Capital Structure in Emerging Asia

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Abstract

This paper examines the capital structure and financing decisions of firms in emerging Asia between 1991-2014. Neither the mean/median leverage nor the upper tails of the leverage distribution show any upward shift in recent years. On the whole, corporate leverage appears quite stable. The legal environment and quality of a country's institutions are important influences on corporate leverage decisions: firm characteristics such as asset tangibility and size that help to overcome information asymmetries are less important in countries with stronger institutions. During periods of expansive global monetary policy, firms in countries with stronger institutions raise more debt financing and invest more than other firms.

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I. Introduction

The rising debt burdens of corporations in emerging market economies (EMEs) are of increasing concern to policy-makers and market participants alike. Non-financial corporate debt of EMEs rose from 58% of GDP in 2007 to 96% in 2015, surpassing the ratio of advanced economies (See Figure 1 based on data from the Bank for International Settlements (2016)). The accumulation of corporate debt has been even more marked in the sub-sample of emerging markets of the Asia-Pacific. Trends such as these hark back to the Asian financial crisis of the late 1990s, memories of which still linger in the region.[1]

Corporate debt is best viewed as high or low relative to the assets - including equity - that are available to support that debt. For that reason, we focus on corporate leverage measures that take into account such support, estimated both with book and market values of equity. Moreover, we look beyond averages to focus on leverage distributions in assessing system vulnerabilities. In particular, changes in leverage of the upper tail of leverage distribution can often be more informative about the sensitivity of bankruptcy rates and financial distress to aggregate shocks. In this respect, we follow the analysis of Bernanke and Campbell (1988), who addressed widespread worries about the rise of US corporate debt in the late 1980s.

Our focus is on examining capital structure decisions of listed firms in emerging Asia with a view to understanding the extent to which recent increases in debt have outpaced those of equity and historical norms. In the process, we provide a more granular understanding of the determinants of debt levels and debt changes of firms in Asia. We

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[1]Though macro-prudential policies have been enacted in many jurisdictions to control the quality, quantity, and pro-cyclicality of lending, these measures frequently target household mortgage debt rather than the provision of credit to corporations. In addition, corporations are increasingly relying on bond markets and in particular, foreign bond markets, which are often out of reach of the macro-prudential policymakers. In what has been identified as "the second phase of global liquidity", bond markets have assumed a greater role in transmitting global financial conditions across borders. See Shin (2013).

examine both standard firm-specific factors suggested by the theoretical literature, and country factors that relate to the macroeconomic environment and quality of institutions together with global factors associated with risk-taking. Our analysis is based on publicly-listed firms in Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore, and Thailand and covers the period from 1991 to 2014.

While there are a number of cross-country studies that estimate the determinants of leverage in developing countries, relatively few cover the recent period of unprecedented quantitative easing in advanced economies. Further, we examine the sources and uses of funds to determine how firms in Asia finance their external funding deficits and whether these financing patterns have changed in the recent period.

We also assess the importance of global liquidity conditions in driving the debt finance of companies in emerging Asia. Recent work has drawn attention to the importance of global factors – particularly related to stance of US monetary policy.[2] Emerging market bond issuance has been positively influenced by quantitative easing in the United States (Lo Duca et al., 2014). What we do not know is the extent to which quantitative easing in the U.S. has affected debt ratios of firms in emerging Asia. Has the financing patterns of Asian firms changed in response to the recent Fed policies? Which countries are more affected and why? These are the questions we address in this paper.

Our results can be summarized as follows:

1. When corporate debt is measured relative to assets, we find little evidence of an increase in leverage in the more recent period. While corporate debt has increased, so have assets including both book and market equity on balance sheets of firms.

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[2]In addition to monetary policies of advanced economies, exchange rate fluctuations could also drive cross-border debt issuances. For example,(Caruana, 2016) argues that cross-border debt moves with exchange rates - it tends to increase when USD depreciates and declines when USD appreciates.

Contrary to the more common view that Asian firms have become excessively leveraged in recent years, we find that corporate leverage in Asia is remarkably stable. This contrasts sharply with what we observed ahead of the Asian financial crisis of the late 1990s.

2. Firms in Indonesia, Korea, and Thailand have relatively more debt than firms in Hong Kong, Malaysia, Philippines, and Singapore. But, even among countries with high firm-level leverage, the current debt levels are much lower than those observed prior to the Asian financial crisis. Market leverage did increase during the recent global financial crisis, but these are largely an artefact of a transitory drop in equity values of firms during the crisis. In the more recent period from 2010, both book and market leverage are similar to levels observed in the previous decade.

3. The 90th and 95th percentile of the distributions of leverage do not seem to have increased faster than the median. Thus, there is no tendency for the upper tail of distribution of leverage to have shifted out.

4. Leverage is positively related to industry median leverage, firm size and tangibility of assets, and negatively related to profitability and market-to-book assets ratio. Firm characteristics explain a significantly greater proportion of cross-sectional variation in leverage in Indonesia, Korea, Philippines, and Thailand and less so in other countries. Furthermore, firm characteristics such as firm size and tangibility are more strongly related to leverage in countries that are less developed and have weaker institutions.

5. The legal environment and quality of institutions has an important influence on capital structure of Asian firms. Leverage increases with the strength of creditor rights, political stability, and efficiency of resolution of insolvencies. Leverage declines with

improvement in shareholder protection and development of stock markets. Furthermore, greater borrowing by governments reduces borrowing by corporates.

6. We find that firms use more *external* equity to fund deficits when institutions are strong, minority shareholders are better protected and there is greater political stability. The fact that firms in countries with strong legal rights and higher political stability are also more leveraged suggests that better institutions and more stable political systems allow firms that generate less internal equity to list. So, despite financing through relatively more external equity, leverage is still high in countries with stronger creditor rights and higher political stability.

7. More accommodative monetary policies in the U.S recently has resulted in greater use of debt financing in countries with stronger institutions. This suggests that capital seeking higher returns flows into debt capital of firms in countries with better quality institutions. These results are consistent with findings in Bae and Goyal (2010) that foreign investors prefer to invest in better governed firms since they are at an informational disadvantage relative to local investors.

8. More accommodative monetary policies in the US recently have also resulted in higher capital expenditures by firms in countries with stronger institutions. Furthermore, global liquidity relaxes the financing constraints of firms.

The remainder of the paper proceeds as follows. We review the relevant empirical and theoretical literature in Section II. In Section III, we describe and summarise the corporate finance, country- and global data employed in the study. Section IV sets up and reports estimates from regressions of leverage on firm characteristics. In Section V we present estimates from regressions of leverage on country-level variables after controlling for firm characteristics and year fixed-effects. Section VI presents summary statistics of

disaggregated cash flows statements of firms and presents results from tests that examine the effect of global liquidity on funding of financing deficit by Asian firms. Section VII examines the effect of global liquidity on corporate investment. We conclude with a summary of findings and issues for further investigation in Section VIII.

II. Literature Review

The determinants of the capital structure of firms internationally is an increasingly well researched topic. Despite the institutional differences in financial systems documented among countries, Rajan and Zingales (1995) identified four firm factors which had been important in studies focused in the United States - size, profitability, asset tangibility and market-to-book ratios - to be also generally important in regressions of G-7 countries. Motivated by the work on US firms by Frank and Goyal (2009), two additional factors, median industry leverage and inflation, have been added to the set of "reliably important" factors for international firms (Oztekin, 2015). Subsequent cross-country work focused on the additional important role played by country level characteristics such as the macreconomy, capital market development, and bankruptcy outcomes (Booth et al. (2001); Gungoraydinoglu and Oztekin (2011), Oztekin (2015)). And in the wake of the global financial crisis, researchers have examined whether swings in risk-taking and global liquidity can also account for movements in firm leverage across countries Kalemli-Ozcan et al. (2012) and International Monetary Fund (2015).

Studies assessing the determinants of leverage have also frequently tested theories of corporate capital structure, most commonly the trade-off theory which sees capital structure as a balance of tax advantages versus the higher agency and bankruptcy costs that generally accrue to debt contracts (Myers (1977) and Stulz (1990)), as well as the pecking-

5

order theory which sees internal finance as usually preferred to external finance because costs related to adverse selection costs, and debt finance as preferred to equity among external financing methods (Myers (1984); Myers and Majluf (1984)). Frank and Goyal (2003) and Frank and Goyal (2009) have found the US data to be more supportive of trade-off theory than the pecking order theory; while Booth et al. (2001) and Gungoraydinoglu and Oztekin (2011) have found some evidence in the international data consistent with both the trade-off and the pecking order theories. Neither study uses data from the firm cash-flow statements to confirm the pecking order hypothesis in international data, however.

III. Data and Summary Statistics

We start with a discussion of average balance sheets of Asian firms and present a first look at cross-country differences in the asset and liability structure of firms. Section A describes our data sources and the resulting sample. Section B summarizes leverage ratios and financing variables. Section C presents summary statistics of firm characteristics, while Section D presents similar statistics on selected macroeconomic and institutional variables. The statistics are disaggregated at the country level and for various sub-periods of interest.

A. Data, Sample, and Average Balance Sheets

Firm-level accounting data are from Worldscope and the stock market data are from Datastream. The period is 1991-2014. In addition, we obtain country-level variables form

various sources, including the Doing Business database available through the World Bank and World Economic Outlook from IMF.

We exclude observations with missing or zero asset values. We also exclude financial firms (6000-6999) and utilities (4000-4999). We require firms to have have data on book leverage and market leverage to be included in our analysis. The financial accounts are deflated using the consumer price index for each country from the world development indicators database from the World Bank. All ratio variables are winsorized at 0.5% in either tail of the distribution.

Table I presents the distribution of countries in our sample. The sample includes firms from Hong Kong, Indonesia, South Korea, Malaysia, Philippines, Singapore, and Thailand. We have 7,198 firms from seven countries with a total of 77,342 firm-year observations. The average panel length is 10.7 years. South Korea has relatively more firms in the sample, while Philippines has fewer. Despite these differences, we don't see any particular country making an outsized influence on our sample. While the panel length varies from 1 year to 24 years, both the mean and median panel lengths range between 9 and 12 years.

Appendix Table1 I reports the average balance sheet as a fraction of assets for publicly traded firms in each of the seven countries. Surprisingly, the balance sheets are not all that different and firms have very similar asset and liability structures despite significant differences in geography and institutions.

This is not to say that nothing stands out in this comparison. Firms in Hong Kong and Singapore hold relatively more cash, have more current assets and fewer fixed assets. On the other hand, firms in Philippines hold less cash, have fewer receivables, but significantly higher levels of fixed assets.

On the liability side, we see significant differences in use of short-term debt - firms in Korea and Thailand have more short-term debt while firms in Hong Kong, Philippines, Malaysia, and Singapore have less. Firms in Indonesia and Thailand use relatively more long-term debt. Overall, debt levels are higher for firms in Indonesia, South Korea, and Thailand.

B. Leverage Ratios

In the introduction, we reviewed concerns about the recent growth of debt in the Asia-Pacific. However, the risks of debt outstanding are most appropriately measured relative to the assets that support them.

We therefore use two leverage measures for our firm-level analysis, book leverage and market leverage. Academic opinion is divided on which is the most appropriate. Reasons for choosing book leverage include the view that assets in place provided better support to debt than growth opportunities (Myers, 1977) and the tendency of managers not to adjust capital structure in response to swings in the stock market (Graham and Harvey, 2001). Market leverage advocates view the book value of equity to be backward looking and not managerially relevant (Welch, 2004).[3]

We define *BookLeverage* as the book value of debt divided by debt plus book equity. We define *MarketLeverage* as the book value of debt divided by debt plus market equity. Welch (2011) argues that leverage ratios constructed using total assets suffer from the problem that total assets include the value of non-financial liabilities such as trade credit.

