Chapter **6**

Capital Structure of Firms and Real-Financial Linkages in East Asia

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Abstract

This paper describes the pattern of corporate financing choices in East Asian listed firms, analyzes the main drivers of debt, equity and maturity choices, and examines the effect of financing choices on the growth of firms' investment in tangible assets. The paper makes new contributions by creating a large database of financial data from the balance sheets of listed companies in East Asia; by considering the combined effects of firm factors, industry characteristics and country features in explaining firms' financial choices; and by introducing a measure of financial openness into country characteristics to allow policy lessons to be drawn about financial opening. East Asian firms have a distinctive financial pattern, depending heavily on external equity finance, and their choice of financial structure is determined by their own characteristics, their industry affiliation and their country characteristics. The growth of investment in tangible assets, however, is driven only by country characteristics such as legal, institutional and financial market structures. The paper suggests further work to derive the effect of more detailed country-level policy variables and the interactions between financial market structures and policies to develop concrete policy advice.

Introduction

Companies raise finance to undertake economic activities in a variety of different ways. Some depend heavily on bank loans while others use their own stores of funds, amassed from retained earnings, with little recourse to outside earnings. While economic theory may try to develop a general explanation of how firms will finance themselves (or, as in Modigliani-Miller, argue that financial structure is irrelevant so there will be no presumption of a systematic pattern in company financing structures) data show that there is a variety of patterns for company finance and that patterns vary over time and place. However, some systematic patterns can be discerned.

An attempt to uncover such patterns within the East Asian region is, in itself, of interest because few, if any, studies do this. There are, furthermore, additional important policy questions that can be informed by such a study. The theme of this volume, the linkages between the real and financial sectors of the economy, requires an analysis of several links in a chain. On one side is the financial system itself where it is important to understand the structure of banks and other financial institutions and how they are financed, what business model they use, and where their vulnerabilities and inefficiencies lie. Surrounding those institutions is a structure of financial (capital) markets that are themselves worthy of study since failures, inefficiencies or absences of those markets, also impact on the provision of finance. Many studies of financial systems stop there but if we are interested in the link between the real behavior of the economy and how it responds to financial pressures and shocks, then one important element of the black box between the real and financial sides of the economy is the structure of corporate financing. To use the example above, if there is a banking crisis the firm that relies heavily on bank finance may behave differently to the firm that uses its own finance. In the absence of any crisis, when financial systems are working well, the firm that restricts itself to using only its own finance will probably not grow as rapidly as one that accesses other sources of funding. If we lack knowledge about the way the corporate sector is financed it may be more difficult to understand how the economy will respond to changes in the financial system.

The companion paper (Corbett, Chapter 4) in this volume has shown that the literature on corporate finance is large and addresses, separately, both microeconomic questions

(usually with a positive focus and little policy relevance) and macroeconomic (both positive and normative in the literature on growth and finance).

This paper picks up the challenge identified there and analyzes the drivers of corporate financing choices in East Asia and gives a preliminary analysis of the effect of financing choices on firms' growth. While the paper uses standard analytical methods, it makes a number of new contributions, including:

- Creating a large database of financial data from the balance sheets of listed companies in East Asia. Few such databases have been compiled. The data cover the pre- and post-Asian crisis period, allowing a clear picture of the changes through time.
- Considering the combined effects of firm factors, industry characteristics and country features in explaining firms' financial choices and the growth of firms.
- Introducing a measure of financial openness into the country characteristics to allow policy lessons to be drawn about financial opening. Few, if any, studies that use microdata to explain the link between financial structure and growth pay attention to the openness or integration of countries' financial systems.

There is still much work to do to refine the results and to draw correct policy inferences from them. However, the work that has gone in to creating this database and demonstrating the uses to which it can be put is a very significant step toward improving understanding of what will make a robust and efficient corporate financial structure in the region.

This paper is structured as follows. Section 2 sets out the detailed research questions. Section 3 describes the data. Section 4 gives a descriptive overview of the data and identifies some intriguing features that are distinctive to the East Asian region and highlights significant changes before and after the Asian crisis. Section 5 sets out the results from analysis of the drivers of the choice of financial structure (the use of debt versus other types of finance and the choice of debt maturity). Section 6 describes the results of analysis of the impact of finance on the growth of firms' investment in assets and identifies the key country characteristics that matter. Section 7 sets out conclusions and opportunities for future research.

2. The Research Questions

This paper addresses a number of distinct but interrelated questions. We are first concerned to see what the structure of finance is like within the region and whether we can explain the choice of debt, the choice of maturity, the use of trade credit and the extent to which earnings are retained. By using a fairly standard model we are able to make some comparisons with the results of other samples of countries reported in other literature. These interests dictate two research questions: (i) what are the choices firms make about the extent of debt financing in the countries we are examining and what determines it; (ii) what are the debt maturity choices of firms and their choices on the retention of earnings and the use of trade credit and what determines them.

The second part of the paper considers what effect financing choices have on the growth of investment in two categories of investment: fixed and current assets. This research agenda addresses the question of whether different financial structure (i.e. choice of financing or sources of funds) has an impact on the real behavior of firms as demonstrated by their investment decisions.

3. Data

We use firm-level data from COMPUSTAT Global Database of the Wharton Research Data Services from 1990 to 2009 (the data were collected at 2009/12). We include data for Australia, China, Indonesia, India, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore and Thailand. We were unable to get data for Vietnam, Laos, Cambodia, Brunei Darussalam or Myanmar and so these countries are not included in the analysis but would be of considerable interest for future research.

Table 1 shows the sample size which is considerable in total and for most countries.

Some cleaning of the data was required and we dropped companies that had negative retained earnings and zero or negative shareholders' equity. Because we are using listed company data we are not able to draw conclusions about the whole corporate sector and unlisted SMEs and non-listed firms such as family firms are not covered (as noted in the companion paper in this volume (Corbett, Chapter 4)). Definitions of our financial variables are given in the Appendix.

Table 1. Sample Size

	Number of Companies	Total Company Years
AUS	1,818	12,856
CHN	1,645	8,538
IDN	265	2,549
IND	1,392	6,217
JPN	3,201	39,803
KOR	917	5,234
MYS	967	9,089
NZL	139	1,077
PHL	151	1,429
SGP	658	5,243
THA	453	4,077
Total	11,606	96,112

4. Empirical Puzzles

Figures 1–2 show patterns in the aggregate data in the use of debt finance in the region. The figures show both sample averages and period averages for individual countries, since there is a presumption that financing patterns differ across countries in both the use of external finance and the composition of that finance. Appendix 2 gives the variation over time in the patterns for individual countries but the discussion in the paper is limited to the averages.

The figures show the sample averages, aggregate time pattern and country time patterns for the ratios of key financing variables: long-term debt as a share of total financing (LTD/TF); short-term debt as a share of total financing (STD/TF); trade credit as a share of total financing (TC/TF); retained earnings as a share of total financing (RE/TF); and common stock as a share of total financing (CS/TF). Total debt (used later in the regressions) is simply the sum of long-term and short-term debt. These figures therefore show the proportions of each type of finance in the total finance raised by firms.

The noticeable features in Figure 1 are the low equity finance ratios in Japan, Korea and India. These countries also display higher ratios of total debt than of equity (stock market) finance so that they conform to the conventional view of "debt-financed" Asian economies. However, the other country data call this stereotype into question. Several

countries in the region show much higher use of equity finance than of debt, thus, clearly, country differences matter.

Figure 2 illustrates two striking features of the financial structure of listed companies in the region. First, it has not been true that retained earnings have been the major source of finance in this region over this time period. Unlike the conventional wisdom reported in the companion paper (Corbett, Chapter 4), it appears that listed companies in East Asia and Australia/NZ rely heavily on outside sources of finance. The second feature is that, over time, the ratio of equity has risen dramatically as retained earnings have fallen. The trend is particularly noticeable after 2001 and the timing of other changes is also suggestive. The drop in retained earnings began somewhat before the onset of the Asian financial crisis, suggesting that firms were increasingly fragile. During the crisis, retained earnings dropped very steeply and, by 2001, had become negative in Australia and dropped to half their previous levels in the rest of the sample, on average. The individual country results in the Appendix show that for many of the countries, retentions were negative for the years immediately after the Asian crisis. Even more striking is that, from that time on, the external finance came in the form of equity finance rather than debt. It appears that there was financial fragility before the crisis and that it took several years before companies were able to restructure to cover their growing losses. Once restructuring had been achieved, their access to stock market finance enabled them to use much higher proportions of equity finance than before the crisis. Whether this is a sign of financial health is a different matter: East Asian firms are now much more dependent on external (outside the company) finance than they were previously. We have no data on the origin of funding so we cannot distinguish how much is foreign nor how much comes from other investors in the region versus elsewhere.

