worked perfectly, this behaviour would not be necessary since, if some types of finance were not available, firms would be able to substitute with others and would not have to cut investment, but in the presence of financial friction firms might build up cash reserves to protect investment plans.

We find, in fact, that cash holdings (and cash plus equivalent liquid assets) at less than 20 percent as a share of assets are not particularly large in any of the countries (Figures 8 and 9), though there is cross-sectional variation. There had been a steady decline in the lead-up to the AFC, and liquid holdings stayed low after the crisis until countries began to build them up again about 2002–03. It appears that during and immediately after the AFC, even though profits fell, firms raised more finance despite the poor economic situation and they ran down their own liquid assets, with the result that fixed assets stayed at a fairly stable share of total assets (Figures 10 and 11).

[4] Note: If liquid assets are parked somewhere (for example, bank deposits) then running these down becomes a source of finance but shows up as a change in assets (reduction), not a change in liabilities. The "net sources" approach of Mayer et al. might miss this effect by deducting the change in assets holdings from the change in similar liabilities but would pick it up if there is no change in the matching liability (or if the change in assets is larger than the change in liability so adding to the total source from, for example, banks). The only way to fully capture this is to show the assets side, which is what we do in the next section.

Figure 8. Cash Holdings by Year

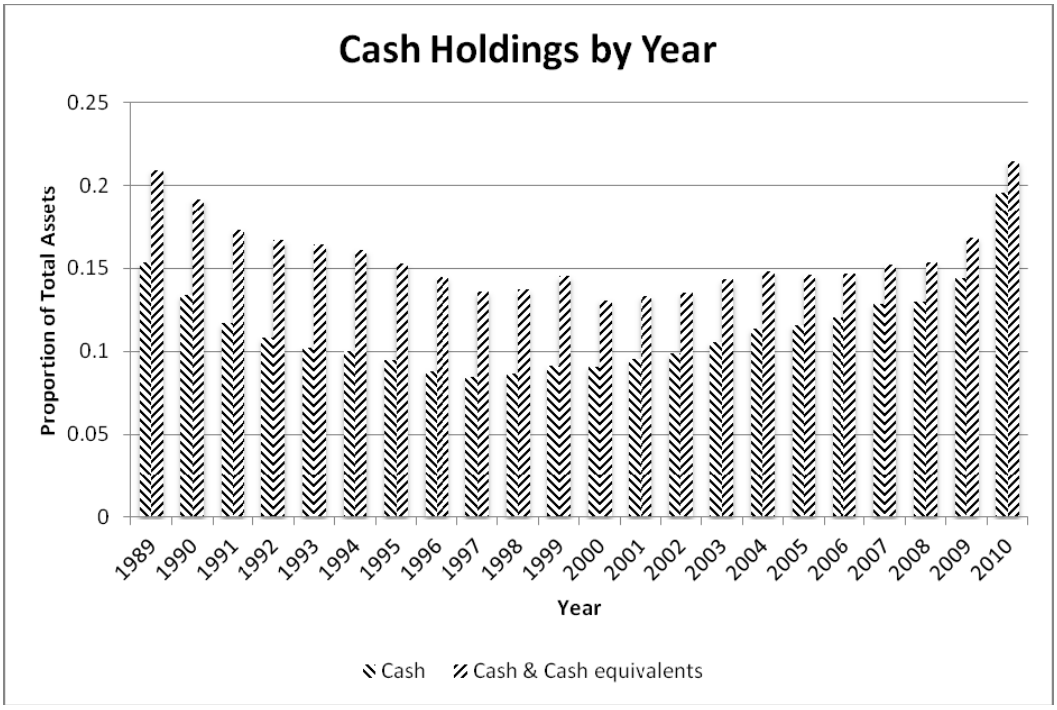


Figure 9. Cash Holdings by Country (1989-2010)