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[3]Academic studies that examine both book and market leverage measures report that the two measures behave similarly (Rajan and Zingales, 1995; Fama and French, 2002; Leary and Roberts, 2005). DeAngelo and Roll (2015) note the high correlation between book and market leverage and conclude that "there is not much incremental information in the market series" (page 377).

Our leverage definitions are thus not affected by changes in non-financial liabilities. We require all firm-level leverage measures to have values between zero and one.

We start with an examination of changes over time and across countries in the mean leverage ratios for the sample firms (Table II panels A and B). In addition to the entire period, we examine the sub-periods of 1991-98, 1999-2007, 2008-2009, and 2010-2014.

One clear point from the table is that, in sharp contrast to the rising corporate debt to GDP ratios discussed earlier, leverage is remarkably stable over time and across all countries. The mean leverage has steadily declined over time across the sample. With the exception of Hong Kong and Singapore, where book leverage measures during the recent period are slightly greater than those at the time of the global financial crisis, all leverage measures in the 2010-2014 period are lower than they were during 2008-2009. In fact, leverage of Asian firms is significantly below historical numbers observed in the 1990s. Indeed, leverage was significantly elevated for almost all countries before the Asian financial crisis but has since then steadily declined.

We find similar trends for both book leverage (Panel A) and market leverage (Panel B). For market leverage, firms in the recent period were significantly less levered than they were during 2008-09. Only Singapore and Malaysia score market leverage measures that are somewhat higher than those before the Asian financial crisis.

Among the sample countries, we can divide the sample into two groups. The "high leverage" group includes firms from Indonesia, Korea and Thailand, which in terms of country long-term averages, range between 34-37% for book leverage and between 35-38% for market leverage. By contrast the remaining four countries of Hong Kong, Malaysia, Philippines and Singapore range lower, between 25-27% for book leverage, and between 26-29% for market leverage.

Even among the high-leverage countries, leverage in Korea stood out in the early 1990s, averaging over 60% for both book and market leverage ahead of the Asian financial crisis. However, subsequent to the crisis, leverage fell below 40% to levels similar to those of Indonesia and Thailand. The average leverage of firms in those two countries also fell significantly after the Asian financial crisis, as generally did that of the other "low-leverage" jurisdictions.

By contrast, leveraging ahead of the 2008-2009 crisis is not readily apparent at the country level for our sample of country averages. The market leverage of all jurisdictions jumped in 2008-2009 across the board (the Philippines in 2008 alone), but this reflected a collapse in global equity markets, and leverage ratios continued a steady decline thereafter. Overall, the results parallel the findings of Kalemli-Ozcan et al. (2012) across a sample covering firms in more than 60 countries. They concluded that ahead of the global financial crisis there were "no visible increases in leverage for the typical non-financial firm."

On the whole, the leverage summary statistics underscore the importance of measuring debt burdens relative to the quantity of assets available to support them. Whereas in the introduction, we saw evidence of uniformly increasing corporate debt since the global financial crisis, both absolutely and compared to GDP, the increases in leverage in our sample of Asia-Pacific jurisdictions we study are much less marked and widespread when measured as a percentage of assets. In fact, the debt burdens for our sample of listed companies in the Asia Pacific are generally far below what we document ahead of the Asian financial crisis and are well within historical ranges.

To be sure, mean leverage ratios based on aggregates do not capture the distribution of debt burdens across firms. To the extent we are interested in the likelihood of a surge in defaults and bankruptcies were the economies under investigation to slow down or be hit by a shock, it makes sense to also examine the upper tails of the distribution in

terms of leverage. Table III reports the mean, median, 90th and 95th percentiles of book and market leverage by year for the entire sample. Both book and market leverage rose sharply in the mid- to late-1990s. Leverage then declined following the Asian financial crisis - both for the median firm but also for firms in the upper tails of the distribution. There has been no significant trend in both leverage measures since then.

Overall, the measures of leverage at the higher points of the distribution show similar historical patterns to those of the mean. The higher percentiles of the leverage distributions do not appear to have risen significantly in recent years, being range bound since the global financial crisis, edging up slightly in the case of book leverage measures, and down slightly in the case of market leverage measures. Further the current ranges are well below those during the late 1990s and early 2000s, in the lead-up and aftermath of the East Asian financial crisis. In fact, only for market leverage numbers in the first half of the 1990s do we see numbers for firms in the higher percentiles in the same range as today. In sum, without a strong prior that the market value of equity is at present greatly overstating estimates of future earnings, both the medians and higher percentiles do not point towards undue solvency risks at present in the jurisdictions we examine.

C. Firm Characteristics

While the capital structure literature identifies a large number of variables that appear correlated with leverage, Frank and Goyal (2009) find that only a small number of factors are empirically robust. According to Frank and Goyal, the most reliable factors for explaining leverage are (firm) size, profitability, tangible assets, market-to-book ratio, and industry leverage. In a recent paper, Oztekin (2015) confirms that these are also the most reliable factors for countries around the world.

$Tangibility$ is defined as the ratio between the value of property, plant, and equipment (PPE) and total assets. Tangible assets are easier to collateralize largely since distress costs are usually smaller when assets are tangible. From the tax-bankruptcy costs tradeoff perspective, tangibility reduces the costs of financial distress and hence results in higher leverage.

$Size$ is estimated as the natural logarithm of book value of total assets (in real US dollars). The theory predicts that larger firms will have higher leverage since larger firms are more diversified and have lower default risk.

$Profitability$ is defined as operating income scaled by total assets. The trade-off theory predicts that profitability should be positively related to leverage since expected bankruptcy costs are lower and interest tax shields more valuable for profitable firms. The empirical studies typically find a negative relation between profitability and leverage. Frank and Goyal (2015) show that the negative relation is consistent with the trade-off theory since adjustment costs imply that debt adjustment do not completely offset profitability shocks and the ratio of debt to capital declines.

$Market - to - BookRatio$ is defined as the ratio between the market value of total assets and the book value of the firm. The trade-off theory predicts a negative relation between leverage and growth because financial distress and underinvestment are more severe for high growth firms. In addition, incentives to substitute risky assets for safe assets are also higher for firms with greater growth opportunities. We expect a negative relation between leverage and market-to-book ratios. Detailed variable definitions are given in the Appendix A.

Table IV examines the cross-section and time-series of the most important leverage factors across all seven jurisdictions (size, profitability, asset tangibility, and market-to-book ratio) as well as for the same sub-periods identified for leverage earlier.

In terms of the cross-sectional differences, it is not immediately apparent that the difference in the long-run average of firms in various countries corresponds to observed leverage patterns. To be sure, tangibility is much higher than average for two of the three high-leverage countries at around 0.40 for Indonesia and Thailand (as opposed to 0.35 for the entire sample). But, for both market-to-book assets ratio and log asset size, there is no obvious relation between these and the leverage ratios at the country level: the high leverage jurisdictions report both high and low measures of these firm factors. Firms in Indonesia, Korea and Thailand average significantly higher profitability than firms in other jurisdictions, similar to the grouping of their leverage, but pecking order theory would suggest that more profitable firms would be less leveraged.

In terms of the time-series trends, we also see a very mixed picture. Recall that the high leverage countries of Indonesia, Korea and the Thailand all increased their leverage ahead of the Asian financial crisis in the late 1990s. But profitability was either flat or declining for firms in Korea, Indonesia and Thailand over the same period. Similarly, market to book ratios, while rather volatile, were generally declining. Only the average asset tangibility metric rose for firms in all countries in the high leverage group.

Did any of the firm variables correspond with the decline in leveraging that occurred after the Asian financial crisis? In both Indonesia and Thailand, asset size declined after the crisis, though asset tangibility declined only for Thailand. Asset tangibility declined but with a lag for Indonesia and Korea, from around 2000/2001. Market-to-book assets ratio remained stable, while profitability declined only for Indonesia.

13

And finally, the modest rise in leverage that we noted for Singapore, Philippines and Hong Kong over the recent few years has not corresponded with movements in any of the explanatory factors other than perhaps asset size (for all three) and market to book for the Philippines.

D. Institutional and Macroeconomic Factors

The extent to which a firm can use contracts to mitigate incentive and information problems depends on the quality of institutions and the macroeconomic environment in which the firm operates. Cross-country differences in institutional and macroeconomic factors are therefore a first-order concern for corporate financial choices of firms. Starting with Rajan and Zingales (1995), it has been recognized that many institutional features of a country's financial markets, and not just the distinction between bank-oriented and market oriented financial systems, can be of critical influence for leverage.

Much of the subsequent work has therefore focused on examining how institutional differences affect capital structure choices.[4] Fan et al. (2012) argue that the "country in which the firm resides is a more important determinant of how it is financed than is its industry affiliation, which in turn suggests that differences in country-level institutional factors are likely to have a 1st-order effect on capital structure choices (page 24)". Here, our main objective is not to weigh in on the debate between the relative importance of country versus firm characteristics, but to understand the extent to which institutions and macroeconomic variables determine both the cross section and time-series of financing choices of firms. In addition, variations in global liquidity may affect financing of firms

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[4]See, for example, Booth et al. (2001), Claessens et al. (2001), Giannetti (2003), De Jong et al. (2008) and Fan et al. (2012).

in different countries differently depending on quality of institutions. We test if countries with better or worse institutions tend to increase their debt or equity financing and capital expenditures when global liquidity improves.

D.1. Corporate Taxes

Before describing the institutional factors, we provide a brief review of taxes since they are fairly static and have the potential to explain country-level differences in leverage. Higher corporate taxes, other things being equal, increase debt tax shields and make the firm more valuable.[5] As far as corporate tax rates are concerned, one country in our sample can be viewed as a relatively high tax jurisdiction: the Philippines stands at 30%. While Indonesia and Thailand had relatively high tax rates before 2000s, they have since reduced them. In a big middle-group, Korea (24%) and Malaysia (24%) join Indonesia (25%) and Thailand (20%). The two countries whose firms have consistently had considerable lower tax rates than those domiciled in other countries are Hong Kong (16.5%) and Singapore (17%).

Comparing these tax rate summary statistics, only in a very mixed sense, do we see an obvious relation between tax rates and leverage. To be sure, the two low-tax entrepots are relatively low leverage as well. But the highest tax regime is not one in which corporate leverage has been the highest. In the middle group of four countries, two jurisdictions have relatively high average leverage and two do not.

Ceteris paribus, any declines in the corporate tax rate over the period should decrease the value of the debt tax shield. The most major such decline was for Thailand between 2011 and 2013 (from 30 to 20%). While there is no striking decline for Thailand for debt

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[5]However, to do proper cross-sectional analysis of tax burdens, we would have to include personal taxes (for the investor) as well, and confirm that the rates considered reflect effective tax rates. The examination of this detail is beyond the scope of this study.

to capital measured by book, when measured by market value, there is a rather significant decline; one which outpaces the decline in average leverage observed in other jurisdictions. While the lowering of the corporate tax rate for Korea from 27.5 to 24% (2008-2009) was not accompanied by a decline in leverage, a somewhat greater decline in Indonesia from 30 to 25% (2008 to 2010) was. These preliminary indications suggest that declines in average leverage for Korean, Indonesian and Thai firms may have been affected by reduction in corporate tax rates.

We now turn our attention to other measures of the strength of legal system that have a bearing on capital structure decisions. The time-series of these measures is generally stable but we do see some variations in institutions from time to time. These measures tend to show the same cross-sectional variation across countries. For instance, countries that rank high on one metric of quality of institutions also rank high on other metrics of insitutional quality. And, countries that rank low on one metric also rank low on others. The correlations of institutional quality and leverage measures across countries suggests that strong institutions are critical for equity financing. And, the jurisdictions that have had the most marked declines in leverage have also had the most improvements in institutions over time.

D.2. Creditor Rights

The ability of creditors to enforce their rights in bankruptcy (creditor rights) affects both the demand and supply of debt financing. While ex ante contractibility of debt contracts may make creditors more willing to provide credit under conditions of moral hazard and asymmetric information, it also give managers the incentive to avoid any leverage that might land it in financial distress. At least for the G-7 countries, Rajan and

Zingales (1995) have noted a clear tendency for strict enforceability of debt contracts to be associated with lower leverage.