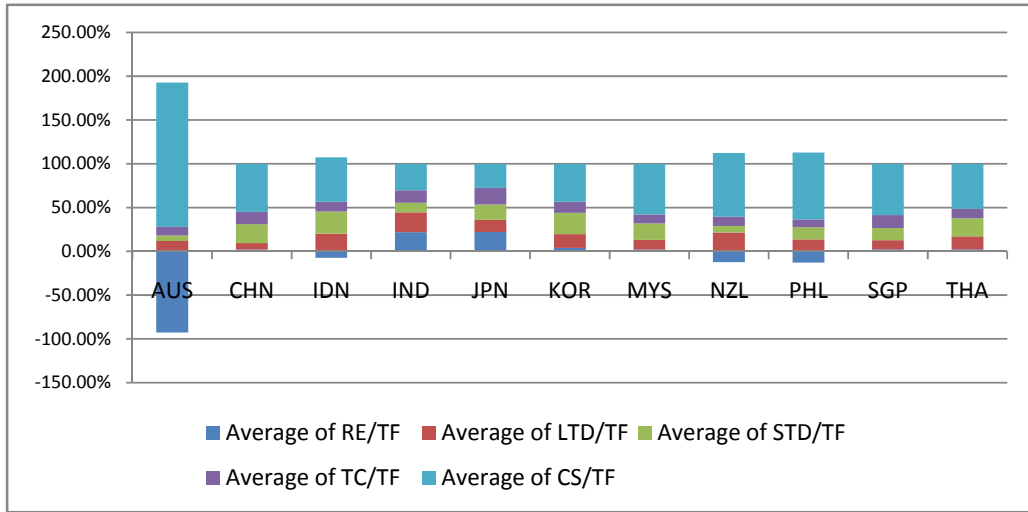**Figure 1a. Full Period (1990–2008) Country Averages**
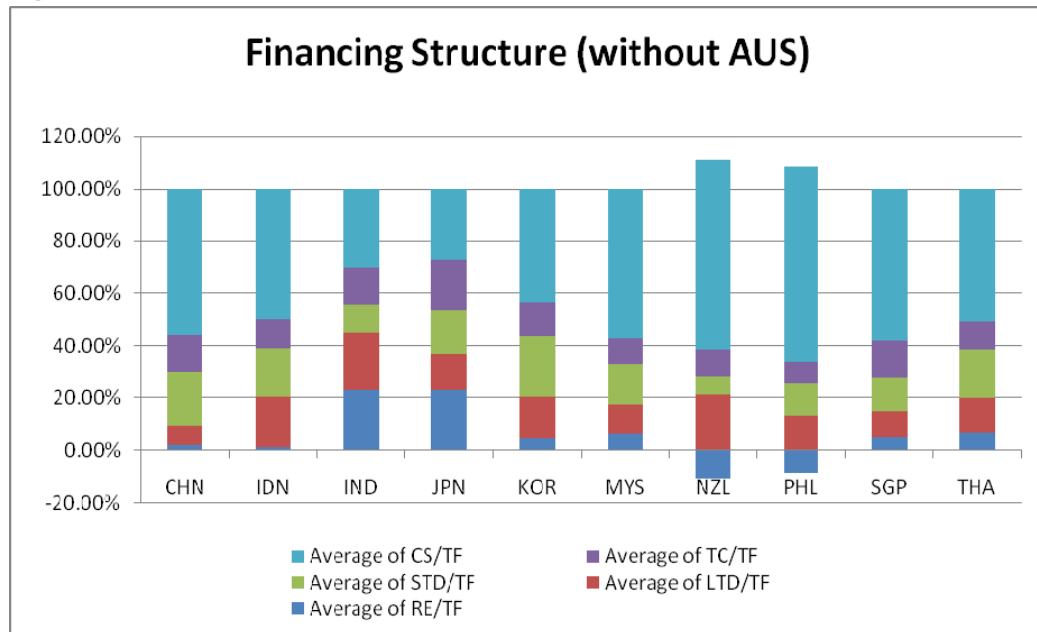

Figure 1b.

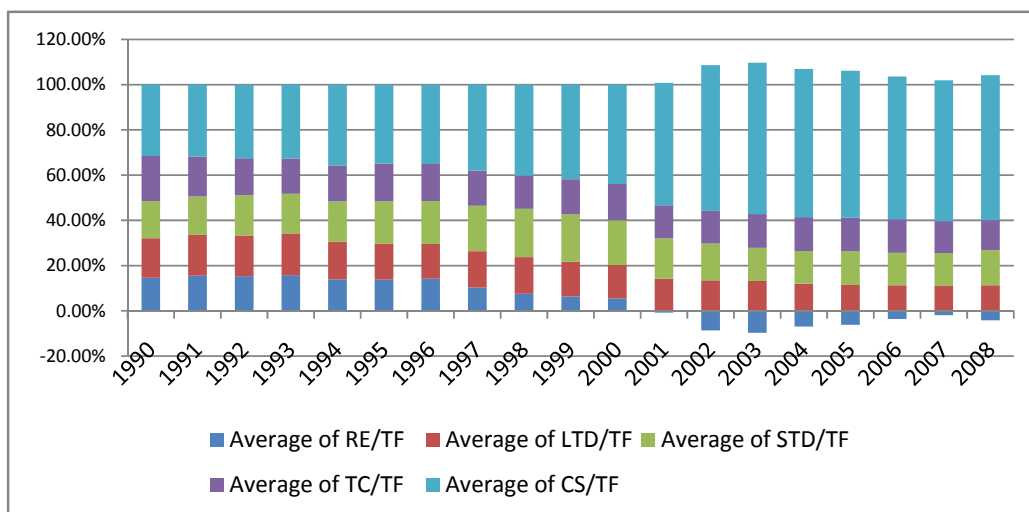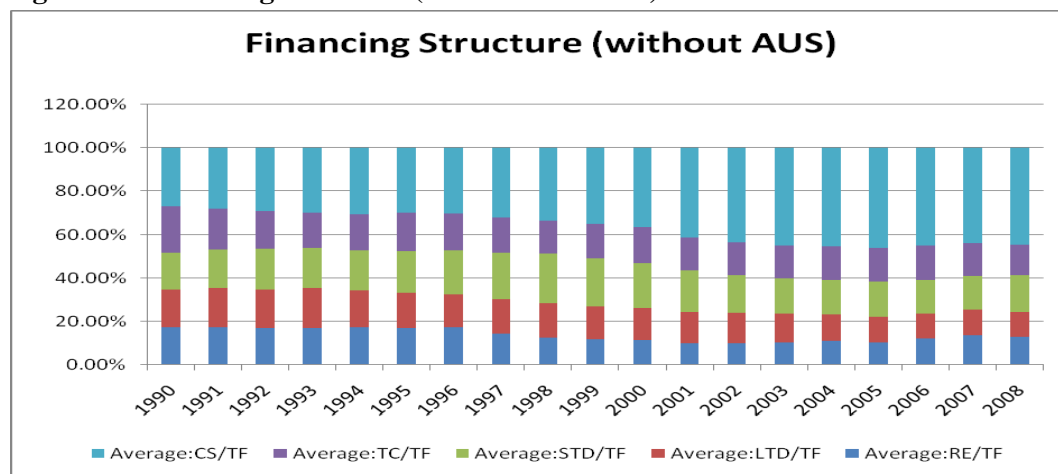**Figure 2a. Financing Structure Annual Averages (with Australia)**

Figure 2b. Financing Structure (without Australia)

Figures 3–5 reinforce the empirical puzzle in terms of the financial flows data. These data show the change in firms' financing structure and give a picture of the sources of funds used to finance business activities. Again, there is significant country variation. Rapidly growing countries show higher growth of financing sources than slow growing ones (Japan, Korea and the Philippines). India, Japan and Korea show quite different patterns from the rest of the group, with small amounts of new equity finance. All other countries show the significant use of stock market finance that is consistent with the position demonstrated above for the outstanding balances of different types of finance. Over time, Figure 5 again shows the dramatic effect of the Asian financial crisis on the

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sources of finance used by companies and the long period of restructuring from 1998 to 2004 where debt was reduced and equity financing increased. The decreasing use of retained earnings and the increasing use of stock market financing since 2004 is very remarkable.

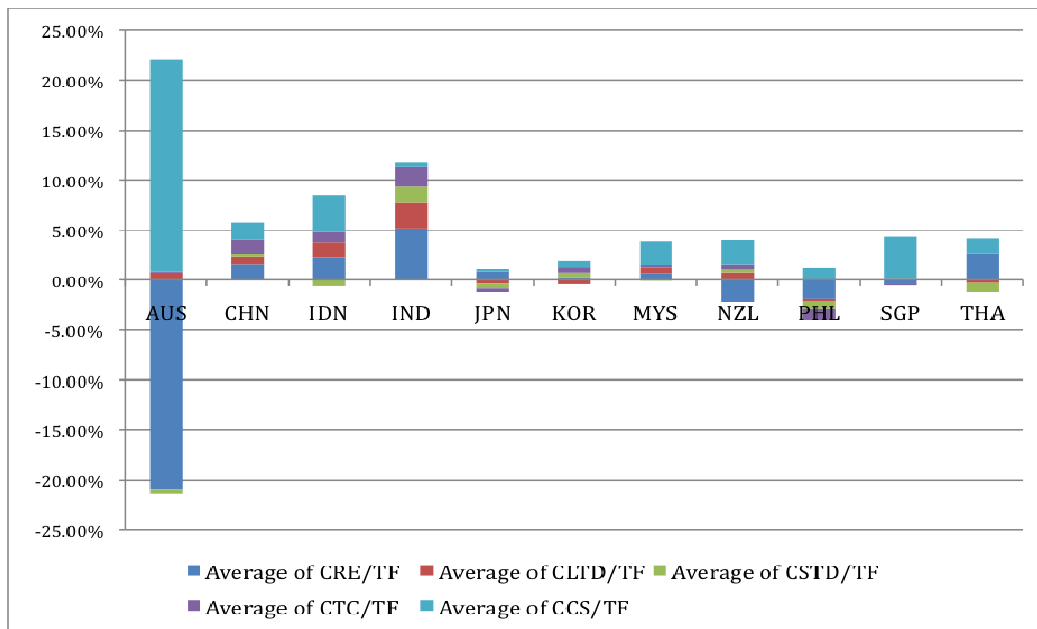**Figure 3. Average Financing Flows for Sample Period 1990–2008**