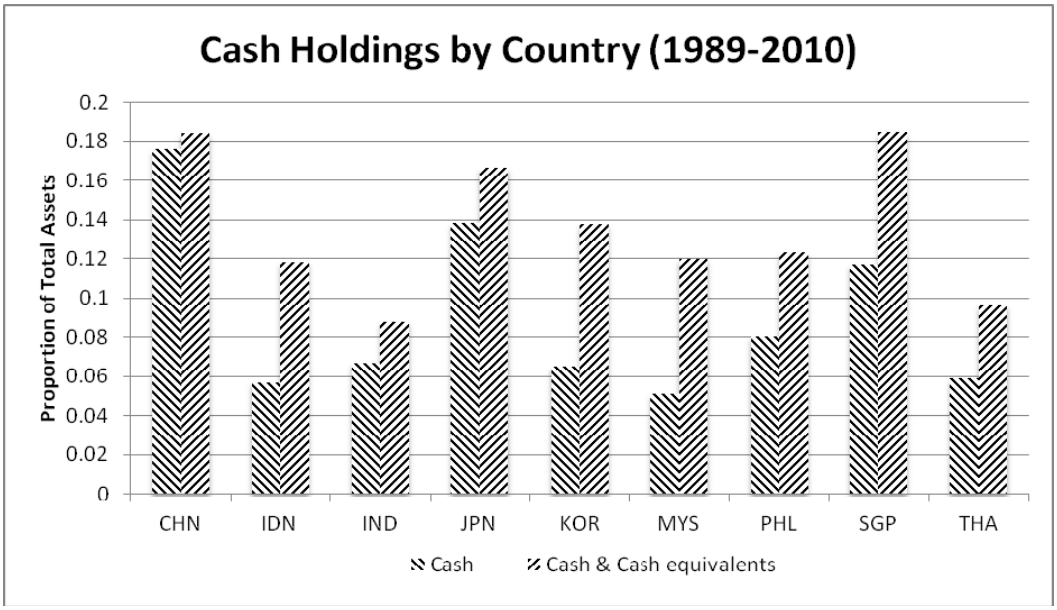


Figure 10. Fixed Assets

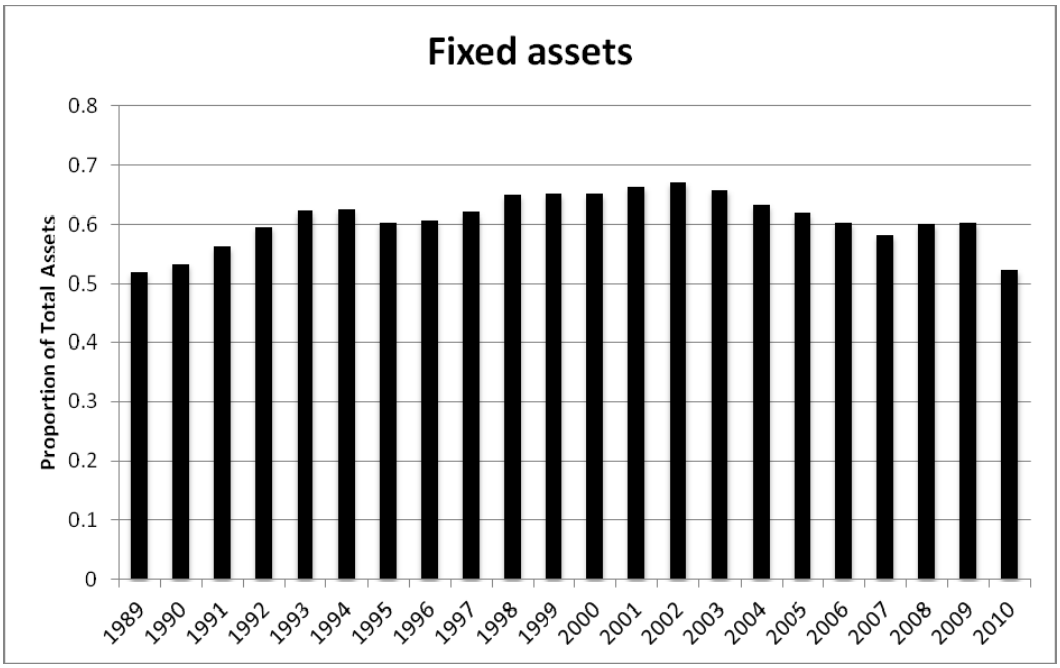
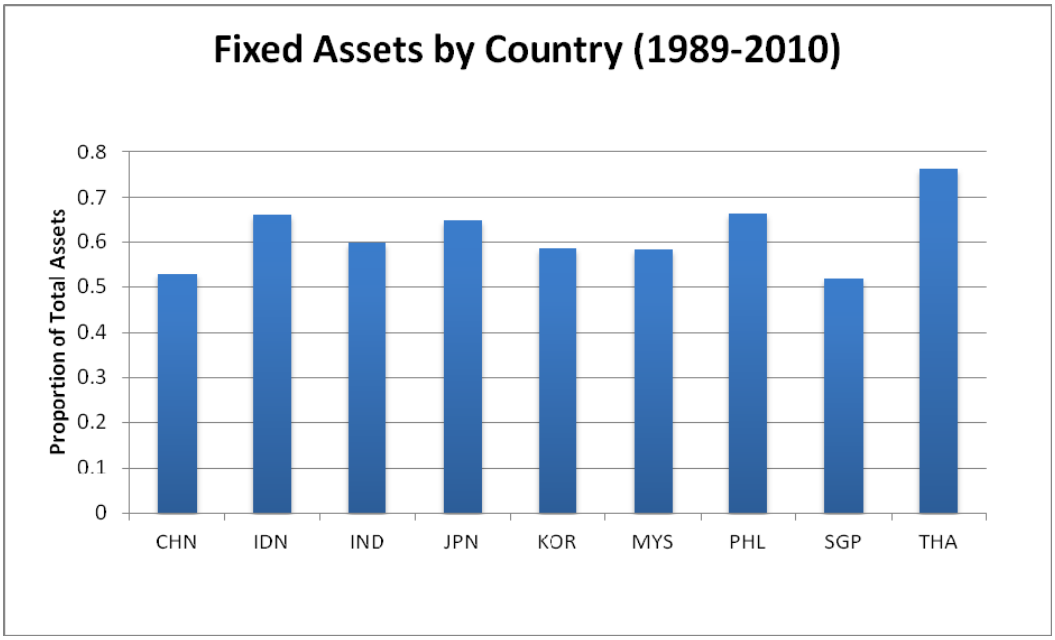