Creditor Rights index ($CreditorRights$) measures the strength of legal rights protecting creditors. Prior to 2005, we obtain our creditor rights index from Djankov et al. (2007). This series is then rescaled, merged and combined with a strength of legal rights index of the World Bank from 2005. The strength of creditors rights measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders. According to Djankov et al., high values of creditor rights indicate that (a) there are restrictions for a debtor to file for reorganization (creditor consent may be required), (b) secured creditors are able to seize their collateral (there is no automatic stay), (c) secured creditors are paid out firs (even before tax and employee claims), and (d) management does not retain administration rights over property. This index has since been expanded to include other protections that creditors have. Higher scores indicate that the collateral and bankruptcy laws are better designed to expand access to credit.

D.3. Resolving Insolvency

The cost of financial distress depend on institutions that determine the time, cost and outcome of insolvency proceedings, that will also determine incentives of borrowers and lenders. We therefore rely on a Resolving Insolvency ($RESOLVE$) variable which captures the ease of resolving insolvencies and measures the strength of the legal framework applicable to bankruptcy and liquidation procedures. The index is based on responses of local insolvency practitioners with regard to the time, cost and outcome of insolvency proceedings in a country and takes into account public information on insolvency systems. The series is obtained from the World Bank and is described in a paper by Djankov et al. (2008a). We expect that legal systems that can efficiently resolve insolvencies to result

in higher leverage since efficient resolution of bankruptcy should lead to a greater use of debt.

D.4. Protection of Minority Investors

Legal protection of minority shareholders from expropriation by corporate insiders is measured through an index of "Protection of Minority Investors" ($PROTECT$). The series is obtained from the Doing Business database provided by World Bank. $PROTECT$ measures the protection of minority investors from conflict of interest shareholders' rights in corporate governance. See Djankov et al. (2008b) for more details on the index.

D.5. Political Stability

We use a broader measure of governance by including "Political Stability" which captures "perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means" (see, Kaufmann et al. (2009) for the use of political stability in their world governance indicators). This takes high values when there is a lower likelihood of "a disorderly transfer of government power, armed conflict, violent demonstrations, social unrest, international tensions, terrorism, as well as ethnic, religious or regional conflicts."

D.6. Government Gross Debt

We obtain the Government Debt as % of GDP from the World Economic Outlook (WEO) Database provided by the IMF.[6]. Government gross debt includes all liabilities that require payment of interest or prinicipal by the government to creditors including

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[6]We accessed the IMF's World Economic Data Series using the following link: `http://www.imf.org/external/pubs/ft/weo/2016/02/weodata/weoselgr.aspx`

debt liabilities in the form of special drawing rights, currency and deposits, debt securities, loans, insurance, pensions and other forms of indebtedness.

D.7. Stock Market Capitalization

Stock market capitalization as a % of GDP is obtained from the World Bank. The variable measures market capitalization (share price times the number of shares outstanding) for listed domestic companies.

D.8. Shadow Short Rates

Shadow Short Rate (SSR) is the shortest maturity rate estimated from the shadow yield curve. We take these estimates from Krippner (2016). SSR essentiallt measurs the stance of the U.S. monetary policy. It is equal to the Fed funds rate when it is above the zero lower bound but it can freely evolve to negative values when the overall stance of policy is more accommodative than a near zero policy rate. Low values of SSR indicate easier global financing conditions.

IV. Firm Characteristics and Leverage

Table VI presents estimates of leverage ratio regressions on firm characteristics. Book leverage is the dependent variable in estimates reported in Columns (1) to (5). Similarly, market leverage is the dependent variable in estimates presented in Columns (6) to (10). We only discuss results for book leverage regressions given how similar the market leverage regression results are.

The other striking fact about these results is how they resemble the results reported in Frank and Goyal (2009) for the U.S. and in Oztekin (2015) for countries around the world. Industry median leverage is positively related to leverage suggesting that firm have high leverage when other firms in the industry have high leverage. This is consistent with all of the work following Frank and Goyal but it also confirms the findings of Leary and Roberts (2014) who demonstrate the effect of peer firms on leverage policies.

Leverage is negatively related to profitability. The negative relation between leverage and profitability is consistent with firms following a pecking order. However, as shown by Frank and Goyal (2015), the negative relation between leverage and profitability is also consistent with costly adjustment that results in firms making incomplete adjustments. Leverage is negatively related to the market-to-book ratio which indicates that high growth firms rely on equity financing. Both firm size and tangibility are positively related to leverage.

To estimate the relation between leverage and firm characteristics at different points in the conditional distribution of leverage, we provide estimates from quantile regressions in Columns (2) to (4), which report what happens at the 25th, 50th, and 75th percentiles. While the baseline model is robust in both signs and statistical significance, we find that the effect of profitability on leverage is much larger at the 75th percentile than it is at the 25th percentile. Column (5) includes firm fixed effects. Most of our results go through except for the market-to-book ratio which continues to have the negative coefficient but it is no longer significant.

We also estimate leverage regressions by country and report results for book leverage in Appendix Table II and for market leverage in Appendix Table III. It is reassuring that firm characteristics have similar effects on leverage in every country that we examine. While the signs and significance levels are similar across countries, we do note that Adjusted-

R^2s are smaller for Hong Kong, Malaysia and Singapore. In addition, several of the firm characteristics matter less for leverage in Hong Kong and Singapore than they do for other countries. Both Hong Kong and Singapore have strong institutions, which weakens the relation between leverage and measures of information frictions. In countries with relatively weak institutions, lenders have limited ability to monitor and therefore lending is more sensitive to the availability of hard assets (see Giannetti (2003) for related evidence). Overall, the differences we observe are consistent with firm characteristics that help to overcome information asymmetries being more important in financing decisions in countries with weak institutions.

V. Institutions, Macroeconomy, and Leverage

Table VII presents results from regressions of book leverage on macroeconomic and institutional variables, controlling for firm-characteristics, country dummies, and year-fixed effects. The results for market leverage regressions are similar so we do not report them here.

We start by examining the effect of creditor rights on leverage. Theory is ambiguous on the relation between creditor rights and leverage. According to Djankov et al. (2007), strong creditor rights increase willingness of lenders to lend, increasing the supply of credit. In this view, stronger creditor rights should increase leverage of firms in that country. However, the alternative view by Acharya et al. (2011) argues that stronger creditor rights (i) impose costs of inefficient liquidation and (ii) increase the likelihood of dismissal of managers. Thus, firms and importantly managers will work to reduce cash flow risk in countries with strong creditor rights. The effect of this risk reduction incentive on leverage is uncertain. If cash flow risk is reduced by borrowing less, then leverage will

21

be lower in countries with strong creditor rights. However, if cash flow risk is reduced through making less risky investments, then leverage might be higher as costs of debt decline and debt capacity increases for firms with safer investments.

Our results in Column (1) show that firms in countries with stronger creditor rights have higher leverage. The positive relation between leverage and creditor rights is consistent with the increase in supply of credit having a larger effect than the fall in demand for credit as legal rights become stronger.

In Column (2), we find that leverage is higher in countries with greater political stability. These results show that lenders value stability. Political risks are important factors in willingness to lend. Greater political instability makes it difficult to write and enforce contracts, thus reducing reliance on debt financing.

We next examine the effect of shareholder protection on capital structure decisions of firms. Fan et al. (2012) argue that better investor protection should lead to a greater use of equity financing. Our results in Column (3), where we examine the effect of protection of minority shareholders on leverage are consistent with the findings in Fan et al.. Leverage is low in countries that score high on protection of minority investors.

Column (4) examines the effect of institutions that improve the efficiency of resolving insolvencies. The positive coefficient on $RESOLVE$ is consistent with greater use of debt financing in countries that have lower cost and faster resolution of bankruptcies. Debt is less costly and the willingness to extend credit is greater when it is more efficient to resolve insolvencies.

Column (5) examines the role of government debt on corporate leverage. When government budget deficits and debt increases, corporations have to offer higher yields on debt issuances and this creates incentives to switch to equity. To what extent does govern-

ment debt crowd out corporate debt? Demirci et al. (2016) document a negative relation between government debt and corporate leverage. Consistent with their paper, we find a significant negative coefficient on government debt to GDP ratio suggesting that firms borrow less when government debt is high.

In Column (6), we examine the relation between leverage and stock market capitalization to GDP ratio. We find a significant negative relation between stock market development and leverage. This is consistent with equity being relatively lower cost in countries with large stock market capitalization. Firms therefore issue more equity and become less leveraged.

The coefficient estimates on firm-specific variables are as expected. These estimates indicate that leverage is positively related to industry median leverage, firm size and tangibility, and negatively related to profitability and the market-to-book ratio. These results are consistent with those reported earlier and also with existing findings in the literature (see, for example, Rajan and Zingales (1995), Frank and Goyal (2009), and Fan et al. (2012).)

In addition, we examine the effect of GDP per capita and inflation on leverage, and find that leverage is lower in wealthier countries, while inflation positively affects leverage. Finally, we examine whether firms exhibit fixed-country differences in the amount of debt in their capital structure after controlling for time-varying firm-characteristics, observable time-varying country-characteristics, and year effects. To test the residual cross-country variation in leverage, we include indicator variables for each country in our sample except for Philippines. Thus, we can re-evaluate the cross-country differences in leverage in a regression context that controls for observable differences in characteristics of countries and of firms. Ceteris paribus, we find that firms in Hong Kong, Malaysia, and Singapore have lower leverage than firms in Philippines. By contrast, firms in Indonesia, South

Korea, and Thailand are relatively more levered compared to firms in Philippines. As these were jurisdictions with the highest mean leverage, this suggests that identifiable firm and country factors do not account for the aggregate country differences in leverage.

VI. Financing of Deficits: Evidence from Firm Cash Flows

According to Myers (1984), firms finance their activities with retained earnings when feasible. If retained earnings are inadequate, then debt is used. Equity is used as a last resort. If firms follow this hierarchy of financing, debt grows when investment exceeds earnings and it declines when earnings exceed investment. Thus, the pecking order theory of capital structure (Myers (1984); Myers and Majluf (1984)) has clear implications for the financing of deficits and reliance on debt financing to fund investment needs in excess of internal cash flows (Frank and Goyal, 2003). We use this pecking order framework to understand the extent to which financing deficits drive debt changes. To what extent are corporate financing deficits increasingly funded through debt issuances in a fashion consistent with the pecking order theory? How do firms finance imbalances between investments and internal cash flow? Do they issue debt or equity? How do institutions or the state of the economy affect a firm's choice to use debt versus equity? How does financing differ across countries?

A. How are Deficits Funded?

We define financing deficit as investments plus change in working capital plus dividends less internally generated cash flow. The cash flow identity suggests that financing deficit must equal net debt issues plus net equity issues.

$$DIV_{ijt} + I_{ijt} + \Delta W_{ijt} - CF_{ijt} = DEF_{ijt} \equiv \Delta D_{ijt} + \Delta E_{ijt} \qquad (1)$$

DIV is cash dividends paid, I is net investment, ΔW is change in working capital, CF in cash flow after interest and taxes, ΔD is net debt issued, and ΔE is net equity issued.

In Table VIII, we report uses and sources of funds by year since we are interested in time-series properties of how deficits are funded. Debt issues were substantial in the 1990s and debt financed a greater fraction of the deficit than equity in the years prior to the Asian financial crisis. From 1998 to 2002, more debt was redeemed than issued and net debt issues were negative on average. Debt issues since then have been largely positive (with the exception of 2009). However, the data do not show increasing use of debt by Asian firms in the more recent period. Equity issues continued to dominate firm financing decisions. As see in the row titled "All Years", the summary statistics show that a typical firm distributes 1.7% of its net assets in dividends, invests 6% of net assets in capital expenditures and other investments, invests 2.6% in change in working capital. These uses are partially funded by internally generated cash flows, which finance 6.8% of the uses, thereby leaving a financing deficit of 3.5%. How is this deficit funded? Contrary to the predictions of the pecking order, the average firm in Asia finances its deficit largely through equity issues, which account for 2.6% of assets with debt issues contributing the remaining 0.9%.