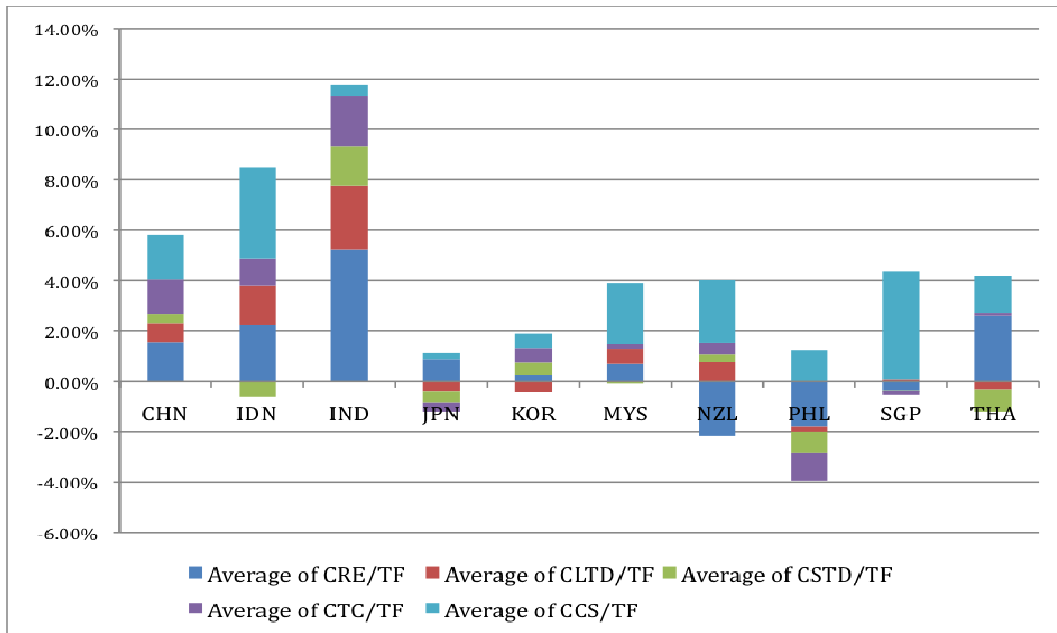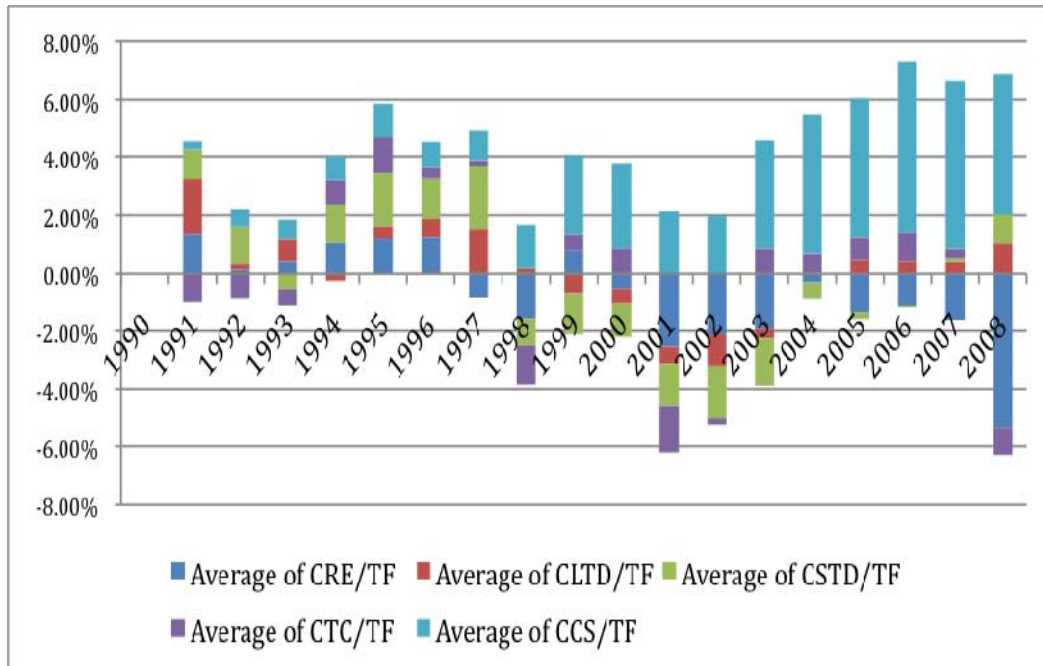**Figure 4. Average Financing Flows for Sample Period 1990–2008 (without Australia)**

Figure 5. Annual Average Financing Flows for All Countries in Sample

5. Explaining Financial Structure

We turn now to the question of what variables explain the observed patterns in the choice of financial structure. We run six regressions on the pooled cross-sections for all countries over the period. Each regression aims to explain the choice of one of the dependent variables:

(i)   total debt(excluding trade credit)/total assets (td_ta);

(ii)   total debt(including trade credit)/total assets (td_tc_ta);

(iii)   retained earnings/shareholder equity (re_shf);

(iv)   long-term debt/total assets (ltd_ta);

(v)   short-term debt/total assets (std_ta);

(vi)   trade credit/total assets (tc_ta)

In each case we regress the financing choice measure on a set of firm-level variables plus a set of industry dummies plus various country characteristics.

Firm-level Variables

As further described in the Appendix, the explanatory variables at the firm level are asset tangibility (fixed assets over total assets), profitability (net income over total assets), firm size (natural logarithm of total assets), the market-to-book ratio (market value of equity over book value of equity) and a dividend payment dummy (dummy equals one if the firm pays a dividend in a given year and zero otherwise).

The justification for this choice of variables is that they are close to the standard firm effects that have been found to be significant in many previous studies of financial structure. Asset tangibility indicates the availability of collateral with which firms can raise external finance, in particular debt. Profitability has been found to be a strong determinant of financial structure and, in general, firms with high profitability tend to have lower debt ratios (and external finance generally) since they have more internal sources of finance and are not finance constrained. Where tax systems favor corporate income over personal there is an incentive for firms to retain earnings. Pecking order theories of finance, whether driven by information asymmetries or other causes, also suggest that retained profits will be used before other sources of finance. Firm size and

the market-to-book ratio capture both the growth opportunities for firms and the observation that larger firms have greater access to external finance for a variety of reasons, from better disclosure to better governance. We expect that firms that pay a dividend have additional sources of financing (both internal and external) and are less financially constrained.

Country Variables

The country variables cover several institutional features: the legal system (common law versus civil law dummy), a corruption index, a tax compliance variable, a business startup cost index, a variable to capture the development of the banking system (Bank deposits/GDP), and an indicator of whether the banking system is state-owned. We also include variables for the stage of development of the economy (an indicator for the level of income) and for the degree of openness of the financial system. Finally, we include indicators showing the degree of development of the debt markets: an indicator of whether there is an explicit bankruptcy code and an index of the extent to which the tax system favors debt. It would be possible, and in further work we hope, to include indicators of the transparency of the accounting system and to break down the indicator of openness to look in more detail at the policy implications of different elements of capital market liberalization. We also plan to consider further the structure on the lenders' side of the market, including the barriers to entry in banking and financial services that may restrict the financial choices open to firms.

The justification for these variable is as follows: 1) common law systems are argued to provide better investor and property rights' protection, making external finance, particularly debt finance, less costly; 2) more corruption means less ability to protect property and to enforce non-defined contracts, giving an advantage to formally specified contracts and resulting in more debt and less investment; 3) higher tax compliance indicates a higher-quality system of regulation and property protection; 4) the fewer days required for contract enforcement, the more efficient is the legal system assumed to be, with the expectation that firms will have access to more debt (and that more investment would be carried out); 5) higher business startup costs give more protection for entrenched businesses, allowing them to access more debt, although the overall

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investment impact is unclear. Turning to variables reflecting the level of development of the banking system and the debt markets we have 7) the larger the banking system the more debt we expect firms to use, particularly short-term debt, which is the typical form of bank debt, and the higher we expect their investment to be; 8) where a deposit insurance scheme exists we also expect more debt because of the preferences of lenders, and in this case we expect more long-term debt since banks with protection are more willing to lend long even with short maturity deposits, and we would expect more investment. Where we have 9) state ownership of banks, we have possible conflicting effects since state ownership may simply be associated with bigger and fewer banks predisposed to more short-term debt. State banks may, however, also be more likely to engage in crony or related lending, resulting in more long-term debt to favored clients and thus the overall investment impact is unclear.

A second set of country variables indicates the level of development, openness and sophistication of the capital markets since these all affect the availability of finance, which is, in turn, likely to affect firms' choice of finance. The index of openness is of particular interest in the context of the region's somewhat hesitant commitment to opening capital markets after the Asian crisis. Its theoretical effect is unclear. While we would expect openness to lead to more investment growth there is no obvious theoretical presumption about the impact on the choice of debt versus equity or retentions. It would be presumed to make more funds of both types available. The developed economy dummy would likely lead to more use of equity since developed capital markets should have less asymmetric information and more disclosure (which we do not measure directly in this set of regressions). The effect on the growth of investment is unclear as growth opportunities may be higher in developing economies rather than mature, developed ones. The sophistication of the debt market is indicated by the bankruptcy code index with the expectation that an explicit bankruptcy code (insolvency reorganization index) provides more protection of creditors, allowing use of more debt and more long-term debt. The tax benefit to debt (Miller ratio) variable should have a straightforward effect where a larger tax benefit to debt would result in more debt being used. We do not consider policy implications from this variable and it

is included here as a control to clarify the effects of other policy and institutional variables but there would be possibilities for future research on tax effects.

5.1. Results

A simple exercise suggests that we should expect that all variables contribute to the explanation of financial structure rather than any subset. Appendix 3 Table 1 shows that regressions with all the variables have greater explanatory power than those with only subsets of the variables. This is a much less rigorous test than an approach using the general-to-specific method, or than using Akaike Information Criteria (AIC) tests, but gives a rough guess as to the effects of additional variables. The overall picture is consistent with the detailed results reported below. The strong message from both sets of results is that, in explaining financial structure choices, all elements (firm characteristics, industry affiliation and country characteristics) matter.

