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FINANCIAL STRUCTURE, CORPORATE SAVINGS, AND CURRENT ACCOUNT IMBALANCES

Zhibo Tan, Shang-Jin Wei, Yang Yao, and Yue Zhao*

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Abstract: We explore the effects of a country's financial structure on its corporate savings and current account. A financial system that relies relatively more on banks and less on the capital market presents more difficulties for small and medium-sized enterprises to access external finance. These firms find it necessary to accumulate more savings on their own. As a result, countries that have a less developed capital market are more likely to run current account surpluses (or smaller current account deficits). Using panel data of 66 countries for the period 1990–2007, we find consistent and robust evidence in favor of this hypothesis. Further explorations based

* Zhibo Tan, School of Economics, Fudan University; Shang-Jin Wei, Graduate School of Business, Columbia University and the Asian Development Bank; Yang Yao, National School of Development and China Center for Economic Research, Peking University; Yue Zhao, the People's Bank of China. We thank Menzie Chinn, Mitali Das, Julian Di Giovanni, Pierre-Olivier Gourinchas, Ross Levin, Gian Maria Milesi-Ferretti, Steve Phillips, Vincenzo Quadrini, Luca Antonio Ricci and seminar participants at Columbia University, Peking University, Tsinghua University, Eastern Finance Association 2013 Annual Meetings, Fall 2012 Midwest Macroeconomics Conference, International Conference of International Economics and Finance Society, Chinese Economists Society Annual Conference for their helpful comments.

on firm-level data reveal that firms, especially smaller firms, in economies with relatively underdeveloped capital markets do save significantly more than their counterparts in countries with relatively more developed capital markets.

Key Words: Current Account Imbalances; Financial Structure; Corporate Savings
JEL classification: F32; G15; G32

I. Introduction

In the literature on global current account imbalances, a number of theoretical papers have highlighted the role of a country's financial development. For example, Cabarrello et al. (2008) present a theoretical model in which the ability of a country's financial system to generate financial assets could be a structural determinant of its current account. Mendoza et al. (2009) focus on the risk diversification properties of a financial system. Ju and Wei (2010) present a model in which countries with a superior financial system tend to simultaneously import financial capital and export foreign direct investment (FDI), whereas countries with an inferior financial system are inclined to do the opposite.

In this paper, we extend the above literature to explore empirically whether and how the structure of a country's financial system affects its current account balances. Whereas the paper is primarily empirical, we sketch a theoretical model in Appendix 2 based on Allen and Gale (1999), which shows that a financial system that relies relatively more on banks and less on the capital market presents more difficulties for small and medium-sized enterprises (SMEs) to get access to external finance. Such firms then find it necessary to accumulate more savings on their own. Because a country's current account balance is the difference between its national savings and national investment and the country's corporate savings are a part of its national savings, the nature of a country's financial system can thus be a structural determinant of its current account. Countries that rely relatively more on bank financing are likely to run more current account surpluses or less current account deficits, whereas countries that rely relatively more on the capital market are likely to run more current account deficits or less current account surpluses. Like Cabarrello et al. (2008), this hypothesis predicts that the United States—a country with arguably the most developed capital market—tends to run a current account deficit. However, it differs from Cabarrello et al. (2008) in that it emphasizes the structure of finance, not its absolute advantage, in determining a country's current account position. For that reason, it is also much less U.S.-centric.

A comparison of two chronic current account deficit countries for most of the time since 1980, the United States and the United Kingdom, with two persistent surplus countries, Japan and Germany, can highlight our story. The latter two countries have a high level of financial development by the conventional measure of the credit to the private sector as a share of gross domestic product (GDP). However, their financial systems are more bank-based than those of the United States and United Kingdom. During the period of 1990 to 2008, the average national saving rates of Japan and Germany were 29.02 percent and 21.38 percent respectively, while the rates of the United States and United Kingdom were 15.09 percent and 14.95 percent,[1] respectively. A closer look at the sectoral distribution of national savings shows that this difference was mainly brought about by the differences in corporate savings. Household saving rate (household savings divided by household disposable income) was relatively stable in Germany and the United States in the period. It even dropped in Japan,[2] and became lower than that of the United States by 2008. In contrast, Germany and Japan's corporate savings[3] as a share of GDP surged from 8.75 percent and 13.33 percent in 1998 to 11.36 percent and 17.84 percent in 2007, respectively, while the corresponding figures for the United States and the United Kingdom were relatively stable, 7.52 percent and 11.08 percent in 1998, and 6.53 percent and 11.91 percent in 2007, respectively. In addition, government savings as a share of GDP in all the four countries almost followed the same trend, fluctuating in the range between −4 percent and 3 percent during the period 1996–2007. Therefore, corporate savings might have played a prominent role to differentiate the United States and the United Kingdom from Germany and Japan. Furthermore, Japan and Germany's average investment rates were also higher than those of the other two countries. Hence, their current account surpluses came mainly from high corporate savings rather than low

[1] The ratios are calculated from World Bank's World Development Index.

[2] The ratio for Germany in 1996 was 10.55 percent, whereas in 2009 the figure was 11.13 percent. The corresponding ratio for the United States was 5.12 percent in 1996 and 6.19 percent in 2009. For Japan, the ratio plunged from 11.4 percent in 1996 to 2.29 percent in 2008.

[3] Corporate savings are calculated as such: gross value added − compensation of employees − taxes less subsidies on production − net interest paid − dividend paid − direct taxes paid + net property income received + net other current transfers received, according to the Organization for Economic Co-operation and Development (OECD 2007).

investment rates.