Appendix Table IV presents average flow of funds and financing of Asian firms by country. We find some interesting cross-country differences in uses and sources of funds. Financing deficits are significantly larger in Hong Kong and relatively small for Malaysia. In every country that we studied, equity issues fund the deficit more so than debt issues.

To examine this more formally, we follow Shyam-Sunder and Myers (1999) and Frank and Goyal (2003) to estimate the following regression:

$$\Delta D_{ijt} = a + b \times DEF_{ijt} + \epsilon_{ijt}, \tag{2}$$

where ΔD_{ijt} is the net debt issuance as a percentage of assets for firm i in country j at time t, and DEF_{ijt} is the funding deficit as a percentage of assets for firm i in country j at time t. As discussed earlier, funding deficit is defined as the sum of dividends, investments, change in working capital minus internal cash flow. In unreported results, we find that the estimated slope coefficient is about 0.56. This is relatively high compared to about 0.15 to 0.28 for the United States reported in Frank and Goyal (2003). The time periods are different but we know that pecking order coefficients have become even smaller for US firms in the more recent period.

We use this pecking order framework to get at the question of how institutional differences determine how firms finance their deficits. Does the quality of institutions or the macroeconomic environment determine financing choices of firms? Table IX provides estimates from regressions of net debt issuance on financing deficit for sub-samples sorted on three key measures of quality of institutions.

Columns (1) and (2) sort country-years on the strength of creditor rights. We find that net debt issuances contribute 69 cents for every dollar of deficit in countries that score low on creditor rights (in Column (2)) compared to net debt issuances contributing

45 cents for a dollar of deficit in countries that score high on creditor rights (in Column (1).

We find similar results for other cuts of the sample. Columns (3) and (4) which examine sub-samples sorted by protection of minority investors yield similar findings - in countries with strong protection of minority investors, debt issuances contribute 43 cents for a dollar of deficit as opposed to 69 cents for countries with weak protection of minority investors. Columns (5) and (6) examine sorts on political stability measure. Here again, we find that in countries that score high on political stability, external debt finances a smaller fraction of financing deficit compared to external equity.

So, how do we reconcile results in Table IX, which show that debt issuances finance a greater fraction of deficit in countries with weak institutions, with results in Table VII where we find that creditor rights and political stability are positively associated with leverage. Note that leverage is a ratio of debt to total capitalization, and firms build equity both internally through retained earnings and externally through external equity issuances. These results suggest that in countries with strong creditors rights and stable political systems, we have many more younger, perhaps less profitable firms, that build less equity internally. Thus, these firms become more leveraged despite financing a greater fraction of their deficit through external equity issuances.

B. Global Liquidity and Funding of Financing Deficits

How do global liquidity conditions affect the securities issuance decisions of our sample of Asian firms? This section examines results from OLS regressions of net debt issuances on funding deficits and their interactions with shadow short rates. We examine if the

27

propensity to rely on debt financing increases with global liquidity as a function of the institutional and the macroeconomic environment of a country.

Our main interest is in examining the effect of global liquidity on financing choices of firms in emerging markets in Asia. We proxy for global financing conditions by taking estimates of the Shadow Short Rates (SSR) in the United States, which are essentially measures of the stance of United States monetary policy. They are particularly useful when the policy rates have reached the zero lower bound. According to Krippner (2016), SSR is the "shortest maturity rate from the estimated shadow yield curve (page 3)". It is similar to the policy interest rate except that it can freely evolve to negative values to indicate an overall stance of monetary policy that is more accommodative than a zero-interest rate policy.

Figure 3 plots the Shadow Short Rates of the U.S. Federal Reserve over the 1991 to 2014 period. The estimates we use are obtained from the website maintained by the Reserve Bank of New Zealand. The figure shows that US shadow rates turned negative sometime in late 2008, bottomed out in 2013, and have been increasing since then. The question is whether easy monetary conditions in advanced economies affect financing decisions of firms in emerging markets. What are the global implications of quantitative easing policies? International Monetary Fund (2015) finds some evidence that accommodative monetary policies in advanced economies resulted in greater corporate bond issuances by firms in emerging markets. Lo Duca et al. (2014) quantify the role of US Quantitative Easing in driving corporate bond issuances in other countries. They show that in emerging markets, issuances would have been lower without QE and argue that QE translates into better financing conditions and lowers risk premia.

While it results in large capital flows into emerging markets, it is unclear how various asset markets are affected. The policies of the U.S. Federal Reserve could affect both debt

and equity markets, and result in portfolio rebalancing across both assets and across all regions. He and McCauley (2013) and Caruana (2016) discuss several possible channels for accommodative monetary policies to affect financing of firms in emerging markets. A prominent channel is the effect that easy U.S. monetary policy has on portfolio rebalancing, which results in lower bond yields in emerging markets and increased capital flows seeking higher returns. These increased flows into emerging markets would result in lower risk premia, increase collateral values, and thereby lower cost of financing. Another potential channel is the increased issuance of U.S. dollar-denominated bonds by non-US firms to accumulate financial assets during periods of appreciating local currency and relatively low US dollar rates (Bruno and Shin (2016)).

Whether firms could increase their supply of corporate bonds to take advantage of easy financing conditions induced by QE depends on each country's institutional environment that reflects both laws in that country and their enforcement. In other words, the question is whether all countries receive inward capital flows equally as a result of more accommodative monetary policies in advanced economies, or do some countries benefit more than others. As foreign investors make portfolio rebalancing decisions and decide where to direct their capital, do they disproportionately allocate capital to countries that have better institutions? In the context of equity market liberalizations, Bae and Goyal (2010) show that foreign investors prefer to invest in better governed firms. Similarly, we expect that countries with stronger creditor rights and better enforcement of property rights should receive more flows than others as monetary policies in advanced become more accommodative. Thus, we examine whether firms in countries with stronger creditor rights, stronger protection of minority investors, and better political stability finance a greater proportion of their deficit through debt financing when US monetary policy is more accommodative.

To perform this test, we follow Huang and Ritter (2009) and separate financing deficit into a negative financing deficit and a positive financing deficit. Since the effect of global liquidity on a negative financing deficit (or a financing surplus) is not clear, we focus on the effect of global liquidity on a positive financing deficit, when firms actually raise outside financing. Thus, we estimate the following regression:

$$\Delta D_{ijt} = a + bDEF_{ijt}^{-} + cDEF_{ijt}^{+} + dSSR_{t-1} \times DEF_{ijt}^{+} + \epsilon_{ijt} \qquad (3)$$

where DEF_{ijt}^{-} equals DEF_{ijt} if $DEF_{ijt} < 0$ and zero otherwise. Similarly, DEF_{ijt}^{+} equals DEF_{ijt} if $DEF_{ijt} > 0$ and zero otherwise. SSR is the shadow short rate which captures global monetary conditions. If global liquidity affects financing decisions of firms in emerging markets, then a lower SSR should positively affect debt issuances. However, we expect easy liquidity conditions to have a greater effect on decisions of firms in countries with relatively strong institutions. We therefore estimate Equation 3 for firms in countries that are sorted on (a) creditor rights, (b) protection of minority shareholders, and (c) political stability. The sorts are done annually.

Results are reported in Table X. Panel A presents results for all countries and for countries that are sorted by the quality of institutions. The coefficient on the interaction term between $SSR_{t-1} \times DEF^{+}$ is insignificant for all firms suggesting that, on average, U.S. monetary policies do not affect the manner in which firms finance their deficits. As argued above, U.S. monetary policy affects both debt and equity markets, and it affects different countries to varying degrees depending on the strength of institutions. In columns (2) to (7), we present three different sorts to examine whether the effect of fed rates on funding of financing deficit varies across countries based on the quality of their institutions.

We find that in countries where creditor rights are weak, minority investors receive less protection, and there is greater political instability, easy monetary policy conditions in US do not result in greater reliance on debt financing. In fact, firms in these countries rely more on equity. Instead, it is in countries with strong creditor rights, better protection to minority investors, and greater political stability that firms finance more through debt than equity during periods of expansive monetary policy in the United States.

Panel B provides results for each of the seven countries in our sample. These results show that Hong Kong and Singapore are the only two countries in our sample where firms increase financing through debt during the period of U.S. easy monetary policy. Indonesia, Malaysia, and Thailand finance more through debt during *tight* monetary policy periods (when U.S. shadow short rates are high).

VII. Global Liquidity and Corporate Investment

We have so far examined the effect of global liquidity conditions on financing decisions of firms in Asia. In this section, we examine the effect of global liquidity and institutions on corporate investment. We run fairly standard investment regressions except that we include our measure of global liquidity conditions and its interaction with the creditor rights and cash flow variables. We estimate the following regression:

$$
\begin{aligned}
\frac{Capex}{Assets}_{ijt} = \alpha \quad &+ \quad \beta_1 SSR_{t-1} + \beta_2 StrongCR_{jt} + \beta_3 SSR_{t-1} \times StrongCR_{jt} \\
&+ \quad \beta_4 \frac{M}{B}_{ijt-1} + \beta_5 \frac{CF}{Assets}_{ijt} + \beta_6 Lev_{ijt-1} + \beta_7 Size_{ijt-1} \\
&+ \quad \beta_8 Ln(GDPperCapita)_{jt} + \beta_9 Ln(Inf)_{jt} + \epsilon_{ijt} \quad\quad (4)
\end{aligned}
$$

where SSR are the Shadow Short Rates in the U.S. (as defined earlier), StrongCR is a dummy that takes a value of one for country-years with above-median creditor rights, $\frac{M}{B}$ is a proxy for Tobin's Q (and measures growth opportunities), $\frac{CF}{Assets}$ is the ratio of internal cash flow to assets, Lev is book leverage, $Size$ is natural log of assets in USD, and Inf is inflation. Table XI presents the results.

Consistent with the Q theory of investment, we find that corporate investment is greater when firms have higher Tobin's Q. And, similar to a large existing literature on investment, we find that investment is sensitive to internal cash flow. The effect of internal cash flow on investment is large suggesting that firms are substantially financially constrained and their investments respond to the availability of internal funds.

Our main interest, however, is in examining the effect of global liquidity conditions on corporate investments of firms in our sample. On their own, US shadow short rates (SSR) do not generally affect the capital expenditures of Asian firms. But, when we interact SSR with our measure of the strength of legal rights in Column (2), we find that corporate investments in countries with strong creditor rights are significantly higher during periods of low SSR (representing better global liquidity). Overall, global liquidity positively affects corporate investment but only in countries with strong institutions. The coefficient on SSR itself in Column (2) is not statistically significant indicating that global liquidity does not add to corporate investment when creditor rights are weak.

In the specification reported in Column (3), we include a second interaction, that between SSR and internal cash flow, to examine how global liquidity relaxes financing constraints of firms. We find the coefficient on SSR and internal cash flow is positive, suggesting that tight monetary policy periods in advanced economies increase financial constraints of firms in emerging Asia.

In sum, our investment results are consistent with our financing results. Both indicate that global liquidity increases both debt financing and corporate investment but only when a country has strong institutions. These results support previous findings in the literature that foreign investors invest relatively more in countries with strong institutions and in firms with better governance.[7]

VIII. Conclusion

We began this paper citing some concerns about the recent growth of corporate debt in the region. The risk of corporate debt is properly gauged taking into account the assets to support it. When corporate debt is measured relative to assets, neither the mean/median nor the upper tails of the distribution are currently in unusually high territory for the more than 7000 listed firms we examine in the economies of emerging Asia.