Tables 2–7 give the results for the regressions explaining the choice of each of the financial structure variables.

Firm characteristics

Taking firm characteristics effects first, the key results for the choice of debt are that higher tangible assets, size and market-to-book are associated with higher levels of total debt. Financially constrained firms (dividend dummy) use less total debt.

Looking at debt maturity we find higher tangible assets, size and market-to-book are associated with more long-term debt and that financially constrained firms (dividend dummy) use less long-term debt. Larger size is also associated with more short-term debt (presumed to be bank debt) while financially constrained firms (dividend dummy) use less short-term debt.

Firms that choose higher levels of trade credit have lower tangible assets (i.e. less collateral to offer for bank debt), larger size and higher market-to-book ratios. While the latter may seem counter-intuitive, it is a feature of trade credit that flows are usually from smaller firms to larger. That is, small businesses are forced to offer credit terms to their larger customers.

We find more profitable firms and dividend-paying firms have higher levels of retained earnings.

These results are all broadly consistent with other studies, suggesting that, while firm characteristics matter for East Asian firms' choice of financial structure, there is nothing unusual about their effects. Firms in the region make financing choices in similar ways to firms elsewhere.

Industry-level results show that Communication, Entertainment, Insurance, Mining and Services are associated with less total debt. Electric, Gas & Sanitary Services, Banks and Transport are associated with more long-term debt while Entertainment, Insurance, Mining, and Tobacco are associated with less long-term debt.

The Automotive industry and Banks are associated with more short-term debt while Chemical, Communication, Electronics, Electric, Gas & Sanitary Services, Entertainment, Hotels, Mining, Newspaper, Retail, Services, Tobacco, and Transport are associated with less short-term debt.

Automotive, Chemical, Construction, Food & Beverages, Manufacturing, Metal fabrication, Paper & Pulp, Retail, Transport and Wholesale use more trade credit.

Insurance and Mining are associated with higher levels of retained earnings.

For the present purposes we have not made any particular use of this information and these variables function mainly as controls to ensure that industry effects are accounted for before attributing significance to other variables. Other studies have used a variety of approaches to account for the fact that different countries have a different industrial mix and this may impact on the way country variables affect financing (see, for example, Carlin and Mayer, 2003). This would be an interesting future question for research.

Country effects

In explaining the choice of total debt, the results indicate that being a common law country, having higher corruption, a larger banking sector, higher state ownership of banks and being a developed economy are associated with higher levels of total debt. These results are consistent with previous studies although the sign on state ownership

of banks was unclear in theory. Unexpectedly, the existence of an explicit bankruptcy code is associated with lower levels of total debt although it was expected to provide better protection for debt holders and to facilitate the use of debt.

The ability to use more long-term debt is associated with common law, lower corruption and an open economy. The latter result is an interesting one to note for future research. Unexpectedly, the existence of an explicit bankruptcy code and higher tax compliance are associated with lower levels of long-term debt.

For the use of short-term debt (which is generally bank debt but is also less risky for lenders than long-term debt) we find that higher corruption, a closed economy, longer duration (less efficient) contract enforcement, being a developed economy, having higher state ownership of banks and higher tax compliance are associated with higher levels of short-term debt. Common law is associated with lower levels of short-term debt, consistent with greater protection of debt holders' rights. The mix of results indicates that short-term debt is used both in developed countries with reasonable enforcement of obligations (as shown by tax compliance) where banks may be willing to provide loans, and in countries where uncertainty about debt holders' protection means that short, rather than long, debt has to be used.

Common law, lower corruption, less tax compliance, lower startup costs, larger banking sector and a more open economy are associated with higher levels of trade credit, suggesting that this is a form of finance that requires reasonably high levels of property rights protection to be used (presumably because it is sometimes informal and would not be easy to pursue).

For the choice of how much earnings to retain, higher corruption, higher tax compliance, higher state ownership of banks are associated with higher levels of retained earnings. Unexpectedly, higher tax benefit to debt is associated with higher levels of retained earnings.

These results are still somewhat preliminary but demonstrate the potential for more detailed analysis of what improvements to financial systems would be associated with changes to the financing choices made by firms. In particular, the fact that financial openness has a significant impact warrants a much more detailed examination. The

strong message that can be taken from the data is that country variables influence financing choices by firms, even after firm characteristics and industry effects have been taken into account. This is reassuring since it is consistent with the results of other studies for large samples of developed and developing countries and it gives scope for policy variables of particular interest in the region to be examined. It also should allow an analysis of what may cause changes in the financial structure of firms that, as noted above, have been very significant in the recent period.

6. Explaining the Impact of Sources of Finance

Tables 8–9 give the results for regressions explaining the change in investment in tangible assets (property, plant and equipment) and in current assets.

Since the focus of interest here is on how financing sources may impact on the investment activity of firms we have included in our explanatory variables several measures of the sources of finance. While our variable definitions (Appendix table) show the sources of finance as a share of total finance, the regression results were better. As these simply uses the change in the amounts of the sources of finance, the results reported in Tables 8 and 9 use changes in the levels of finance (change is defined as t – t-1 for each variable).

The R-squared for these investment equations is low but the results are broadly consistent with other studies so they may still be taken as informative. Essentially the results confirm that financial structure variables matter little for the amount of investment that firms carry out. Indeed, the only variables that have significant impact are country characteristics. These results remain puzzling in the finance literature but they are consistently replicated in the literature across a number of different specifications of real activity by firms and with different samples of countries and firms. We may therefore conclude that East Asia is not different in this respect. This does not mean that there is nothing to be learned from these results. On the contrary, they give considerable (future) scope for considering which country characteristics matter, for focusing on particular policy and regulatory characteristics and for further examining the interactions between country characteristics and firm and industry structure within countries. It would also be desirable to do more rigorous testing of which insignificant

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variables can be removed and what the effect is on the remaining results (general-to-specific strategy).

Taking the detail of the results in Tables 8 and 9 it is clear that the sources of financing do not influence firm fixed investment. For investment in current assets there is some evidence that lower levels of short-term debt financing are associated with higher current asset investment.

As expected, different industries have different investment behavior. Electronics, Electric, Gas & Sanitary Services, Manufacturing, Metal fabrication, Paper & Pulp and Retail are associated with higher fixed asset investment while there is no industry effect on current asset investment.

The interesting results are at the country level. The main significant effects are in this group of variables. In addition to the variables in earlier regressions, we add a shareholder rights index (where better protection is expected to make investors more able to enforce contracts and should lead to both more use of equity and more investment) and a creditor rights index (where better protection should lead to more debt and more investment). Overall, lower corruption, lower startup costs (i.e. less entrenched business), more tax compliance, higher state ownership of banks, a more open financial system and stronger shareholder rights are associated with higher fixed asset investment. Unexpectedly, common law, a developed economy, a larger banking system, an explicit bankruptcy code and weaker creditor rights are associated with less fixed asset investment

Lower corruption, lower startup costs and higher creditor rights are associated with higher current asset investment.

7. Conclusions and Future Research

- East Asian firms have a distinctive and striking financial structure. They rely to a considerable degree on external finance rather than retained earnings, and much of that finance comes from stock markets.

- Only Japan, Korea and India conform to the stereotype of debt-financed corporate structure.

- In the aftermath of the Asian financial crisis, there was a dramatic change in the financial structure of firms and their sources of finance. The transition to the new structure took several years to achieve.

- For firms' financial structure choices (i.e. debt levels, equity levels, maturity structure and retained earnings) firm-level, industry-level and country-level variables all matter.

- Thus, firm financing choices are not common across countries even though firm characteristics do matter.

- This is consistent with other literature that finds that country variables matter for financial structure but it is the first demonstration for the East Asian economies alone.

- The use of debt is greater when a country has common (rather than civil) law, has higher corruption, a larger banking sector, higher state ownership of banks and is a developed economy.

- There is no perceptible effect of shareholders' or debt holders' rights.

- Openness of the financial system has no effect on the overall choice of debt ratio but does increase the use of long-term debt (reducing short term).

- Firms' sources of finance (i.e. the structure of their fund raising) have no influence on the change in investment in either long- or short-term assets.

- Only country-level variables have an effect (consistent with other research).

- The main variables supporting the creation of assets are lower corruption, lower start-up costs for new business, higher state ownership of banks (China effect?) and an open financial system.

- Stronger shareholders' rights also have a significant effect.

Future Research

The current research has compiled a very large database of company accounting data that demonstrate what can be done even with the limitations of currently available data. There is clearly enormous scope for more research that can inform an understanding of

how the financial system is structured, how it connects with the corporate sector's real activities, and what elements of policy and institutional structure make a difference. To develop specific policy recommendations we suggest the following further research.

- A closer look at individual country results to see how countries have changed over time and what has determined those changes. This would be better achieved by using fixed-effects panel data estimation methods.
- Separation of individual elements of the financial openness measures and the inclusion of regional integration measures to consider the effects of financial liberalization and integration on the financial structure and behavior of firms.
- The inclusion of better measures of financial market development.
- Other measures of different types of investment such as R&D, which is a crucial element in growth and productivity.
- Closer examination of structural breaks around times of crisis to see whether finance sources and structure impact on investment more at certain times and under certain circumstances.