Figure 11

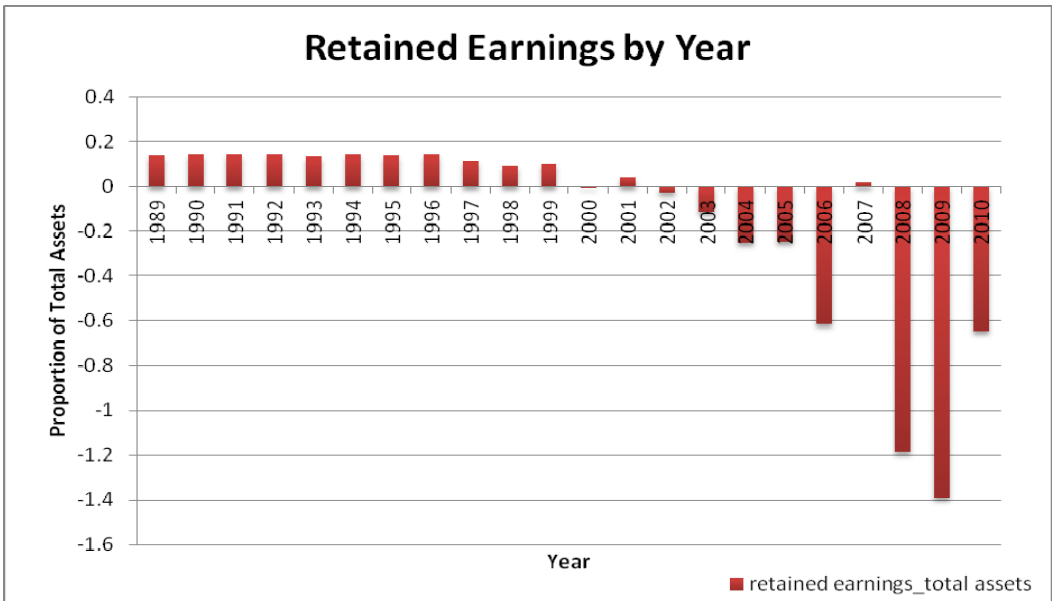


An alternative to managing liquid assets for firms facing financial constraints is to manage retentions. Firms with poor access to external financial markets, but with productive investment opportunities, could cut dividends to provide more retained earnings. Shareholders might be willing to accept this in the short term if longer-term

investment returns are positive. The effect in company accounts would be a rise in the share of retentions relative to assets (given that dispersing retentions into fixed assets cannot take place immediately) and this would, in effect, be a temporary deferral of acquisition of current real assets for future ones.

Figures 12 and 13 show no evidence of large accumulations of retained earnings. In fact, as noted above, despite the increase in retentions for some firms, when all firms are included (even those with negative earnings), retentions have declined since the AFC, in some years have become heavily negative. This is not the result of large dividend payouts. Figures 14 and 15 show payout ratios across countries and over time that are not significantly different from international standards (at about 0.6).[5] Rates have fallen since 2000 but this is also true across the world.

Figure 12. Retained Earnings by Year



[5] The Mean Dividend Payout Ratio for all countries in the Compustat data is 0.600011; all countries excluding the United States have 0.608032; the United States has 0.23906; all countries with payout < 1 have 0.414713; developing countries have 0.405512; developed countries have 0.794509.

Figure 13. Retained Earnings by Country (1989-2010)

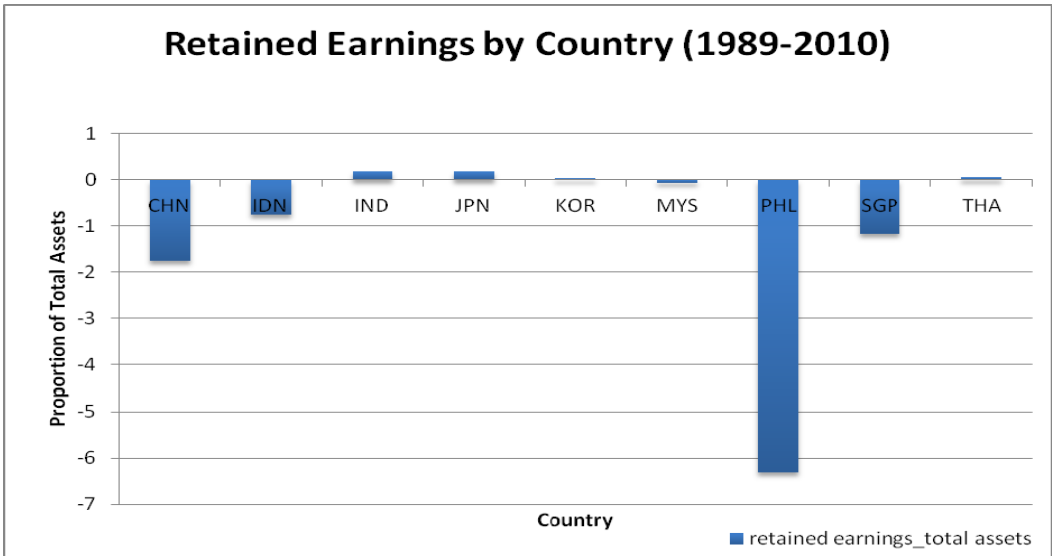


Figure 14. Dividend Payout by Country (1989-2010)