We find that the legal environment and quality of institutions are a very important influence on the leverage decision: standard firm factors are more weakly related to leverage in jurisdictions with stronger institutions. We interpret this to mean that firm characteristics such as asset tangibility and size that help to overcome information asymmetries are more important in the corporate financing decisions in countries with weaker institutions.

When institutions are strong, companies are more likely to use equity financing to fund deficits. At the same time, such companies tend to increase both their leverage and capital expenditure in conditions of expansive global liquidity, as proxied by the United State shadow rate. More generally, when global liquidity is high, investment is less sensitive to cash flow across the sample.

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[7]See, for example, Bae and Goyal (2010)

An important caveat of our analysis is that though we cover seven important emerging market jurisdictions in Asia, our analysis does not include mainland China. Due to the ongoing existence of capital controls, and a large and evolving shadow banking system, we choose not to combine the analyses of firms in these seven jurisdictions with those of mainland China. To the extent that increases in corporate debt in the region stem from those in mainland China, they are worthy of separate investigation.

The confluence of global factors, risk-taking and institutions might be investigated further as well. Local currency appreciation against the US dollar has been associated with increases in capital inflows in emerging markets, as borrowers can appear stronger (Bruno and Shin, 2016). Even if this channel has not yet resulted in excessive increases in leverage for our sample in the recent cycle, it may be a channel worth monitoring going forward. Further it is an open question whether the perception of strong legal frameworks and institutions might make jurisdictions more vulnerable to this sort of risk-taking.

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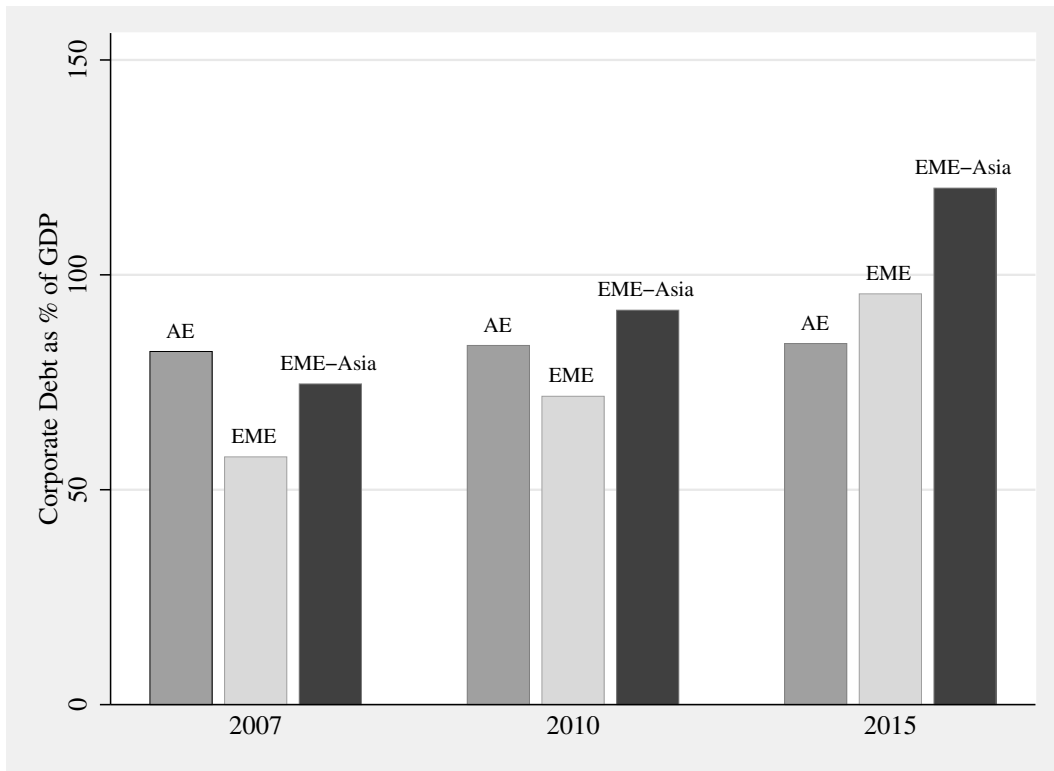
Figure I. Corporate Debt as % of GDP for Advanced Economies (AE), Emerging Market Economies (EME) and Emerging Market Economies - Asia (EMEAsia) at the end of selected years. The figures reflect jurisdictions reported in Bank for International Settlements (2016), page 10.
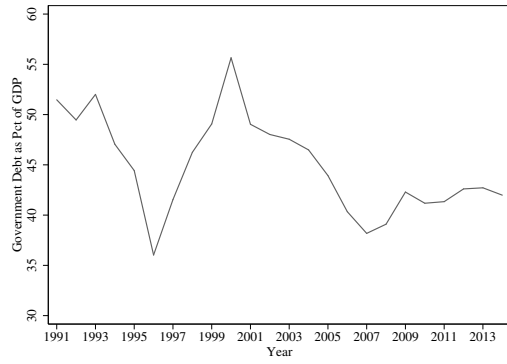
(a) Government debt as % of GDP

(b) Stock market capitalization as % of GDP
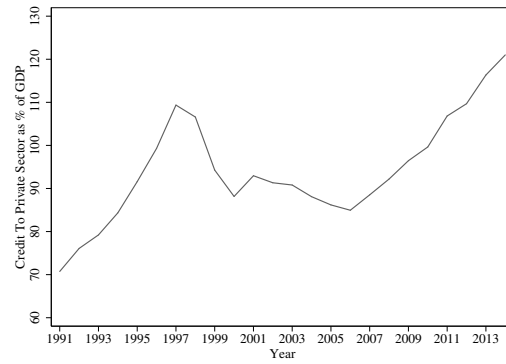
(c) Credit to private sector as % of GDP

Figure II. Macroeconomic Variables for Selected Asian Countries, 1991-2014.

39

Figure III. Shadow Short Rate, 1991-2014.

Source: Shadow Short Rate data is from the Reserve Bank of New Zealand website.
`http://www.rbnz.govt.nz/research-and-publications/research-programme/`
`additional-research/measures-of-the-stance-of-united-states-monetary-policy/`
`comparison-of-international-monetary-policy-measures`

Table I
Sample Distribution

This table reports the distribution of countries and the frequency of firms and firm-year observations by country. The last two columns provide the mean and median panel length for firms in the sample. We exclude financial firms, utilities and observations with asset values that are either missing or zero.

Country	# of firms	# of firm-year observations	Average panel length	Median panel length
Hong Kong (HKG)	1,573	15,714	10.0	9.0
Indonesia (IDN)	488	5,833	12.0	12.0
South Korea (KOR)	1,970	19,009	9.7	9.0
Malaysia (MYS)	1,064	12,427	11.7	11.0
Philippines (PHL)	204	2,475	12.1	12.0
Singapore (SGP)	950	10,515	11.1	10.0
Thailand (THA)	949	11,369	12.0	11.0
Total	7,198	77,342	10.7	10.0

Table II
Mean Leverage Ratios for Asian Firms, 1991-2014

Mean leverage ratios for Asian firms. The sample period is from 1990 to 2014. The variables are defined in Appendix.

	Period	Hong Kong	Indonesia	South Korea	Malaysia	Philippines	Singapore	Thailand	All Firms
Panel A: Book Leverage									
	Book Lev	0.254	0.372	0.342	0.271	0.255	0.272	0.343	0.303
Sub-periods	1991-1998	0.280	0.430	0.616	0.293	0.308	0.289	0.463	0.388
	1999-2007	0.241	0.392	0.328	0.288	0.276	0.277	0.340	0.301
	2008-2009	0.251	0.363	0.325	0.271	0.212	0.253	0.296	0.287
	2010-2014	0.261	0.321	0.310	0.235	0.207	0.265	0.294	0.279
Panel B: Market Leverage									
	Market Lev	0.266	0.358	0.384	0.292	0.267	0.274	0.317	0.315
Sub-periods	1991-1998	0.290	0.385	0.642	0.223	0.285	0.245	0.417	0.360
	1999-2007	0.241	0.386	0.395	0.305	0.330	0.266	0.329	0.318
	2008-2009	0.323	0.417	0.390	0.358	0.242	0.309	0.330	0.350
	2010-2014	0.265	0.289	0.320	0.270	0.171	0.284	0.236	0.280
Panel C: Number of Observations - Leverage									
	Num Obs	15,714	5,833	19,009	12,427	2,475	10,515	11,369	77,342
Sub-periods	1991-1998	1,667	1,080	1,447	1,575	441	1,620	2,047	9,877
	1999-2007	6,284	2,190	7,332	5,680	1,062	4467	4,615	31,630
	2008-2009	2,112	664	2,747	1,591	262	1,363	1,291	10,030
	2010-2014	5,651	1,899	7,483	3,581	710	3,065	3,416	25,805

Table III
Distribution of Corporate Leverage

Distribution of Book and Market Leverage for Asian Corporations, 1991-2014.

Year	Book Leverage				Market Leverage			
	Mean (1)	Median (2)	90th %ile (3)	95th %ile (4)	Mean (5)	Median (6)	90th %ile (7)	95th %ile (8)
1991	0.307	0.278	0.676	0.747	0.255	0.182	0.667	0.771
1992	0.330	0.306	0.676	0.762	0.259	0.199	0.615	0.758
1993	0.359	0.362	0.685	0.763	0.246	0.192	0.598	0.704
1994	0.362	0.359	0.681	0.757	0.274	0.238	0.587	0.671
1995	0.376	0.391	0.687	0.747	0.319	0.280	0.678	0.761
1996	0.399	0.412	0.712	0.774	0.354	0.317	0.752	0.828
1997	0.449	0.460	0.828	0.884	0.494	0.513	0.910	0.951
1998	0.420	0.415	0.815	0.900	0.483	0.519	0.890	0.942
1999	0.369	0.351	0.752	0.853	0.386	0.364	0.809	0.884
2000	0.338	0.314	0.709	0.836	0.399	0.369	0.846	0.912
2001	0.322	0.291	0.688	0.801	0.366	0.326	0.800	0.876
2002	0.308	0.278	0.657	0.779	0.360	0.317	0.792	0.868
2003	0.299	0.269	0.639	0.737	0.298	0.243	0.712	0.801
2004	0.289	0.270	0.609	0.706	0.300	0.243	0.694	0.790
2005	0.286	0.260	0.610	0.699	0.296	0.235	0.699	0.798
2006	0.282	0.259	0.597	0.681	0.281	0.219	0.665	0.781
2007	0.276	0.252	0.601	0.684	0.267	0.196	0.653	0.793
2008	0.297	0.279	0.628	0.723	0.389	0.366	0.830	0.944
2009	0.277	0.248	0.606	0.706	0.312	0.249	0.747	0.931
2010	0.270	0.242	0.587	0.680	0.282	0.218	0.659	0.809
2011	0.277	0.252	0.598	0.683	0.294	0.238	0.679	0.762
2012	0.280	0.256	0.594	0.698	0.278	0.225	0.652	0.745
2013	0.282	0.253	0.606	0.698	0.274	0.216	0.653	0.744
2014	0.289	0.265	0.609	0.696	0.270	0.210	0.641	0.748
All Years	**0.303**	**0.280**	**0.640**	**0.739**	**0.315**	**0.256**	**0.732**	**0.835**

Table IV
Descriptive Statistics for Firm Factors

Mean values of firm characteristics for Asian firms. The sample period is from 1990 to 2014. The variables are defined in Appendix.