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Results Tables

Table 2. Total Debt/Total Finance

Variable	Coef.	t	P
tangible	.2147967	5.65	0.000
profit	−.0019585	−0.99	0.320
size	.0235452	7.18	0.000
m_b	5.89e−06	3.56	0.000
div_dum	−.073453	−3.99	0.000
law	.0510641	2.34	0.019
corrupt	.0186969	4.31	0.000
enforce_du~t	.0002817	2.07	0.039
taxevas	.016249	1.32	0.186
startup_co~t	−.0263369	−0.41	0.681
bankdeposi~p	.0218991	2.20	0.028
deposit_in~e	−.0168976	−0.90	0.370
bankstate	.061523	3.63	0.000
openness	−.0018508	−0.21	0.830
income	.0554457	3.59	0.000
reorg	−.0369542	−1.61	0.108
miller	.0621813	1.51	0.131
_Iindust_8	−.0938547	−3.53	0.000
_Iindust_9	.2482043	7.42	0.000
_Iindust_10	−.0874373	−4.67	0.000
_Iindust_16	−.156324	−4.12	0.000
_Iindust_21	−.1854775	−4.20	0.000
_cons	−.2053378	−2.78	0.006

Number of Obs = 91918; R-squared = 0.2292; Root MSE = 0.1713 Notes: Only Industry dummies with a P of .001 or less have been included in the tables.

Table 3. Total Debt Plus Trade Credit/Total Finance

Variable	Coef.	t	P
tangible	.0409238	4.01	0.000
profit	−.0020694	−1.08	0.282
size	.0271438	7.25	0.000
m_b	6.65e–06	3.90	0.000
div_dum	−.0765193	−3.42	0.001
law	.0784962	2.57	0.010
corrupt	.0125895	2.49	0.013
enforce_du~t	.0001911	0.98	0.329
taxevas	−.0166862	−1.19	0.235
startup_co~t	−.1109728	−1.32	0.186
bankdeposi~p	.0486097	4.48	0.000
deposit_in~e	−.0185104	−1.08	0.279
bankstate	.0704777	5.01	0.000
openness	.0060221	0.58	0.560
income	.0563452	3.17	0.002
reorg	−.0500276	−1.98	0.048
miller	.0837131	1.50	0.134
_Iindust_8	−.1004735	−3.28	0.001
_Iindust_9	.2495399	10.73	0.000
_Iindust_16	−.1658329	−4.33	0.000
_Iindust_21	−.2082075	−5.09	0.000
_Iindust_23	.1074116	7.56	0.000
_cons	.0638888	0.57	0.572

Number of Obs = 91916, R-squared = 0.2364, Root MSE = 0.1902

Table 4. Retained Earnings/Shareholders Equity

Variable	Coef.	t	P
tangible	–.7023238	–0.13	0.896
profit	2.242583	2.69	0.007
size	1.061307	1.67	0.095
m_b	–.0109832	–0.79	0.429
div_dum	3.72845	2.69	0.007
law	1.476316	0.37	0.711
corrupt	1.574422	3.15	0.002
enforce_du~t	–.0008221	–0.05	0.958
taxevas	7.824188	4.61	0.000
startup_co~t	–3.398072	–0.26	0.792
bankdeposi~p	–2.544971	–1.22	0.224
deposit_in~e	1.719604	0.93	0.352
bankstate	10.60071	7.48	0.000
openness	.9458251	0.79	0.427
income	.0846882	0.06	0.955
reorg	–2.16044	–0.75	0.454
miller	13.28458	2.00	0.045
_cons	–55.24883	–5.66	0.000

Number of Obs = 91944, R-squared = 0.0038, Root MSE = 129.7856

Table 5. Long-term Debt/Total Finance

Variable	Coef.	t	P
tangible	.1851676	6.67	0.000
profit	–.0008804	–1.34	0.181
size	.0209732	7.59	0.000
m_b	6.21e–06	5.34	0.000
div_dum	–.0347795	–6.13	0.000
law	.1460649	5.61	0.000
corrupt	–.0042395	–2.55	0.011
enforce_du~t	–.0002936	–1.44	0.149
taxevas	–.0501534	–4.47	0.000
startup_co~t	–.0984596	–1.71	0.088
bankdeposi~p	.0143888	1.19	0.232
deposit_in~e	–.0089322	–0.64	0.522
bankstate	–.0181173	–0.80	0.424
openness	.0146491	2.96	0.003
income	.0022558	0.15	0.879
reorg	–.0365448	–1.87	0.061
miller	.0461133	1.00	0.315
_Iindust_7	.0614651	5.67	0.000
_Iindust_9	.1998528	6.66	0.000
_cons	.0508133	0.91	0.362

Number of Obs = 91934, R-squared = 0.2973, Root MSE = 0.1101

Table 6. Short-term Debt/Total Finance

Variable	Coef.	t	P
tangible	.0298037	1.51	0.132
profit	−.0010838	−0.81	0.416
size	.0025538	2.28	0.023
m_b	−3.16e−07	−0.42	0.677
div_dum	−.038722	−2.81	0.005
law	−.0948951	−4.58	0.000
corrupt	.0229242	4.58	0.000
enforce_du~t	.0005754	6.45	0.000
taxevas	.0663039	6.00	0.000
startup_co~t	.0722868	1.93	0.054
bankdeposi~p	.0076561	0.55	0.586
deposit_in~e	−.0080042	−0.57	0.571
bankstate	.0796828	5.01	0.000
openness	−.0165479	−3.09	0.002
income	.0533869	2.85	0.004
reorg	−.0003924	−0.03	0.980
miller	.0161676	0.26	0.794
_Iindust_4	−.0880793	−4.52	0.000
_Iindust_7	−.0794157	−5.41	0.000
_Iindust_8	−.055409	−3.69	0.000
_Iindust_13	−.0679676	−4.26	0.000
_Iindust_16	−.0890191	−4.35	0.000
_Iindust_17	−.0560176	−3.74	0.000
_Iindust_20	−.0630637	−4.93	0.000
_Iindust_21	−.0908602	−3.67	0.000
_cons	−.2559502	−3.49	0.000

Number of Obs = 91933, R-squared = 0.1409, Root MSE = 0.1236

Table 7. Trade Credit/Total Finance

Variable	Coef.	t	P
tangible	–.1736383	–4.65	0.000
profit	–.0001351	–0.54	0.587
size	.0035974	4.02	0.000
m_b	7.60e–07	2.52	0.012
div_dum	–.0030248	–0.68	0.496
law	.0274353	2.75	0.006
corrupt	–.0061018	–4.10	0.000
enforce_du~t	–.0000899	–1.23	0.220
taxevas	–.0329664	–8.04	0.000
startup_co~t	–.0843965	–2.73	0.006
bankdeposi~p	.0267527	4.02	0.000
deposit_in~e	–.0016499	–0.16	0.875
bankstate	.0089752	0.94	0.347
openness	.0078736	2.20	0.028
income	.0009315	0.18	0.859
reorg	–.0129973	–1.61	0.108
miller	.0218234	1.13	0.260
_Iindust_5	.0803013	7.74	0.000
_Iindust_14	.0413365	3.71	0.000
_Iindust_19	.0578412	5.07	0.000
_Iindust_23	.1271955	4.99	0.000
_cons	.268934	5.96	0.000

Number of Obs = 91973, R–squared = 0.3203, Root MSE = 0.0900

Table 8. Investment in Property, Plant & Equipment

Variable	Coef.	t	P
chg_ltd	–4.96e–08	–0.16	0.870
chg_std	9.69e–08	0.65	0.515
chg_tc	3.81e–07	0.84	0.398
chg_re	1.21e–07	1.65	0.099
law	–5.247312	–2.67	0.008
corrupt	–.5419505	–5.21	0.000
enforce_du~t	–.0251875	–4.10	0.000
taxevas	1.224491	3.49	0.000
startup_co~t	–15.70504	–5.39	0.000
bankdeposi~p	–2.476196	–2.92	0.004
deposit_in~e	–.1899943	–0.30	0.766
bankstate	3.684801	3.45	0.001
openness	.0106528	0.06	0.954
income	–5.82652	–5.38	0.000
reorg	–2.906417	–2.58	0.010
miller	–7.308702	–1.99	0.047
creditor_r~s	–2.03561	–7.06	0.000
share_rights	3.502545	5.00	0.000
_Iindust_6	.6546698	3.35	0.001
_Iindust_7	1.054598	3.21	0.001
_Iindust_14	.6743884	3.83	0.000
_cons	3.709195	3.06	0.002

Number of Obs = 64515, R-squared = 0.0007, Root MSE = 53.4648. Note: change in retained earnings, change in long-term debt; change in short-term debt and change in trade credit are defined as t – t-1

Table 9. Investment in Current Assets

Variable	Coef.	t	P
chg_ltd	5.18e–08	0.20	0.845
chg_std	−4.68e–07	−2.06	0.040
chg_tc	5.96e–07	0.94	0.349
chg_re	−7.01e–08	−0.53	0.595
law	−11.56963	−0.76	0.448
corrupt	−2.469467	−1.86	0.064
enforce_du~t	−.0224026	−2.14	0.033
taxevas	−1.717838	−1.90	0.058
startup_co~t	−22.59532	−1.16	0.244
bankdeposi~p	1.530191	0.79	0.430
deposit_in~e	.0892354	0.12	0.904
bankstate	11.44514	0.93	0.353
openness	.1455602	0.27	0.786
income	−14.21094	−1.48	0.140
reorg	−4.026255	−0.74	0.462
miller	−9.066622	−0.62	0.538
creditor_r~s	1.089851	1.96	0.050
share_rights	6.678921	1.07	0.283
_cons	6.240801	0.76	0.447

Number of Obs = 66246, R-squared = 0.0006, Root MSE = 89.8051

Appendix 1

Variable Definitions

A1.1. Independent Variables

1. Leverage in period t (a) or Leverage (a)

Definition: total debt/market value

Where total debt is defined as the book value of current and long-term interest bearing debt, market value is defined as the market value of common equity plus book value of preferred stock plus total debt.

Calculating Formula:

$$Leverage\ (a)_t = \frac{DLC_t+DLTT_t}{CSHO_{t,last\ trading\ day} \times PRCCD_{t,last\ trading\ day}+PSTK_t+DLC_t+DLTT_t}$$

2. Leverage in period t (b) or Leverage (b)

Definition: total debt/market value

Where total debt defined as the book value of current and long-term interest bearing debt plus trade credit, market value is defined as the market value of common equity plus book value of preferred stock plus total debt.