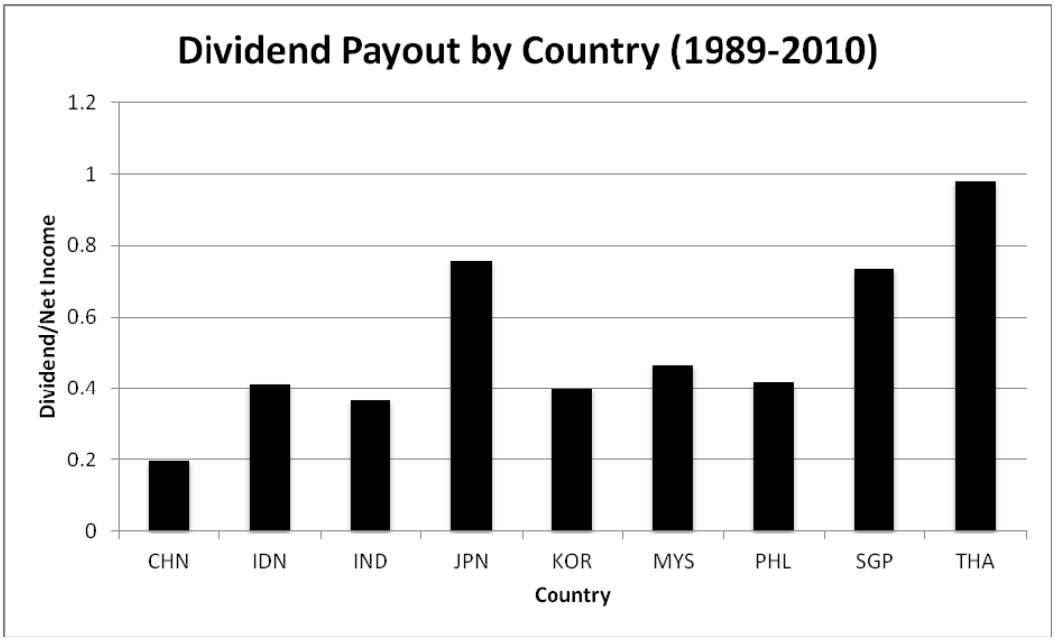
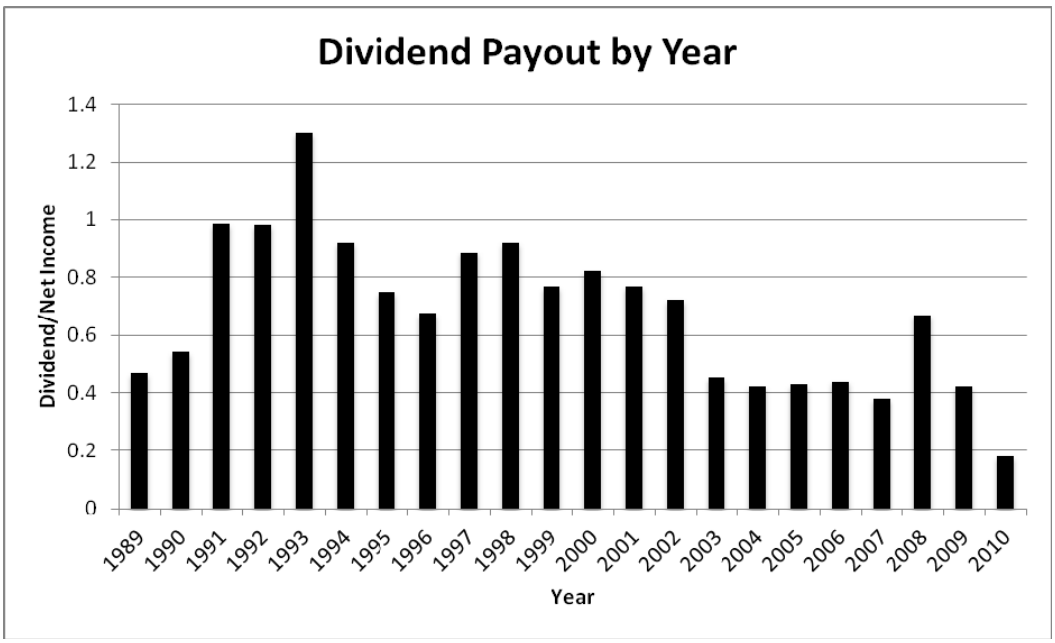


Figure 15. Dividend Payout by Year



There is little evidence, therefore, that cash accumulations or retained earnings were hoarded rather than used for real asset creation. Figures 10 and 11 show that even the lowest countries have a high proportion of fixed assets in total assets, at 50 percent to 70 percent. Even during the crisis years, the proportion of fixed assets remained high. From 2003 onwards, these shares have fallen—consistent with other evidence that investment has slowed in most of these countries (possibly in response to "excess" investment in the pre-AFC years), but even at their lowest level in 2010, fixed assets represented 50 percent of total assets.

We can exploit the variation in the pattern of retentions and accumulation of liquid assets to look more closely at the main drivers of the asset-accumulation behaviour. Table 2 shows a set of regression results that shows the significant effects of country-level policy and institutional factors on firms' allocation of funds between different uses (retained earnings, liquid assets and fixed assets). These are the results of two-stage regressions that give the country-specific factors affecting the acquisition of different types of assets, after accounting for firm effects. The two-stage procedure regresses the dependent variable on firm characteristics, then uses the error terms from those regressions as dependent variables in the second stage. The first-stage dependent

variables are: i) cash and cash equivalents over total assets; ii) retained earnings over total assets; and iii) fixed assets over total assets.

Table 2. Asset Accumulation

Dependent variables:	Cash & cash equivalents/total assets	Retained earnings/total assets	Fixed assets/total assets
Independent variables:			
Country factors:			
Common law	–0.0795	–2.6953	–0.3694
	(–12.81)***	(–3.05)***	(–7.93)***
Corruption	–0.0060	0.5289	0.0547
	(–2.04)**	(2.60)***	(2.44)***
Creditor rights	0.0138	–0.8143	–0.0971
	(3.31)***	(–2.49)***	(–2.74)***
Shareholder rights	–0.0001	0.6541	0.1401
	(–0.02)	(2.39)***	(10.58)***
Bank state owned	0.0489	1.6164	0.3065
	(4.15)***	(1.92)*	(3.97)***
Tax evasion	0.0105	1.8507	0.2056
	(1.38)	(2.97)***	(3.47)***
Openness	0.0038	–0.6970	–0.0010
	(1.21)	(–2.61)***	(–0.08)
AFC	–0.0224	0.4202	–0.0243
	(–4.25)***	(1.04)	(–1.10)
Industry:			
Non-durables	0.0033	0.0609	0.0643
	(0.58)	(0.37)	(1.96)*
Durables	0.0300	0.1678	0.0593
	(4.11)***	(1.33)	(0.97)
Manufacturing	0.0011	–0.7551	0.0686
	(0.30)	(–0.71)	(2.49)**
Energy	0.0198	–0.2167	0.1901
	(1.84)*	(–0.76)	(3.60)***
High-tech	0.0918	0.3931	–0.3659
	(7.88)***	(2.11)***	(–9.48)***
Telecomm.	0.0616	0.4748	0.0506
	(5.60)***	(3.27)***	(0.64)
Shops	–0.001	0.1629	–0.1930
	(–0.30)	(1.24)	(–9.55)***
Health services	0.0179	0.2689	0.1266
	(1.47)	(1.16)	(0.78)
Number of observations	75,883	76,790	76,216
R-squared	0.1357	0.0002	0.1901

Note: Two-stage regression of dependent variable on country-level variables, controlling for firm and industry. Standard errors are robust to clustering within country over time. T-statistics are given in parentheses. Significance levels: * 10 %; ** 5 %; *** 1 %.