	Period	Hong Kong	Indonesia	South Korea	Malaysia	Philippines	Singapore	Thailand	All Firms
Panel A: Profit									
	Profitability	0.033	0.080	0.046	0.043	0.035	0.040	0.056	0.046
Sub-periods	1991-1998	0.063	0.096	0.055	0.069	0.051	0.053	0.062	0.064
	1999-2007	0.026	0.074	0.051	0.040	0.022	0.043	0.058	0.045
	2008-2009	0.038	0.082	0.049	0.037	0.030	0.042	0.046	0.045
	2010-2014	0.031	0.078	0.038	0.039	0.047	0.027	0.054	0.040
Panel B: Firm Size									
	Firm Size	5.402	3.043	4.585	3.950	3.617	5.037	4.153	4.500
Sub-periods	1991-1998	5.510	4.579	6.043	4.865	4.591	5.551	4.521	5.144
	1999-2007	4.899	2.778	4.505	3.839	3.295	4.780	3.984	4.266
	2008-2009	5.481	2.514	4.275	3.694	3.321	4.876	4.021	4.344
	2010-2014	5.899	2.660	4.496	3.837	3.603	5.212	4.209	4.599
Panel C: Tangibility									
	Tangibility	0.286	0.397	0.336	0.382	0.405	0.328	0.402	0.349
Sub-periods	1991-1998	0.414	0.405	0.363	0.419	0.482	0.409	0.443	0.415
	1999-2007	0.307	0.401	0.351	0.401	0.446	0.345	0.424	0.368
	2008-2009	0.249	0.401	0.326	0.342	0.343	0.289	0.393	0.321
	2010-2014	0.238	0.386	0.321	0.352	0.319	0.278	0.353	0.311
Panel D: Market-to-Book Ratio									
	Market-to-Book Assets	1.393	1.363	1.126	1.216	1.394	1.292	1.359	1.278
Sub-periods	1991-1998	1.318	1.411	1.047	1.876	1.471	1.520	1.412	1.437
	1999-2007	1.479	1.224	1.110	1.163	1.168	1.358	1.237	1.256
	2008-2009	1.233	1.166	1.030	0.955	1.307	1.065	1.052	1.084
	2010-2014	1.380	1.567	1.192	1.125	1.727	1.175	1.609	1.318

Table V
Macroeconomic and Institutional Variables: Descriptive Statistics

This table reports average values of macroeconomic and institutional variables for the seven Asian countries in our sample over the period from 1991 to 2014. We also provide sub-period statistics by country. The variables are defined in Appendix.

	Period	Hong Kong	Indonesia	South Korea	Malaysia	Philippines	Singapore	Thailand	All Firms
	Panel A: Creditor Rights								
	Creditor Rights	10.0	5.7	6.8	8.6	3.2	8.6	5.8	7.0
Sub-periods	1991-1998	10.0	7.2	7.5	7.5	2.5	7.5	7.5	7.1
	1999-2007	10.0	5.0	6.8	8.6	3.2	8.6	5.0	6.7
	2008-2009	10.0	5.0	6.0	10.0	4.0	10.0	5.0	7.1
	2010-2014	10.0	5.0	6.0	10.0	4.0	10.0	5.0	7.1
	Panel B: Political Stability								
	Political Stability	0.891	-1.305	0.339	0.182	-1.194	1.114	-0.504	-0.068
Sub-periods	1991-1998	0.512	-1.471	0.468	0.171	-0.387	0.948	0.467	0.101
	1999-2007	0.957	-1.716	0.336	0.272	-1.344	1.079	-0.256	-0.096
	2008-2009	1.000	-0.921	0.387	0.003	-1.741	1.225	-1.349	-0.199
	2010-2014	0.955	-0.619	0.250	0.098	-1.191	1.232	-1.196	-0.067
	Panel C: Protection of Minority Shareholders								
	Minority Protection	90.0	57.4	60.6	86.7	43.3	93.3	64.2	70.8
Sub-periods	1991-1998	90.0	56.7	60.0	86.7	43.3	93.3	60.0	70.0
	1999-2007	90.0	56.7	60.0	86.7	43.3	93.3	60.0	70.0
	2008-2009	90.0	56.7	60.0	86.7	43.3	93.3	68.4	71.2
	2010-2014	90.0	60.0	62.7	86.7	43.3	93.3	76.7	73.3
	Panel D: Resolving Insolvency								
	Resolving Bankruptcy	87.0	17.1	87.4	42.8	5.4	96.5	46.1	54.6
Sub-periods	1991-1998	87.4	10.6	87.2	41.3	4.7	96.5	46.1	53.4
	1999-2007	87.1	11.3	87.4	41.4	4.5	96.5	46.3	54.0
	2008-2009	85.4	31.5	87.0	41.4	4.6	96.5	45.3	56.0
	2010-2014	87.1	32.1	88.0	48.4	8.5	96.6	46.1	58.1

Table V Continued

	Period	Hong Kong	Indonesia	South Korea	Malaysia	Philippines	Singapore	Thailand	All Firms
	Panel E: Government Debt as % of GDP								
	Government Debt	1.237	41.207	21.204	44.772	53.733	86.575	43.657	44.424
Sub-periods	1991-1998	.	.	11.040	45.066	61.466	71.580	35.176	45.328
	1999-2007	1.922	55.155	21.966	39.151	58.186	89.520	48.876	46.233
	2008-2009	0.772	28.368	29.771	45.522	44.255	97.514	38.663	40.695
	2010-2014	0.465	24.027	32.668	54.119	40.226	100.892	41.351	41.964
	Panel F: Stock Market Capitalization as % of GDP								
	Stock Market Cap	575.805	32.563	57.272	160.065	54.574	187.648	61.621	167.962
Sub-periods	1991-1998	218.501	27.390	28.772	200.515	61.438	142.265	57.158	116.416
	1999-2007	553.441	28.784	60.590	142.281	39.490	192.022	53.392	152.857
	2008-2009	841.453	29.596	69.755	112.492	40.583	193.981	49.119	190.997
	2010-2014	1081.485	44.693	91.909	146.388	83.204	249.854	88.573	255.158

Table VI: Capital Structure of Asian Firms

The table presents estimates of the leverage ratio regressions on firm characteristics. The sample comes from the Worldscope files for Hong Kong, Indonesia, South Korea, Malaysia, Philippines, Singapore, and Thailand during the period 1991-2014. Financial firms are excluded. Columns (1) through (5) present estimates of the book leverage estimated as the ratio of debt over debt plus book equity. Columns (6) through (10) present estimates of market leverage, estimated as the ratio of debt over debt plus market equity. The explanatory variables $Profitability_{t-1}$, $(\frac{M}{B})_{t-1}$, $Tangibility_{t-1}$, and $Ln(AssetsUSD)_{t-1}$ are described in Appendix A. $IndMedianLev_{t-1}$ is estimated as the median book leverage of all *other* firms in the same industry in Columns (1) to (5), and as the median market leverage of all *other* firms in the same industry in Columns (6) to (10). The industry is defined at the level of the 4-digit SIC code. All specifications include the year fixed effects. The specifications in column (5) and (10) additionally include the firm fixed effects. We report t-statistics where the standard errors are clustered at the firm level in parentheses. [a]Significant at the 1 percent level.

Variables	OLS Cls SE (1)	25th %ile Reg (2)	Median Reg (3)	75th %ile Reg (4)	FE Cls SE (5)	OLS Cls SE (6)	25th %ile Reg (7)	Median Reg (8)	75th %ile Reg (9)	FE Cls SE (10)
			Book Leverage					Market Leverage		
$IndustryMedianLev_{t-1}$	0.458^a	0.318^a	0.565^a	0.576^a	0.190^a	0.502^a	0.340^a	0.643^a	0.671^a	0.252^a
	(14.0)	(18.5)	(29.5)	(28.1)	(5.4)	(17.1)	(22.7)	(38.3)	(37.5)	(7.3)
$Profitability_{t-1}$	-0.472^a	-0.245^a	-0.530^a	-0.771^a	-0.350^a	-0.423^a	-0.265^a	-0.542^a	-0.714^a	-0.342^a
	(-25.0)	(-19.2)	(-37.2)	(-50.6)	(-21.9)	(-22.8)	(-19.4)	(-35.4)	(-43.8)	(-19.9)
$\frac{M}{B}_{t-1}$	-0.010^a	-0.008^a	-0.011^a	-0.009^a	-0.001	-0.078^a	-0.031^a	-0.071^a	-0.093^a	-0.044^a
	(-5.0)	(-5.5)	(-6.8)	(-5.6)	(-0.3)	(-37.6)	(-21.0)	(-42.1)	(-51.8)	(-21.5)
$Size_{t-1}$	0.029^a	0.027^a	0.036^a	0.031^a	0.070^a	0.026^a	0.022^a	0.030^a	0.030^a	0.071^a
	(19.7)	(40.1)	(48.9)	(39.7)	(24.4)	(17.4)	(30.6)	(37.3)	(35.6)	(24.0)
$Tangibility_{t-1}$	0.135^a	0.167^a	0.190^a	0.136^a	0.115^a	0.141^a	0.153^a	0.175^a	0.141^a	0.142^a
	(12.5)	(31.4)	(32.0)	(21.3)	(10.0)	(12.9)	(27.0)	(27.5)	(20.8)	(11.7)
$Constant$	0.074^a	-0.101^a	-0.026^a	0.185^a	-0.115^a	0.110^a	-0.050^a	0.063^a	0.269^a	-0.092^a
	(5.5)	(-15.3)	(-3.5)	(23.4)	(-7.0)	(9.5)	(-7.3)	(8.3)	(33.2)	(-5.7)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$R^2 - Adjusted$	0.155				0.681	0.233				0.660
$PseudoR^2$		0.087	0.105	0.097			0.090	0.158	0.178	
$Observations$	67,237	67,237	67,237	67,237	67,237	67,239	67,239	67,239	67,239	67,239

47

Table VII
Macroeconomic and Institutional Factors and Leverage

The table presents estimates of the leverage ratio regressions on both firm- and country-level variables. The sample comes from the Worldscope files for Hong Kong, Indonesia, South Korea, Malaysia, Philippines, Singapore, and Thailand during the period 1991-2014. Financial firms are excluded. The dependent variable is book leverage estimated as the ratio of debt over debt plus book equity. The explanatory variables include time-varying firm characteristics, time-varying country-characteristics, country dummies and year fixed effects. The firm characteristics include $IndMedianLev_{t-1}$, $Profitability_{t-1}$, $\left(\frac{M}{B}\right)_{t-1}$, $Size_{t-1}$ and $Tangibility_{t-1}$. The country variables include creditor rights index, political stability, protection of minority investors ($PROTECT$), efficiency of resolving insolvency ($RESOLVE$), log of government debt to GDP ratio, log of market cap to GDP, log of real GDP and log of inflation rate. These variables are described in Appendix A. All specifications include year fixed effects. We report t-statistics where the standard errors are clustered at the firm level in parentheses. [a]Significant at the 1 percent level.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Creditor Rights	0.020^a					
	(9.5)					
Political Stability		0.026^a				
		(5.2)				
$PROTECT$			-0.003^a			
			(-8.6)			
$RESOLVE$				0.002^a		
				(4.7)		
Ln(Government Debt/GDP)					-0.018^a	
					(-5.4)	
Ln(StockMktCap/GDP)						-0.044^a
						(-7.4)
$IndustryMedianLev_{t-1}$	0.343^a	0.354^a	0.343^a	0.350^a	0.348^a	0.353^a
	(10.9)	(10.8)	(10.9)	(11.1)	(10.6)	(11.1)
$Profitability_{t-1}$	-0.577^a	-0.573^a	-0.577^a	-0.577^a	-0.575^a	-0.579^a
	(-31.5)	(-31.1)	(-31.5)	(-31.6)	(-31.0)	(-31.5)
$\frac{M}{B}_{t-1}$	-0.003^c	-0.003	-0.004^b	-0.005^b	-0.005^a	-0.003^c
	(-1.7)	(-1.6)	(-2.0)	(-2.5)	(-2.6)	(-1.7)
$Size_{t-1}$	0.040^a	0.041^a	0.041^a	0.041^a	0.041^a	0.041^a
	(27.2)	(27.2)	(27.4)	(27.4)	(27.0)	(27.4)
$Tangibility_{t-1}$	0.107^a	0.111^a	0.105^a	0.102^a	0.109^a	0.102^a
	(10.3)	(10.5)	(10.1)	(9.8)	(10.2)	(9.8)