Calculating Formula:

$$Leverage\ (b)_t = \frac{DLC_t+DLTT_t+AP_t}{CSHO_{t,last\ trading\ day} \times PRCCD_{t,last\ trading\ day}+PSTK_t+DLC_t+DLTT_t+AP_t}$$

3. Debt maturity in period t (a) or DM (a)

Definition: long-term debt/total debt *total debt defined as the book value of current and long-term interest-bearing debt.

Calculating Formula: $DM(a)_t = \frac{DLTT_t}{DLC_t+DLTT_t}$

4. Debt maturity in period t (b) or DM (b)

Definition: long-term debt/total debt *total debt defined as the book value of current and long-term interest-bearing debt plus trade credit.

Calculating Formula: $DM(b)_t = \frac{DLTT_t}{DLC_t+DLTT_t+AP_t}$

5. Shareholder Equity Ratio in period t or SEMR

__Definition:__ shareholders equity/total assets

__Calculating Formula:__ $EMR_t = \frac{SEQ_t}{AT_t}$

6. Long-Term Debt Maturity Ratio in period t or LTMR

__Definition:__ long-term debt/total assets.

__Calculating Formula:__ $LTMR_t = \frac{DLTT_t}{AT_t}$

7. Short-Term Debt Maturity Ratio in period t or STMR

__Definition:__ short-term debt/total assets.

__Calculating Formula:__ $STMR_t = \frac{DLC_t}{AT_t}$

8. Trade Credits Maturity Ratio in period t or TCMR

__Definition:__ trade credits/total assets.

__Calculating Formula:__ $TCMR_t = \frac{AP_t}{AT_t}$

9. Proportions of fixed investment in period t (a) or PFI (a)

__Definition:__ change in fixed assets/total investable funds.

Where total investable funds defined as change in current liabilities plus change in long-term liabilities plus change in issued equity plus cash flow from operations.

__Calculating Formula:__ $PFI(a)_t = \frac{(AT_t - ACT_t) - (AT_{t-1} - ACT_{t-1})}{OANCF_t + (LT_t - LT_{t-1}) + (CSTK_t - CSTK_{t-1})}$

10. Proportions of fixed investment in period t (b) or PFI (b)

__Definition:__ change in gross PP&E/total investable funds.

Where total investable funds defined as change in current liabilities plus change in long-term liabilities plus change in issued equity plus cash flow from operations.

__Calculating Formula:__ $PFI(b)_t = \frac{PPEGT_t - PPEGT_{t-1}}{OANCF_t + (LT_t - LT_{t-1}) + (CSTK_t - CSTK_{t-1})}$

11. Proportions of current investment in period t or PCI

__Definition:__ change in current assets/total investable funds.

Where total investable funds defined as change in current liabilities plus change in long-term liabilities plus change in issued equity plus cash flow from operations.

Calculating Formula: $PCI_t = \frac{(ACT_t - ACT_{t-1})}{OANCF_t + (LT_t - LT_{t-1}) + (CSTK_t - CSTK_{t-1})}$

12. FINCF/OANCF Ratio in period t or FOR

Definition: net financing cash flow/net operating cash flow.

Calculating Formula: $FOR_t = \frac{FINCF_t}{OANCF_t}$

13. Retained Earnings Ratio in period t or RER

Definition: change in retained earnings / (change in long-term debt + change in common stock capital).

Calculating Formula: $RER_t = \frac{RE_t - RE_{t-1}}{(DLTT_t - DLTT_{t-1}) + (CSTK_t - CSTK_{t-1})}$

14. FINCF/OANCF Ratio in period t or FOR

Definition: net financing cash flow/net operating cash flow.

Calculating Formula: $FOR_t = \frac{FINCF_t}{OANCF_t}$

15. RE/TF Ratio in period t or RE/TF

Definition: retained earnings/total financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $RE/TF_t = \frac{RE_t}{SEQ_t + DLTT_t + DLC_t + AP_t}$

16. LTD/TF Ratio in period t or LTD/TF

Definition: long-term debts/total financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $LTD/TF_t = \frac{DLTT_t}{SEQ_t + DLTT_t + DLC_t + AP_t}$

17. STD/TF Ratio in period t or STD/TF

Definition: short-term debt/total financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $STD/TF_t = \dfrac{DLC_t}{SEQ_t + DLTT_t + DLC_t + AP_t}$

18. TC/TF Ratio in period t or TC/TF

Definition: trade credit/total financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $AP/TF_t = \dfrac{AP_t}{SEQ_t + DLTT_t + DLC_t + AP_t}$

19. CS/TF Ratio in period t or CS/TF

Definition: the residual value of total financing, representing the equity capital proportion in financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $CS/TF_t = 1 - RE/TF_t - LTD/TF_t - STD/TF_t - TC/TF_t$

20. CRE/TF Ratio in period t or CRE/TF

Definition: change in retained earning/total financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $CRE/TF_t = \dfrac{RE_t - RE_{t-1}}{SEQ_t + DLTT_t + DLC_t + AP_t}$

21. CLTD/TF Ratio in period t or CLTD/TF

Definition: change in long term debt/total financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $CLTD/TF_t = \dfrac{DLTT_t - DLTT_{t-1}}{SEQ_t + DLTT_t + DLC_t + AP_t}$

22. CSTD/TF Ratio in period t or CSTD/TF

Definition: change in short term debt/total financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $CSTD/TF_t = \dfrac{DLC_t - DLC_{t-1}}{SEQ_t + DLTT_t + DLC_t + AP_t}$

23. CTC/TF Ratio in period t or CTC/TF

Definition: change in trade credit/total financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $CTC/TF_t = \frac{AP_t - AP_{t-1}}{SEQ_t + DLTT_t + DLC_t + AP_t}$

24. CCS/TF Ratio in period t or CCS/TF

Definition: change in long term debt/total financing.

Where total financing defined as shareholders equity plus total debts plus trade credit.

Calculating Formula: $CCS/TF_t = \frac{CSTK_t - CSTK_{t-1}}{SEQ_t + DLTT_t + DLC_t + AP_t}$

Data Item List:

ACT	ACT – Current Assets – Total
AP	AP – Accounts Payable – Trade
AT	AT – Assets – Total
CEQ	CEQ – Common/Ordinary Equity – Total
CSHO	CSHO – Common Shares Outstanding
CSHR	CSHR – Common/Ordinary Shareholders
CSTK	CSTK – Common/Ordinary Stock (Capital)
DLC	DLC – Debt in Current Liabilities – Total
DLTT	DLTT – Long-Term Debt – Total
FINCF	FINCF – Financing Activities – Net Cash Flow
LCT	LCT – Current Liabilities – Total
LT	LT – Liabilities – Total
OANCF	OANCF – Operating Activities – Net Cash Flow
PPEGT	Property, Plant and Equipment – Total (Gross)
PSTK	PSTK – Preferred/Preference Stock (Capital) – Total
SEQ	SEQ – Stockholders' Equity – Total
RE	Retained Earnings
PRCCD	Closing Price Daily

Table A1.2. Industry Dummies Definitions

	Industry	SIC
1	Agriculture, Forestry & Fishing	1+2+7+8+9
2	Automotive	55+75
3	Chemical	28+29
4	Communication	48
5	Construction	15+16+17
6	Electronics	36+38
7	Electric, Gas & Sanitary Services	46+49
8	Entertainment	78+79+84
9	Banks	60
10	Insurance	64
11	Brokers, real estate & other	62+65+67
12	Food & beverage	20
13	Hotels	70
14	Manufacturing	22+23+24+25+30+31+32+35+37+39
15	Metal fabrication	33+34
16	Mining	10+12+13+14
17	Newspapers	27
18	Paper & pulp	26
19	Retail	52+53+54+56+57+58+59
20	Services	43+72+73+76+80+81+82+83+86+87+88+89
21	Tobacco	21
22	Transport	40+41+42+44+45+47
23	Wholesale	50+51
24	Other	91+92+93+94+95+96+97+99

Table A1.3. 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)
Corruption index	An index ranging from 0 to 10, with larger value indicating more severe corruption.	Corruption Perception Index, Transparency International
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, McLiesh, Shleifer (2007)
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, La Porta, Lopez-de-Silanes, Shleifer (2008)
Contact enforcement	Estimated duration, in calendar days, between the moment of issuance of judgment and the moment the creditor obtains payment.	Djankov, La Porta, Lopez-de-Silanes, Shleifer (2003)
Tax evasion	Executives' assessment of how important tax evasion is in their country (the lower the measure the more rampant is tax evasion)	Djankov, Ganser, McLiesh, Ramalho, Shleifer (2009)
Business startup cost	The cost of obtaining legal status to operate a firm as a share of per capita GDP.	Djankov, La Porta, Lopez-de-Silanes, Shleifer (2003)
Deposits	A proxy for the degree of financial intermediation of a country, measured as the country's deposits (liquid liability) over GDP.	International Financial Statistics, International Monetary Fund
Deposit insurance	Dummy variable equal to 1 if bank deposits are insured by government.	Demirguc-Kunt, Karacaovali, Laeven (2005)
State control	An index measuring the proportion of a country's banks that are state controlled, where a bank is defined to be state	Caprio, Laeven, Levine (2005)

	controlled if the state's voting rights exceed 10 percent.	
Openness	An index that measures the extent of openness in capital account transactions. Higher values represent more open economies.	Chinn, Ito (2008)
Developed economy	A 0 or 1 dummy variable indicating whether the country is classified as developed according to the World Bank classification based on countries' gross national income levels.	World Development Indicators, World Bank
Bankruptcy code	A proxy for the existence of an explicit bankruptcy code, measured as a dummy variable equal to 1 if an insolvent firm is most likely to undergo a reorganization proceeding.	Djankov, Hart, McLiesh, Shleifer (2008)
Tax	Estimate of the Miller tax ratio equal to (1 – [(after all tax value of $dividends)/(after all tax value of $interest)]) calculated using statutory tax rates.	Price Waterhouse Coopers, Doing Business