The picture that emerges is that firms in common-law systems retain less and also accumulate lower proportions of cash. This result is consistent with common-law systems providing better investor protection, and enabling investors to "demand" higher dividend payments and more frequent monitoring via external financing. The observation that common-law systems are associated with lower levels of fixed assets is consistent with better property rights protection facilitating the investment in intangible assets. Interestingly, firms in countries with high corruption levels have lower cash and higher retentions. As expected, the higher retentions result in an increase in fixed assets rather than an accumulation of cash. This is consistent with higher corruption levels implying less ability to protect property and to enforce non-defined contracts, giving a disadvantage to holding cash and an advantage to investing in fixed (non-discretionary) assets. This might result in overinvestment in inefficient physical projects. Stronger creditor rights are normally associated with the use of more debt, allowing lower retained earnings, as we find. In our results, the puzzle is that this leads to higher accumulation of cash rather than the investment in fixed assets. As expected, stronger shareholder rights are associated with higher levels of retained earnings and fixed assets because shareholders' confidence in their ability to exercise their property rights gives them the confidence to allow firms to retain earnings. Recent criticism of the indexes that we and many others use to capture investors' rights raises issues about the interpretations to be put on the results and are discussed in more detail in the conclusion. An important finding for the region is that the more open the economy, the stronger is the reliance on external financing and the lower is the level of retained earnings, though openness has no effect on the allocation between cash and fixed assets. Finally, the AFC seems to have had little impact on either the level of retention or the accumulation of fixed assets, but certainly did result in a decline in cash holdings, suggesting that at least part of the firms' investment during that period was financed by a depletion of cash holdings rather than the use of external financing.

This closer consideration of the accumulation of retentions also helps to make the link we seek between corporate savings behavior and investment. What can we conclude about the hypothesis that the region suffers from excess corporate savings given the evidence of the declining role for retentions and a growing need for external sources of finance?

3. Do East Asian Firms Save A Lot or A Little?

As noted in the introduction, we are interested in the sources and uses of financing not only for what they tell us about the way in which access to finance might impact on the formation of productive assets and as a means to understand the transmission of financial shocks to real investment, but also because they provide another lens through which to understand the development of corporate savings. Our evidence on retained earnings so far does not suggest that these are unusually high, or that dividend payouts are out of line with international norms. Furthermore, it appears that retentions have been managed along with total financing and the acquisition of assets so as to keep the share of fixed assets quite high. There is little support for the idea of unproductive hoarding of corporate earnings. Yet the idea that an important source of global imbalances is excess corporate savings has been prevalent.

Two recent IMF studies give rather different pictures of the contribution of corporate savings to global imbalances. The IMF (2009) claims that corporate savings have increased in Asia since the turn of the century, that they have driven up national savings rates because households have not reduced their savings to compensate and that they now account for a rising share of global savings. The data to support these claims are not easy to verify as many countries in the region do not report corporate savings in their national income accounts and the source of the IMF study data is not given. The study argues that a combination of stagnant investment and household consumption plus rising corporate savings create the global imbalances. They attribute rising corporate savings to governance structures and financial institutions that give rise to high retained earnings (IMF, 2009:57). In an argument paralleling ours above, they note that limited market financing options and low shareholder pressure to pay dividends *could* give rise to an "excessive" build-up of retentions. They claim their micro-data-based study, using 20,000 firms from 60 countries, shows that a lack of financial development leads to an external finance premium forcing Asian firms to save (defining savings as after-tax earnings net of dividends divided by sales). Full details of the study are not available but those that are reported in fact show that an interaction term between financial liberalization and an Asian region dummy has a significant, and large, negative

coefficient, implying that financial liberalization in Asia has reduced corporate savings by even more than in other regions (see pp. 69–70). This can be interpreted as showing that financial liberalization has an even greater effect in Asia than elsewhere but it does not, directly, allow the interpretation that there is an external finance premium. Furthermore, the results as reported do not provide evidence of whether Asian firms' savings differ from the average, much less whether they are unusually high, so the interpretation that financial liberalization would "improve" the results depends on other evidence that Asian corporate savings are above average. That evidence comes from a regression on aggregate corporate savings in national income accounts data in which Asia post 2000 does seem to be larger than the mean of other countries. It is not clear, however, which Asian countries have been included or whether the definitions of corporate savings are comparable (see our discussion below about the problem of depreciation in the data).

The authors conclude that though improvements in both governance and financial markets have occurred in Asia, reducing the need for corporations to "amass a large war chest of savings" (IMF 2009:57), these effects have been "offset" by rising corporate savings. They draw the policy conclusion that more of the same governance and finance reforms are needed to further reduce savings.

An alternative interpretation is proposed in IMF (2010) and in Bayoumi et al. (2010) (see also the chapter by Wei in this volume). Both papers argue that corporate savings are not a particular problem in Asia generally, or even in the most likely case of China, and that the problem is high, though stable, household savings, low household incomes and low corporate investment. The important difference of emphasis has policy significance. If corporate savings are not the main problem then policy attention should be focussed on the investment side of the corporate equation. It might still be that improving financial markets plays a role here but, as we show below, and as is borne out in many other studies, a focus on the general investment and legal climate is likely to be a key. If these policies have an effect, it will come about by increasing investment, not by reducing savings.

We have already shown that retention ratios are not particularly high relative to assets, nor are dividends unusually low. Furthermore, even companies with positive

earnings are accessing external finance, implying that they are creating fixed assets beyond their own resources (that is, that their investment exceeds their savings).