Table VII Continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Ln(GDP per Capita)	-0.105^a	-0.097^a	-0.057^a	-0.122^a	-0.087^a	-0.111^a
	(-7.3)	(-7.0)	(-4.0)	(-8.4)	(-5.9)	(-7.8)
Ln(Inflation Rate)	0.006	0.006	0.005	0.012^a	-0.004	0.013^a
	(1.3)	(1.4)	(1.0)	(2.6)	(-0.7)	(2.9)
HKG	0.124^a	0.172^a	0.254^a	0.114^b	0.126^a	0.384^a
	(2.9)	(3.9)	(5.9)	(2.3)	(2.6)	(8.2)
IDN	0.136^a	0.176^a	0.195^a	0.140^a	0.178^a	0.155^a
	(8.1)	(10.5)	(11.6)	(7.8)	(10.4)	(9.1)
KOR	0.268^a	0.257^a	0.247^a	0.174^a	0.267^a	0.348^a
	(7.3)	(6.9)	(6.8)	(3.8)	(7.0)	(9.5)
MYS	0.048^c	0.116^a	0.224^a	0.099^a	0.132^a	0.215^a
	(1.8)	(4.5)	(8.3)	(3.6)	(5.2)	(8.4)
SGP	0.186^a	0.215^a	0.303^a	0.138^b	0.251^a	0.377^a
	(4.0)	(4.6)	(6.5)	(2.5)	(5.3)	(8.0)
THA	0.118^a	0.128^a	0.170^a	0.076^a	0.131^a	0.166^a
	(6.2)	(6.7)	(8.7)	(3.1)	(6.8)	(8.6)
Constant	0.643^a	0.702^a	0.518^a	0.902^a	0.693^a	0.935^a
	(6.1)	(6.9)	(5.0)	(7.6)	(6.4)	(8.6)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
$R^2 - Adjusted$	0.217	0.211	0.216	0.214	0.210	0.216
Observations	67,237	63,911	67,237	67,237	63,610	66,823

49

Table VIII
Time-Series of Investments, Deficits, and External Financing

The table presents average funds flow and financing by year. . DIV is the amount of dividends paid. I is capital expenditure. ΔW is change in working capital. CF is cash flow after interest and taxes. DEF is the financing deficit and equals (DIV + I + ΔW - CF). DEF should equal net debt issues (ΔD plus net equity issues (ΔE).

Year	DIV	I	ΔW	CF	$Deficit$	ΔD	ΔE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1991	0.028	0.002	0.014	0.016	0.029	-0.003	0.032
1992	0.025	0.005	0.017	0.019	0.028	-0.012	0.039
1993	0.023	0.014	0.021	0.026	0.032	-0.006	0.038
1994	0.022	0.068	0.037	0.062	0.065	0.029	0.036
1995	0.019	0.088	0.040	0.069	0.079	0.053	0.026
1996	0.018	0.100	0.032	0.071	0.078	0.048	0.029
1997	0.015	0.094	0.025	0.065	0.069	0.047	0.022
1998	0.012	0.051	-0.017	0.058	-0.013	-0.026	0.014
1999	0.012	0.042	0.018	0.070	0.002	-0.027	0.028
2000	0.014	0.053	0.028	0.068	0.027	-0.008	0.035
2001	0.015	0.049	0.010	0.064	0.010	-0.014	0.024
2002	0.015	0.053	0.017	0.069	0.016	-0.010	0.026
2003	0.016	0.051	0.031	0.070	0.028	0.004	0.024
2004	0.018	0.058	0.037	0.075	0.037	0.009	0.029
2005	0.019	0.067	0.031	0.074	0.042	0.012	0.030
2006	0.018	0.068	0.029	0.076	0.039	0.013	0.026
2007	0.019	0.069	0.047	0.078	0.056	0.018	0.038
2008	0.018	0.073	0.016	0.073	0.034	0.020	0.014
2009	0.015	0.059	0.025	0.077	0.022	-0.001	0.023
2010	0.017	0.058	0.039	0.077	0.037	0.010	0.027
2011	0.018	0.061	0.027	0.068	0.038	0.020	0.018
2012	0.018	0.059	0.016	0.062	0.030	0.012	0.018
2013	0.017	0.057	0.026	0.062	0.038	0.010	0.027
2014	0.017	0.057	0.023	0.061	0.035	0.008	0.027
All Years	**0.017**	**0.060**	**0.026**	**0.068**	**0.035**	**0.009**	**0.026**

Table IX
Institutional Quality and Financing of Deficits

The table presents estimates from regressions of net debt issuance (ΔD) on financing deficit (DEF). The sample period is from 1991 to 2014. DEF is the financing deficit and equals (DIV + I + ΔW - CF), where DIV is the amount of dividends paid, I is capital expenditure, ΔW is change in working capital, and CF is cash flow after interest and taxes. The heteroscedasticity-corrected t-statistics are reported in parentheses. [a] indicates significance at the 1% level.

	Creditor Rights		Protection of Minority Shareholders		Political Stability	
	Strong	Weak	Strong	Weak	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
DEF	0.446^a	0.694^a	0.429^a	0.687^a	0.449^a	0.686^a
	(52.9)	(104.0)	(48.2)	(108.1)	(52.3)	(99.5)
$Constant$	-0.010^a	-0.011^a	-0.009^a	-0.011^a	-0.010^a	-0.010^a
	(-29.1)	(-43.8)	(-24.3)	(-47.9)	(-28.6)	(-44.1)
$R^2 - Adjusted$	0.345	0.590	0.332	0.578	0.362	0.598
$Observations$	38,656	38,686	32,774	44,568	34,018	38,379

Table X
Shadow Rates and Funding of Financing Deficits

We estimate the following regression:

$$\Delta D_{j,i,t} = \alpha + \beta_1 Deficit^-_{j,i,t} + \beta_2 Deficit^+_{j,i,t} + \beta_3 SSR_{t-1} \times Deficit^+_{j,i,t} + \epsilon_{j,i,t} \qquad (5)$$

where $\Delta D_{j,i,t}$ is net debt issuance by firm i in country j at time t, $Deficit^-_{j,i,t}$ equals financing deficit for firm i in country j at time t if the firm has negative deficit. It is zero otherwise, $Deficit^+_{j,i,t}$ equals deficit for firm i in country j at time t if the firm has a positive deficit and zero otherwise, and SSR_{t-1} is shadow short rates. See Appendix A for variable definitions. In Panel A, we sort firms based on the quality of creditor rights, protection of minority investors, and political stability. In Panel B, we estimate the pecking order regressions by country. The heteroscedasticity-corrected t-statistics are reported in parentheses. [a] indicates significance at the 1% level. [b] indicates significance at the 5% level. [c] indicates significance at the 10% level.

Panel A: Quality of Institutions

	All Firms	Creditor Rights		Protection of Minority Investors		Political Stability	
		Strong	Weak	Strong	Weak	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Deficit^-$	1.072^a	1.083^a	1.040^a	1.093^a	1.034^a	1.119^a	1.036^a
	(144.1)	(87.2)	(120.1)	(77.7)	(128.1)	(86.0)	(123.2)
$Deficit^+$	0.403^a	0.306^a	0.546^a	0.293^a	0.539^a	0.294^a	0.538^a
	(53.6)	(30.8)	(56.1)	(28.5)	(57.8)	(29.4)	(54.3)
$SSR \times Deficit^+$	0.001	-0.005^b	0.011^a	-0.007^a	0.011^a	-0.007^a	0.011^a
	(0.9)	(-2.4)	(5.6)	(-3.0)	(5.4)	(-3.3)	(4.8)
$Constant$	0.008^a	0.009^a	0.004^a	0.010^a	0.003^a	0.012^a	0.004^a
	(20.7)	(18.4)	(8.1)	(18.7)	(7.4)	(22.3)	(10.6)
$R^2 - Adjusted$	0.517	0.434	0.621	0.426	0.610	0.467	0.632
$Observations$	77,342	38,656	38,686	32,774	44,568	34,018	38,379

Panel B: Country Sorts

	HKG	IDN	KOR	MYS	PHL	SGP	THA
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Deficit^-$	1.122^a	0.983^a	1.059^a	1.023^a	0.905^a	1.035^a	1.057^a
	(49.5)	(36.4)	(79.6)	(71.8)	(24.5)	(44.7)	(112.7)
$Deficit^+$	0.227^a	0.617^a	0.548^a	0.440^a	0.453^a	0.423^a	0.531^a
	(17.7)	(25.2)	(42.3)	(21.0)	(14.0)	(23.1)	(27.1)
$SSR \times Deficit^+$	-0.009^a	0.016^a	0.003	0.014^a	0.002	-0.014^a	0.023^a
	(-3.1)	(3.2)	(1.2)	(3.0)	(0.3)	(-3.5)	(5.6)
$Constant$	0.015^a	0.001	0.005^a	0.002^b	0.004^a	0.004^a	0.002^a
	(18.7)	(1.0)	(7.8)	(2.6)	(3.1)	(4.5)	(2.6)
$R^2 - Adjusted$	0.377	0.636	0.635	0.512	0.561	0.500	0.613
$Observations$	15,714	5,833	19,009	12,427	2,475	10,515	11,369

Table XI
Global Liquidity and Corporate Investment

We estimate the following regression:

$$\frac{Capex}{Assets}_{ijt} = \alpha + \beta_1 SSR_{t-1} + \beta_2 \frac{M}{B}_{ijt-1} + \beta_3 \frac{CF}{Assets}_{ijt} + \beta_4 Lev_{ijt-1}$$
$$+ \beta_5 Size_{ijt-1} + \beta_6 Ln(GDPperCapita)_{jt} + \beta_7 Ln(Inf)_{jt} + \epsilon_{j,i,t}$$

See Appendix A for variable definitions. We cluster standard errors at firm and year level and report robust t-statistics in parentheses. [a] indicates significance at the 1% level. [b] indicates significance at the 5% level. [c] indicates significance at the 10% level.

	(1)	(2)	(3)
$ShadowShortRate(\%)_{t-1}$	0.000	0.000	0.000
	(0.2)	(1.1)	(0.8)
Strong Creditor Rights		-0.040^a	-0.041^a
		(-3.4)	(-3.4)
$SSR_{t-1} \times StrongCreditorRights$		-0.001^a	-0.001^a
		(-3.4)	(-3.3)
$\frac{M}{B}_{ijt-1}$	0.012^a	0.012^a	0.012^a
	(17.9)	(18.0)	(18.0)
$\frac{CF}{Assets}_{ijt-1}$	0.268^a	0.268^a	0.267^a
	(40.7)	(40.7)	(39.8)
$SSR \times \frac{CF}{Assets}_{ijt-1}$			0.003^c
			(1.7)
$BookLeverage_{ijt-1}$	-0.011^a	-0.011^a	-0.011^a
	(-5.1)	(-5.2)	(-5.2)
$Size_{ijt-1}$	0.001^a	0.001^a	0.001^a
	(4.2)	(4.1)	(4.1)
Ln(GDP per Capita)	0.008^b	0.009^b	0.009^b
	(2.2)	(2.4)	(2.4)
Ln(Inflation Rate)	-0.003^c	-0.004^a	-0.004^a
	(-1.7)	(-2.6)	(-2.6)
$Constant$	-0.030	-0.031	-0.032
	(-1.0)	(-1.0)	(-1.1)
$R^2 - Adjusted$	0.131	0.132	0.132
$Observations$	67,303	67,303	67,303

Appendix Table I: Common-size Balance Sheets of Asian Firms, 1991-2014

This table reports average balance sheet items of firms in various Asian countries. All balance sheet items are expressed as a fraction of assets. The sample period is from 1991 to 2014.