Appendix 2

Figures A2.1 – A2.13. Financial Structure: Individual Country Results
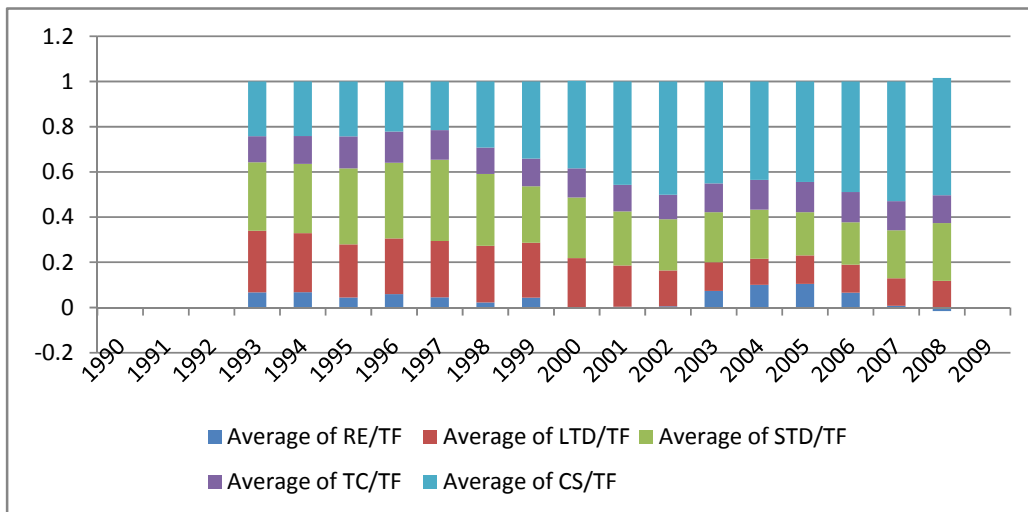
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India