To consider what factors influence the accumulation of corporate savings, Table 3 reports regressions of gross savings (over total assets) and gross savings adjusted for dividends (over total assets) on firm and country-level variables, controlling for industry. The firm-level characteristics are firm size (natural logarithm of sales), leverage (book value of total debt over book value of total debt plus book value of common stock plus book value of preferred stock), asset tangibility (fixed assets over total assets) and profitability (net income over total assets) lagged one period to allow for contemporaneous correlation between profitability and gross savings. As expected, we find that gross savings are higher, and the larger the firm, the higher is the investment in fixed assets and the lower is the leverage (that is, the less use is made of external finance). These results are consistent with other literature and indicate that firms with higher investment needs will accumulate high savings. As we have shown from the descriptive data, there is evidence that these savings are used for investment rather than being hoarded.

The country variables, which are of particular interest, show (somewhat puzzlingly) that the level of gross savings is higher under strong legal environments—namely, where there is a common-law system, lower corruption and less tax evasion. This result could be consistent with better legal systems allowing for the enforcement of non-defined contracts and permitting the retention of funds within the firm. The observation that stronger shareholder rights are associated with lower levels of gross savings would imply that, with better shareholder protection, shareholders "demand" the distribution of earnings and more frequent monitoring via external financing, but this is not consistent with the result on the legal system. Curiously, the results suggest that firms in countries characterized by state ownership of banks have lower levels of gross savings, suggesting that bank financing might in fact substitute for corporate savings in these countries.

Table 3. Explaining Total Savings

Dependent variables:	Gross savings/total assets	Gross savings dividend adjusted/total assets
Independent variables:		
Firm factors:		
Size	0.0140	0.0071
	(6.22)***	(3.20)***
Leverage	–0.0096	–0.0184
	(–3.13)***	(–2.32)**
Asset tangibility	0.0118	0.0279
	(0.72)	(3.72)***
Profitability(t-1)	0.0409	0.0462
	(1.26)	(1.90)*
Country factors:		
Common law	0.1450	0.0795
	(6.44)***	(3.21)***
Corruption	–0.0070	–0.0093
	(–2.44)***	(–1.76)*
Creditor rights	–0.0036	0.0064
	(–1.20)	(1.44)
Shareholder rights	–0.0366	–0.0191
	(–5.38)***	(–2.76)***
Bank state owned	–0.0751	–0.0388
	(–3.87)***	(–2.47)***
Tax evasion	–0.0402	–0.0396
	(–3.99)***	(–3.68)***
Openness	0.0037	0.00630
	(1.67)*	(1.94)*
AFC	–0.0105	–0.0079
	(–0.95)	(–1.21)
Industry:		
Non-durables	0.0090	–0.0083
	(1.86)*	(–0.59)
Durables	0.0097	0.0104
	(1.53)	(1.99)**
Manufacturing	0.0110	0.0068
	(2.47)***	(2.56)***
Energy	0.0125	0.0133
	(1.03)	(1.02)
High-tech	0.0027	0.0100
	(0.28)	(1.61)
Telecomm.	0.0185	0.0337
	(2.00)**	(6.08)***
Shops	–0.0058	–0.0027
	(–0.59)	(–0.51)
Health services	0.0096	0.0080
	(1.52)	(0.79)
Number of observations	81,546	57,807
R-squared	0.0711	0.0103

Note: Regression of gross savings (over total assets) and gross savings adjusted for dividends (over total assets) on firm and country-level variables controlling for industry. Standard errors are robust to clustering within firm and country over time. T-statistics are given in parentheses. Significance levels: * 10 %; ** 5 %; *** 1 %.

While we do not include a variable for financial reform (as in IMF, 2009), our variable for financial openness is only marginally significant, so there is no strong evidence that companies hoard savings as economies liberalize. The AFC dummy is insignificant so the apparent crisis-induced increase in savings in the raw data does not survive, once controls for other effects are included. We have some doubts about the reliability of regressions such as these for reasons noted in the conclusions below and put more weight on the results reported in Table 2, which cast a different light on savings behaviour. Since the savings variable used in Table 3 is the same as that in IMF (2009), their results might also require care in interpretation.

4. Savings and Investment

We have previously described how firms allocate their financial resources to different types of assets (liquid versus fixed) and found little evidence that they hoard cash and liquid assets but do appear to use them for fixed asset formation. We can consider more directly the hypothesis that firms' investment activity is dependent on their accumulated cash balances or their contemporaneous cash flow (for example, when they cannot access external finance) to see whether there is evidence of an incentive to build war chests. To examine this, we can exploit the variation in the sensitivity of firms' investment to cash flow. High cash flow sensitivity would suggest that firms use cash flow and cash holding as sources of funding for investments. We can, furthermore, look for direct evidence of whether this sensitivity is stronger for financially constrained firms that face limits to the use of external financing.

We present results in Table 4 showing a regression of capital expenditure (normalized by total assets) on cash and cash equivalent (over total assets) lagged one period to allow for contemporaneous correlation between cash holdings and capital expenditure, and cash flow (over total assets). We also include market-to-book ratios (Tobin's Q) and control for country-level factors and industry effects. The three firm-level variables are interacted with a financial constraint dummy (FC). The financial constraint dummy takes a value of 1 if the firm has above median dividend payout and

leverage (total debt/[total debt + book value of common stock + book value of preferred stock]) and 0 otherwise.

While we find no general relationship between cash flow and investment, we find a positive and significant relationship between cash flow and capital expenditure for financially constrained firms, suggesting that investment by firms faced with constrained access to external financing is sensitive to the availability of the firms' own cash and cash flows. This has fairly immediate and obvious policy implications—developed below.