Variable	Average Balance Sheet Item as a Fraction of Total Assets							
	Hong Kong	Indonesia	South Korea	Malaysia	Philippines	Singapore	Thailand	Total
Number of Observations	15,714	5,833	19,009	12,427	2,475	10,515	11,369	77,342
Number of Firms	1,573	488	1,970	1,064	204	950	949	7,198
Cash and cash equivalents	0.214	0.123	0.147	0.129	0.115	0.177	0.101	0.152
+ Accounts receivable	0.169	0.163	0.208	0.206	0.122	0.192	0.165	0.185
+ Inventory	0.117	0.169	0.124	0.132	0.081	0.136	0.166	0.134
+ Other current assets	0.026	0.029	0.022	0.017	0.027	0.022	0.021	0.023
= **Current Assets-Total**	0.519	0.480	0.504	0.481	0.342	0.526	0.453	0.492
+ Property plant and equipment-net	0.286	0.397	0.336	0.382	0.405	0.328	0.402	0.349
+ Investment in associated companies	0.046	0.023	0.036	0.035	0.064	0.045	0.039	0.040
+ Other assets	0.146	0.096	0.121	0.099	0.184	0.098	0.103	0.117
= **Total assets**	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Short-term debt	0.103	0.141	0.166	0.124	0.091	0.112	0.160	0.134
+ Accounts payable	0.092	0.100	0.096	0.082	0.070	0.108	0.091	0.093
+ Other current liabilities	0.104	0.077	0.083	0.081	0.086	0.096	0.072	0.087
= **Current Liabilities-Total**	0.298	0.316	0.346	0.285	0.248	0.317	0.321	0.313
Long Term Debt	0.081	0.148	0.092	0.084	0.099	0.091	0.119	0.097
+ Other long-term liabilities	0.022	0.039	0.040	0.028	0.045	0.020	0.019	0.029
= **Total Liabilities**	0.403	0.504	0.478	0.400	0.409	0.430	0.462	0.441
+ Common equity	0.565	0.476	0.503	0.575	0.564	0.543	0.523	0.536
+ Minority interest	0.029	0.019	0.017	0.022	0.023	0.026	0.013	0.021
= **Total Liabilities & SE**	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Appendix Table II: Book Leverage Regressions by Country

Cross-sectional leverage regression estimates with year fixed effects. $Lev_{i,j,t}$ is the debt to capital ratio for firm i in country j at time t. The vector of firm characteristics, $X_{i,j,t-1}$ is described in Appendix. All firm characteristics are lagged one period. Y_t are year fixed effects. The sample period is from 1991 to 2014. The heteroscedasticity-corrected standard errors are reported in parentheses. Country regressions include year fixed effects. [a] indicates significance at the 1% level. [b] indicates significance at the 5% level. [c] indicates significance at the 10% level.

Variables	HKG	IDN	KOR	MYS	PHL	SGP	THA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$IndustryMedianLev_{t-1}$	0.457^a	0.422^a	0.372^a	0.168^b	0.359^b	0.189^b	0.378^a
	(0.061)	(0.117)	(0.068)	(0.077)	(0.145)	(0.074)	(0.090)
$Profitability_{t-1}$	-0.313^a	-0.710^a	-0.854^a	-0.766^a	-0.331^a	-0.366^a	-0.707^a
	(0.031)	(0.070)	(0.037)	(0.049)	(0.094)	(0.044)	(0.057)
$\frac{M}{B}_{t-1}$	-0.010^a	-0.004	0.008	0.005	0.002	-0.008	0.005
	(0.003)	(0.007)	(0.005)	(0.005)	(0.007)	(0.005)	(0.007)
$Size_{t-1}$	0.028^a	0.044^a	0.042^a	0.044^a	0.078^a	0.027^a	0.053^a
	(0.003)	(0.005)	(0.003)	(0.004)	(0.006)	(0.004)	(0.004)
$Tangibility_{t-1}$	0.091^a	0.127^a	0.230^a	0.047^c	0.119^a	0.087^a	0.067^b
	(0.020)	(0.036)	(0.023)	(0.026)	(0.044)	(0.026)	(0.027)
$Constant$	-0.026	0.054	0.233^a	-0.002	-0.213^a	0.075^b	0.090^b
	(0.025)	(0.043)	(0.028)	(0.031)	(0.053)	(0.031)	(0.039)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$R^2 - Adjusted$	0.138	0.231	0.310	0.164	0.380	0.105	0.243
$Observations$	13,384	5,074	16,414	11,004	2,107	9,213	10,041

Appendix Table III: Market Leverage Regressions by Country

Cross-sectional leverage regression estimates with year fixed effects. $Lev_{i,j,t}$ is the debt to capital ratio for firm i in country j at time t. The vector of firm characteristics, $X_{i,j,t-1}$ is described in Appendix. All firm characteristics are lagged one period. Y_t are year fixed effects. The sample period is from 1991 to 2014. The heteroscedasticity-corrected standard errors are reported in parentheses. ^{a} indicates significance at the 1% level. ^{b} indicates significance at the 5% level. ^{c} indicates significance at the 10% level.

Variables	HKG (1)	IDN (2)	KOR (3)	MYS (4)	PHL (5)	SGP (6)	THA (7)
$IndustryMedianMLev_{t-1}$	0.516^a	0.508^a	0.558^a	0.238^a	0.514^a	0.265^a	0.404^a
	(0.058)	(0.096)	(0.062)	(0.069)	(0.146)	(0.071)	(0.072)
$Profitability_{t-1}$	-0.184^a	-0.722^a	-0.716^a	-0.712^a	-0.531^a	-0.352^a	-0.654^a
	(0.031)	(0.068)	(0.041)	(0.054)	(0.094)	(0.044)	(0.051)
$\frac{M}{B}_{t-1}$	-0.071^a	-0.071^a	-0.086^a	-0.062^a	-0.045^a	-0.064^a	-0.063^a
	(0.003)	(0.007)	(0.005)	(0.005)	(0.010)	(0.006)	(0.006)
$Size_{t-1}$	0.021^a	0.037^a	0.037^a	0.040^a	0.068^a	0.024^a	0.038^a
	(0.003)	(0.005)	(0.003)	(0.005)	(0.007)	(0.004)	(0.004)
$Tangibility_{t-1}$	0.106^a	0.158^a	0.254^a	0.070^b	0.125^b	0.126^a	0.057^b
	(0.022)	(0.037)	(0.024)	(0.028)	(0.049)	(0.027)	(0.027)
$Constant$	0.090^a	0.062^c	0.290^a	0.047^c	-0.160^a	0.046^c	0.164^a
	(0.025)	(0.036)	(0.027)	(0.028)	(0.045)	(0.028)	(0.032)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$R^2 - Adjusted$	0.215	0.329	0.363	0.220	0.389	0.198	0.309
$Observations$	13,384	5,074	16,417	11,003	2,107	9,213	10,041

Appendix Table IV
Corporate Cash Flows of Asian Firms, 1991-2014

This table reports average cash flows of firms in various Asian countries. All cash flow items are expressed as a fraction of assets. The sample period is from 1991 to 2014.

| Variable | Average Cash Flow Item as a Fraction of Total Assets | | | | | | | |
	Hong Kong	Indonesia	South Korea	Malaysia	Philippines	Singapore	Thailand	Total
Number of Observations	15,714	5,833	19,009	12,427	2,475	10,515	11,369	77,342
Number of Firms	1,573	488	1,970	1,064	204	950	949	7,198
Dividends	0.020	0.017	0.007	0.017	0.013	0.019	0.031	0.017
Investments	0.063	0.065	0.066	0.044	0.065	0.053	0.067	0.060
Δ Working capital	0.038	0.017	0.029	0.019	0.018	0.025	0.018	0.026
Internal Cash Flow	0.063	0.067	0.071	0.060	0.061	0.062	0.090	0.068
Financing Deficit	0.057	0.032	0.030	0.021	0.034	0.035	0.028	0.035
Net debt issues	0.014	0.014	0.011	0.002	0.012	0.007	0.006	0.009
Net equity issues	0.043	0.018	0.019	0.019	0.021	0.028	0.022	0.026
External financing	0.057	0.032	0.030	0.021	0.034	0.035	0.027	0.035

Appendix A. Variable Definitions

Leverage Measures

Book Leverage is the ratio of total debt (debt in current liabilities + long-term debt) to total debt plus book equity.

Market Leverage is the ratio of total debt (debt in current liabilities + long-term debt) to total debt plus market value of equity (stock price × shares outstanding).

Factors

Profitability

Profitability - operating income before depreciation (Profit) is the ratio of operating income before depreciation, to assets.

Firm size

Log of Assets (Assets) is the log of assets (in USD) deflated to 2010 dollars using the GDP deflator.

Growth Opportunities

Market-to-Book ratio (Mktbk) is the ratio of market value of assets to book value of assets. Market value of assets is obtained as the sum of the assets - book value of equity + market value of equity (stock price × shares outstanding).

Industry

Median industry leverage (IndustLev) is the median of total debt to book (market) capitalization by country, SIC code and year. Industry is defined at the four-digit SIC code level in the main results.

Nature of assets

Tangibility (Tang) is the ratio of net property, plant and equipment to assets.

Creditor Rights Variable

The Creditor Rights variable is constructed so that, prior to 2005, the observations are taken from Djankov et al. (2007). The original scale of the Djankov series was 0-4. The index gains one if each of the following rights of secured lenders are defined in laws and regulations: First, there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization. Second, secured creditors are able to seize their collateral after the reorganization petition is approved, i.e. there is no "automatic stay" or "asset freeze." Third, secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as government or workers. Finally, if management does not retain administration of its property pending the resolution of the reorganization. The index thus ranges from 0 (weak creditor rights) to 4 (strong creditor rights) and is constructed as at January for every year from 1978 to 2002. This series was rescaled, merged and combined with a strength of legal rights index of the World Bank, which was a scale of 0-10 for 2005-2014; 0-12 for 2014-2016. Higher numbers in the latter index correspond to "the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending." Values for 2003 and 2004 are interpolated.

Protection of Minority Shareholders Variable

The Protection of Minority Shareholders rights variable is from the World Bank. The variable is available on an annual basis from 2006 . We extend back the series using 2006 values. This index index is composed of the conflict of regulation index and shareholder governance index. The extent of conflict of interest regulation index measures the protection of shareholders against directors' misuse of corporate assets for personal gain by distinguishing three dimensions of regulation that address conflicts of interest: transparency of related-party transactions (extent

of disclosure index), shareholders ability to sue and hold directors liable for self-dealing (extent of director liability index) and access to evidence and allocation of legal expenses in shareholder litigation (ease of shareholder suits index). The extent of shareholders governance index measures shareholders' rights in corporate governance by distinguishing three dimensions of good governance: shareholders' rights and role in major corporate decisions (extent of shareholders rights index), governance safeguards protecting shareholders from undue board control and entrenchment (extent of ownership and control index) and corporate transparency on ownership stakes, compensation, audits and financial prospects (extent of corporate transparency index).

Resolving Insolvency

The Resolving Insolvency variable is taken from a World Bank series reflects the time, cost and outcome of insolvency proceedings involving domestic entities as well as the strength of the legal framework applicable to liquidation and reorganization proceedings. This variable is available on an annual basis from 2004; we extend back the series using 2004 values.

Political Stability

Macroeconomic Variables

Log(GDP per capita): Natural log of the average GDP per capita in US dollars.

General government gross debt as a percentage of GDP obtained from IMF WEO.

Stock market capitalization as a percentage of GDP also obtained from IMF WEO.

Shadow short rate

The shadow short rate of the US in measured in percent. The source is Krippner (2016). The SSR is the shortest maturity rate from the estimated shadow yield curve. It is essentially equal to the policy interest rate in conventional monetary policy environments. However, SSR can freely evolve to negative values in unconventional environments to indicate an overall policy stance that is more accommodative than a near-zero policy rate alone.