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Korea

Malaysia

New Zealand

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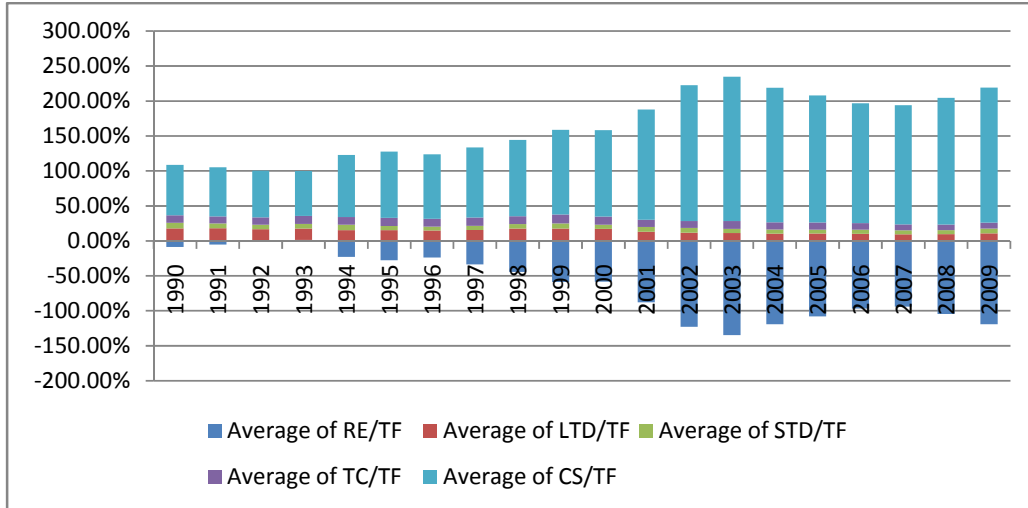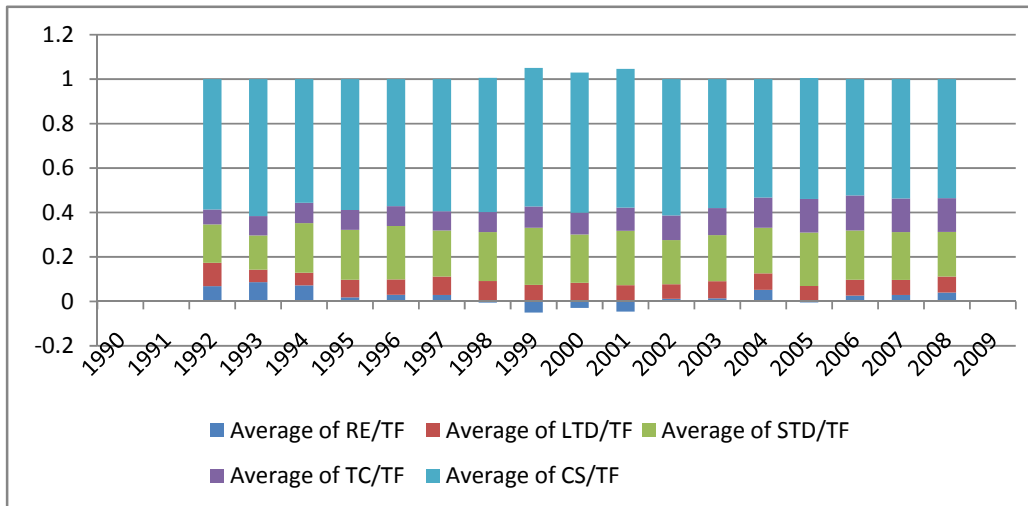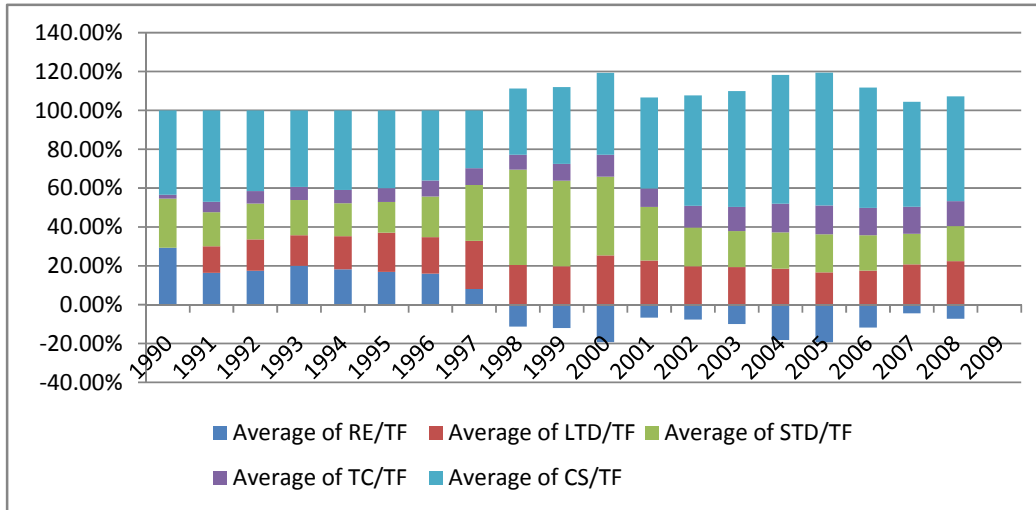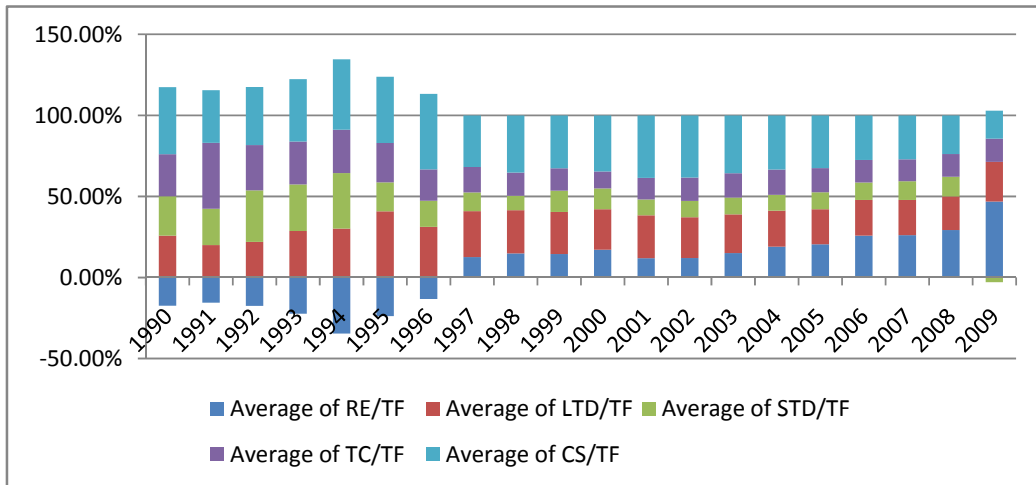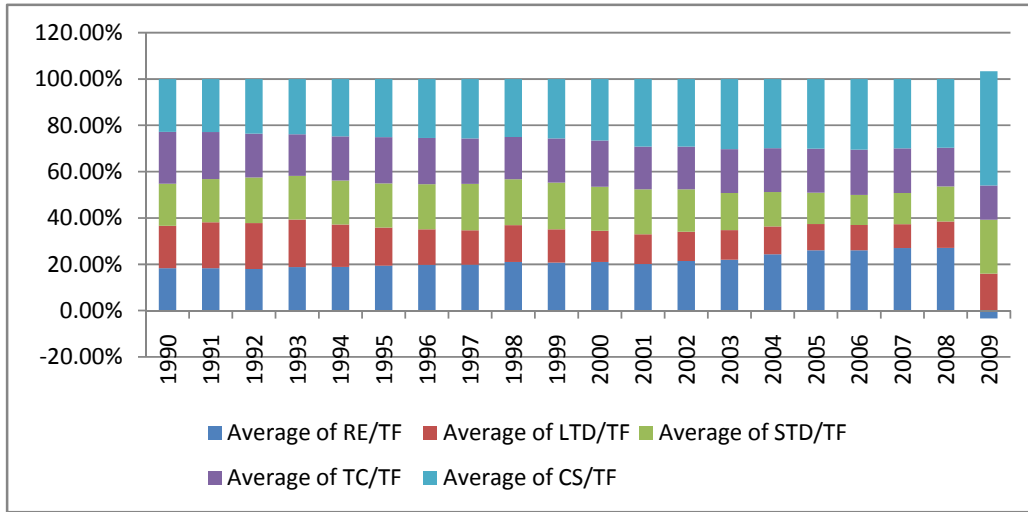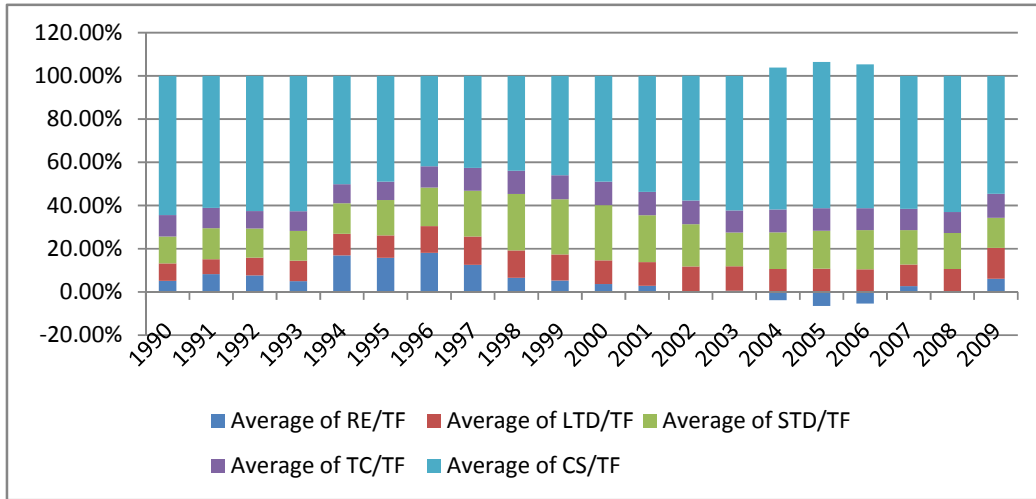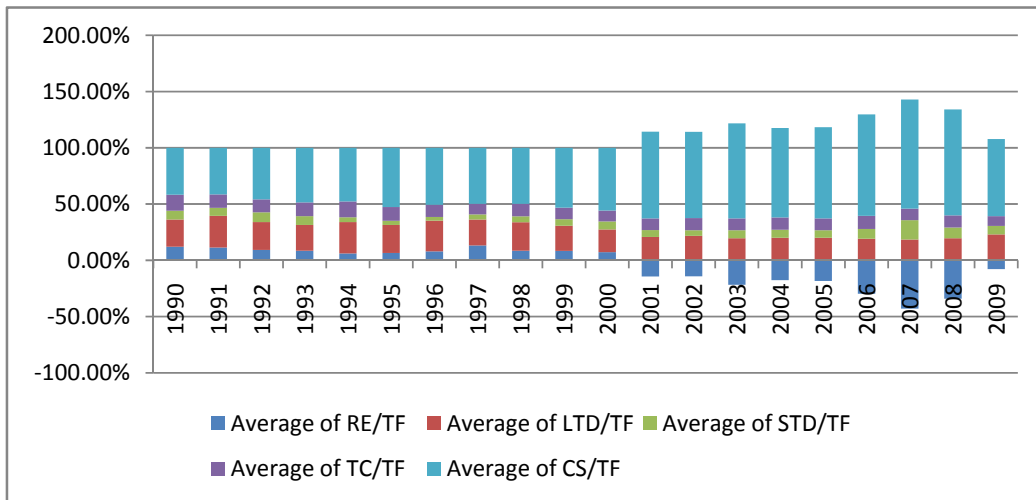
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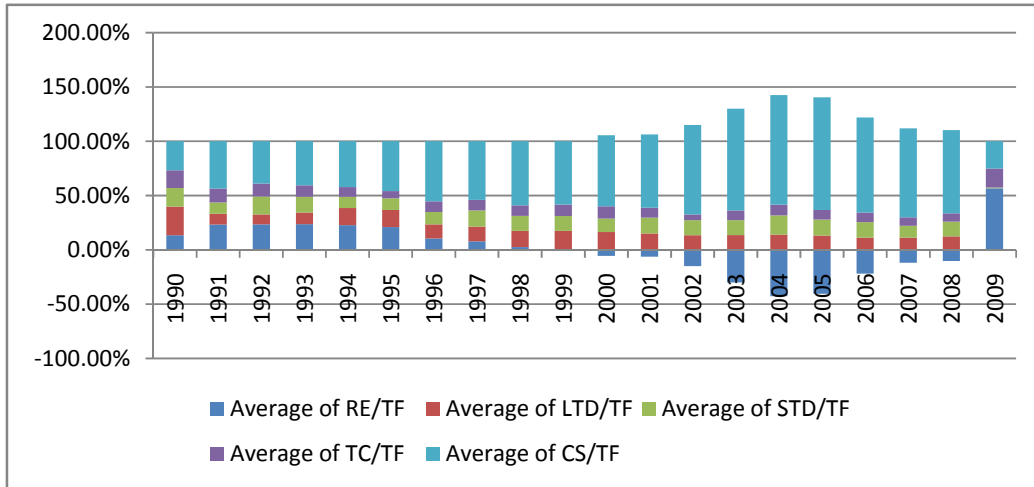
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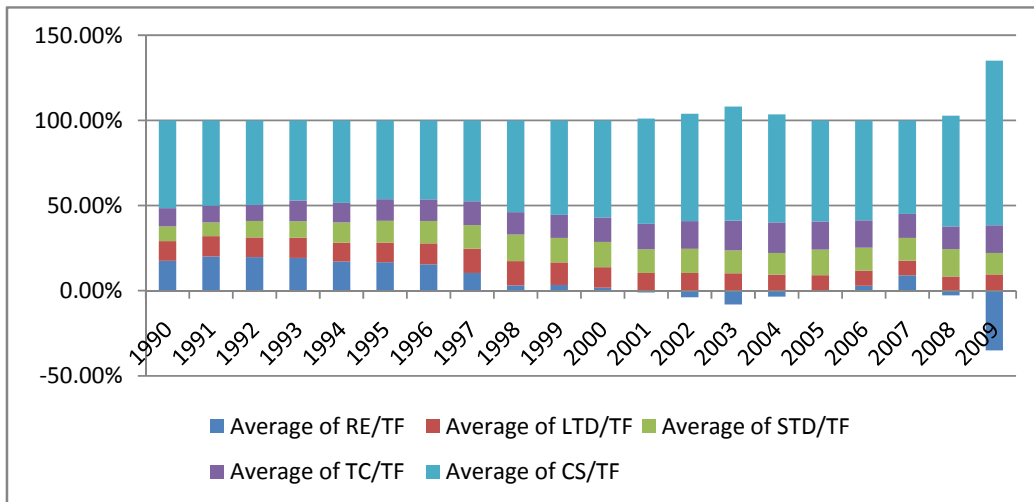
Thailand
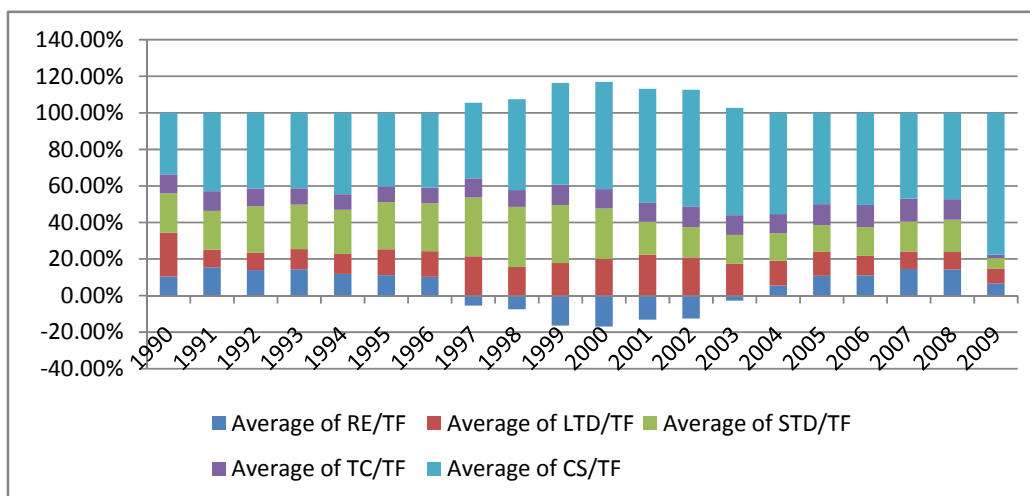
Appendix 3

Table A3.1. R^2 for Separate Regressions

R-square	All Variables	Firm Only	Industry Only	Country Only
Td_ta	0.2454	0.1689	0.1067	0.0657
Td_tc_ta	0.2517	0.1481	0.1520	0.1038
Re_shf	0.0043	0.0034	0.0006	0.0006
Ltd_ta	0.3119	0.2058	0.1039	0.0533
Std_ta	0.1597	0.0511	0.0854	0.0935
Tc_ta	0.3371	0.2197	0.2311	0.0890