In addition, we find that capital expenditure is higher under a strong legal environment—namely, a common-law system—with better shareholder and creditor protection, lower corruption and less tax evasion. Interestingly, the results suggest that firms in countries characterized by state ownership of banks invest more in fixed assets. These results provide more unambiguous evidence that improving the legal environment increases firms' willingness to invest compared with the more tentative results on the effect on fixed assets as a share of total assets.

Table 4. Explaining Capital Expenditure

Dependent Variables:	Capital Expenditure/ Total Assets
Independent variables:	
Firm factors:	
Cash & cash equivalents(t-1)/total assets	0.0023
	(0.14)
Cash flow/total assets	0.0002
	(1.60)
Market-to-book	0.0001
	(1.88)*
FC*Cash & cash equivalents(t-1)/total assets	–0.0096
	(–0.89)
FC*Cash flow/total assets	0.1677
	(11.19)***
FC*Market-to-book	0.0001
	(0.06)
Country factors:	
Common law	0.0055
	(2.81)***
Corruption	–0.0032
	(–6.66)***
Creditor rights	0.0044
	(2.06)**
Shareholder rights	0.0024
	(2.74)***
Bank state owned	0.0212
	(9.23)***
Tax evasion	–0.0123
	(–8.79)***

Openness	0.0011
	(0.84)
AFC	0.0110
	(3.58)***
Industry:	
Non-durables	–0.0025
	(–0.74)
Durables	0.0094
	(1.17)
Manufacturing	0.0002
	(0.09)
Energy	0.0111
	(1.13)
High-tech	–0.0109
	(–3.00)
Telecomm.	0.0160
	(1.83)*
Shops	–0.0078
	(–1.81)*
Health services	0.0147
	(2.01)**
Number of observations	60,632
R-squared	0.0815

Note: Regression of investment (capital expenditure) sensitivity to cash and cash equivalent (over total assets) lagged one period, cash flow (over total assets) and market-to-book (Q) controlling for country-level factors and industry. In addition, these three variables are interacted with a financial constraint dummy (FC). The financial constraint dummy takes a value of 1 if the firm has above median dividend payout and leverage (total debt/[total debt + book value of common stock + book value of preferred stock]) and 0 otherwise. Standard errors are robust to clustering within firm and country over time. T-statistics are given in parentheses. Significance levels: * 10 %; ** 5 %; *** 1 %.

5. Conclusions

We have shown that the financial patterns that emerged in Corbett and Twite (2010) have continued to be the predominant pattern for Asian firms despite the Global Financial Crisis. Although retained earnings have risen as a source of finance, companies are generally heavily dependent on external sources of funds and are increasingly using common stock issuance as the means of raising finance. This implies that even the strongest firms in these economies—those with positive net earnings and with access to the stock market—are net borrowers rather than net savers. These firms do not have abnormally low dividend payouts and do not accumulate very large cash and liquid asset balances. Their assets are dominated by fixed assets (that is, physical investment in plant and equipment), and the share of fixed assets has been maintained during periods of crisis.

The choice of how to allocate finance to different asset classes—that is, whether to hoard it in liquid assets or to use it for fixed asset formation—is influenced by the presence of common-law systems providing better investor protection, by corruption, by shareholder and debtor rights, and by openness. The AFC also had an effect. Common-law systems that are usually regarded as giving higher protection for property rights have a different effect from the direct effect of stronger shareholder rights. The former results in lower retentions and lower fixed asset shares (and possibly higher intangibles, though we did not explicitly consider that) while the latter are associated with higher retentions and higher fixed assets. Higher corruption increases retentions and fixed assets, perhaps because these are less likely to be expropriated or subject to fraud than cash and liquid assets. This might result in overinvestment in inefficient physical projects. Stronger creditor rights are linked with lower retentions but these do not give rise to higher fixed assets but to higher cash accumulations. Since the basis of legal systems (common versus civil) is hardly likely to be changed, a policy focus on strengthening shareholders' rights and reducing corruption is more likely to be useful in reducing the incentives for firms to hold on to retained earnings. Stronger creditor rights will enable greater access to debt finance and reduce the need for retentions.

An important finding for the region is that the more open the economy, the stronger is the reliance on external financing and the lower is the level of retained earnings, though openness has no direct effect on the allocation between cash and fixed assets.

Our regressions on savings are somewhat different from the findings on retentions. The level of gross savings seems to be higher under strong legal environments—namely, where there is a common-law system, lower corruption and less tax evasion. This result might be interpreted as meaning that better legal systems allow for the enforcement of non-defined contracts and thus allow for the retention of funds within the firm, though that is not what we found when regressing retentions directly on these variables. The savings data, by necessity, include amounts that firms retain for depreciation and we believe that this introduces a bias into the evidence on savings. The result is that when comparing countries we are picking up any variation in the depreciation practices as if they were differences in savings. In a country such as China, where the main growth in fixed assets has been quite recent, the amount of depreciation is likely to be small, while in countries that have had a long history of fixed asset investment, these amounts will be large. In addition, if there are differences, or changes, in accounting practices that lead to different depreciation amounts, these will also confound the results. Since we have confidence in the retention regressions reported earlier (which are not subject to this problem), we prefer those results. This also means that other studies that have drawn conclusions about savings behaviour using similar variables to those in our savings regressions might be unreliable.

Finally, our investment regression shows that financial constraints do hold back investment so that, in addition to improving the general support of investors and creditors rights, policies that remove financial constraints would impact on investment.

Clear policy recommendations require still further research and an extension to other country policy variables that are of specific interest in the region and to a finer grained analysis of the elements of openness, financial sector reform and accounting changes that impact on company strategies and on data. We note also that there has been much careful criticism of the La Porta et al. (1998) indexes on investors' rights and the legal systems. As Spamann (2010) notes, the classification of countries into civil or common law has led to corrections in the classifications that are significant enough to undermine previously accepted research results. Spamann's correlation

between the corrected and original values is only 0.53, and he points out that many empirical results established using the original index might not be replicable with corrected values. This will also apply to the work we have done here, and in future research we should consider whether our countries need to be reclassified. One particularly important aspect is that Spamann's newer results fail to support the notion that shareholder protection is higher in common than in civil-law countries. These have implications for the interpretations we have made in our regression analysis.

We conclude by returning to a point made at the outset. There is little evidence that listed firms in the region are hoarding savings. The savings in the corporate sector are being used for investment purposes. Thus, while it might be true that there is some accumulation of assets in retentions or in liquid form, this seems to be in the group of firms that behave as if financially constrained. A further policy focus on the drivers, determinants and impediments to investment will be a more productive way to respond to global imbalances than a narrow focus on corporate savings.

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Appendix 1. Data

We use firm-level data from the Compustat Global Database from 1989 to 2010. We include data for China, Indonesia, India, Japan, Korea, Malaysia, the Philippines, Singapore and Thailand. Table A1 shows the sample size in total and by country. Because we are using listed company data, we are not able to draw conclusions about the whole corporate sector, and unlisted small and medium enterprises (SMEs) and non-listed firms such as family firms are not covered.

Table A1. Sample Size

Country	Number of firms	Total firm-year observations
China	2,234	13,256
India	2,354	14,420
Indonesia	469	5,060
Japan	4,893	67,045
South Korea	2,336	19,652
Malaysia	1,193	13,339
Philippines	261	2,898
Singapore	835	7,748
Thailand	766	8,278
Total	15,341	151,696

In the regressions reported in the text, the firm-level variables are fixed assets or asset tangibility (fixed assets over total assets), profitability (net income over total assets), firm size (natural logarithm of sales), the market-to-book ratio (market value of equity over book value of equity), dividend payout (total dividend over net income), leverage (total debt/[total debt + book value of common stock + book value of preferred stock]), cash (cash over total assets), cash and cash equivalents (cash and cash equivalents over total assets), cash flow (cash flow over total assets), and a financial constraint dummy that takes a value of 1 if the firm has above median dividend payout and leverage and 0 otherwise.

The country-level variables cover several institutional features: the legal system (common law versus civil law dummy), a corruption index, an indicator of whether the banking system is state owned, a tax-compliance variable, variables for creditors' and shareholders' rights and the degree of openness of the financial system. We also include an indicator for the AFC that takes a value of 1 for 1997 and 1998 and 0

otherwise. The definition and sources for these country-level variables are given in Table A2. Finally, we have adopted a 10-industry classification. The industry classifications are given in Table A3.

Table A2. Definitions and Data Sources of Country-Level Variables

Variable	Description	Source
Common law	A 0 or 1 dummy variable indicating whether a country adopts the common-law system.	Treisman (2000) and La Porta et al. (1998)
Corruption index	An index ranging from 0 to 10, with larger value indicating more severe corruption.	Corruption Perception Index (Transparency International, n.d.)
Creditor rights	An index aggregating creditor rights—restrictions for a debtor to file for reorganization; secured creditors are able to seize their collateral after the reorganization petition is approved; secured creditors are paid first out of the proceeds of liquidating a bankrupt firm; management does not retain administration of its property pending the resolution of the reorganization. The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights).	Djankov et al. (2007)
Tax evasion	Executives' assessment of how important tax evasion is in their country (the lower the measure, the more rampant is tax evasion)	Djankov et al. (2009)
Shareholder rights	Aggregate index of shareholder rights. The index is formed by summing: 1) vote by mail; 2) shares not deposited; 3) cumulative voting; 4) oppressed minority; 5) pre-emptive rights; and 6) capital to call a meeting.	Djankov et al. (2003, 2008b)
State control	An index measuring the proportion of a country's banks that is state controlled, where a bank is defined to be state controlled if the state's voting rights exceed 10 percent.	Caprio et al. (2005)
Openness	An index that measures the extent of openness in capital account transactions. Higher values represent more open economies.	Chinn and Ito (2008)

Table A3. Industry Groups

Industry	Four-digit SIC code
Non-durables: Consumer non-durables—food, tobacco, textiles, apparel, leather, toys	0100–0999, 2000–2399, 2700–2749, 2770–2799, 3100–3199, 3940–3989
Durables Consumer durables—cars, TVs, furniture, household appliances	2590–2599, 3630–3659, 3710–3711, 3714–3714, 3716–3716, 3750–3751, 3792–3792, 3900–3939, 3990–3999
Manufacturing Manufacturing—machinery, trucks, planes, chemicals, office furniture, paper, com. printing	2520–2589, 2600–2699, 2750–2769, 2800–2829, 2840–2899, 3000–3099, 3200–3569, 3580–3629, 3700–3709, 3712–3713, 3715–3715, 3717–3749, 3752–3791, 3793–3799, 3830–3839, 3860–3899
Energy Oil, gas, and coal extraction and products	1200–1399, 2900–2999
High-tech Business equipment—computers, software, and electronic equipment, industrial controls; services—computer programming and data processing; computer-integrated systems design; services—computer processing, data prep.; services—information retrieval services; services—computer facilities management services; services—computer rental and leasing; services—computer maintenance and repair; services—computer-related services; services—research and development labs; services—research, development, testing labs	3570–3579, 3622–3622, 3660–3692, 3694–3699, 3810–3839, 7370–7372, 7373, 7374, 7375, 7376, 7377, 7378, 7379, 7391, 8730–8734
Telecommunications Telephone and television transmission	4800–4899
Shops Wholesale, retail and some services (laundries, repair shops)	5000–5999, 7200–7299, 7600–7699
Health services Health care, medical equipment and drugs	2830–2839, 3693–3693, 3840–3859, 8000–8099
Utilities	4900–4949
Other Other—mines, construction, building materials, transport, hotels, bus services, entertainment, finance	