We conduct our empirical analysis in two parts. One is at the country level. Using panel data of 66 countries for the period 1990–2007, for which we can obtain relatively reliable data for the key variables, we establish a positive relationship between a relatively more developed capital market and a larger current account deficit. In addition, we show that corporate savings contribute significantly to current account imbalances. The other part of analysis is at the firm level. Using firm data provided by the World Bank's 1999 World Business Environment Survey (WBES) and the data of listed-firms provided by the Global COMPUSTAT Industrial and Commercial Annual Database (GCICAD) for the period 2000–2007, we examine whether corporate savings are systematically connected to a country's financial structure. We find that firms, especially smaller firms, in economies with relatively underdeveloped capital markets save significantly more than their counterparts in countries with relatively more developed capital markets.

The rest of the paper is organized as follows. In Section II, we review the relevant literature, link our study to several strands of studies, and sketch the intuitions about why financial structure matters. Section III establishes the association between financial structure and current account using cross-country panel data. Further exploration of the relationship between financial structure and retained earnings /internal financing based on the WBES is conducted in Section IV. Then in Section V, we offer further evidence for the connection between financial structure and firms' net savings using the GCICAD data. Section VI concludes the paper.

II. Review of the Existing Literature

The existing literature on the current account has examined the role of the real exchange rate (Mckinnon and Schnabl, 2009), government savings (Backus et al., 2005; Chinn et al., 2007), and factors that affect household savings such as the precautionary motive (Carroll and Jeanne, 2009), the age structure of the population (Henriksen, 2005), and national asset bubbles (Laibson and Mollerstrom, 2010). A

novel factor—the competitive saving motive or savings to gain relative competitiveness for the purpose of marriage—has also been proposed in the literature; countries with higher sex ratios in the premarital age cohorts are found to be more likely to run current account surpluses.[4]

Most closely related to the current paper is a set of recent papers that examine the implications of cross-country differences in financial sector characteristics for current accounts and international capital flows. Dooley et al. (2004) hypothesize that a relatively high perceived risk of expropriation requires emerging market economies that wish to attract foreign direct investment to post implicit collateral abroad that could be seized upon by foreign investors in case the expropriation risk did materialize. One practical way for emerging market economies to post the collateral is to run a current account surplus year after year and to hold foreign financial assets including U.S. government debts. Caballero et al. (2008) propose a theory that explains the current account patterns by a combination of cross-country differences in financial sector efficiency and growth potentials. Countries with a high growth potential but a poor financial system (think of China and India) cannot generate a sufficient amount of locally produced financial assets and have to run a current account surplus in order to accumulate needed assets in the region with a developed financial system. Countries with a good financial system but a low growth potential (think of the United States) run a current account deficit in order to create the opportunity for the former to be the net holder of its financial assets. Mendoza et al. (2009) focus on the risk diversification properties of a financial system. Countries with a poorly developed financial system have an inferior ability to provide risk diversification, inducing households to engage in more precautionary savings. Such a country would have a lower interest rate in financial autarky. Once international capital flows are allowed, they then become net exporters of capital. In the model of Ju and Wei (2010), the expected marginal product of capital and the financial interest rate are not equal because of either inefficiency in financial mediation or agency

[4] See Wei and Zhang (2011) for household-level and regional evidence from China and Du and Wei (2010) for a theoretical model and some cross-country evidence.

problems in corporate governance. Whereas the expected return to physical capital is high in an emerging market economy, the local financial return on savings may be low. This low return on savings induces domestic savers to channel savings to countries with a more developed financial system; at the same time, firms in financially developed countries are willing to invest in financially underdeveloped countries (but with a moderate expropriate risk) in order to take advantage of the latter's higher returns on physical capital. This produces a pattern of two-way capital flows: emerging market economies simultaneously import FDI but export financial capital, whereas countries with a strong financial system do the reverse. Whereas the quality of a country's financial system affects the composition of its gross international capital flows, Ju and Wei (2010) point out that the quality of a country's financial system does not unambiguously pin down the country's current account position.

Empirically, Chinn and Ito (2007) find that the more developed the financial market is, the less saving a country undertakes. However, they only consider the absolute level of financial market development, measured by the loans to the private sector as a share of GDP, but not the structure of the financial market, which is our focus.

Our paper follows this new line of explanations of the current account and extends it by linking financial structure to current account imbalances. Specifically, we differentiate countries by their relative reliance on banks or the capital market to provide finance. The corporate finance literature, in particular, Allen and Gale (1999), provides the theoretical underpinnings for our approach. Compared with a financial system relying more on banks (a bank-based system), one with a relatively well-developed capital market (a market-based system) has the strength to avoid the diversity of opinions arising from delegated decisions. Its drawback, though, is a higher search cost because of individual decisions. Allen and Gale (1999) study this trade-off and provide intuitive results predicting when a country should adopt a particular system. In Appendix 2, we provide a simple extension to their model to illustrate why firms' saving behavior in a market-based economy differs from firms' saving behavior in a bank-based economy. Instead of studying heterogeneous financing costs across projects as Allen and Gale (1999) do, we study a uniform

financing cost that separates countries apart. Countries with higher financing costs tend to rely more on banks to get finance in order to gain scale economies of cost saving. The downside is that they tend to leave more projects underfinanced because investors either have low expectations or very diverse opinions about the profitability of these projects. Whereas opinions about large firms tend to be uniform because of their high levels of exposure, opinions about the risk distribution of small firms can be very diverse. As a result, small firms are better situated to get external finance, and they accumulate less corporate savings in a country with a more developed capital market, while finance of large firms can be invariant with different financial structures. On the other hand, financial structure is less likely to affect household and government savings. So countries' current account positions may differ by their financial structures through the corporate savings channel.

There are empirical studies that associate firms' external financing behavior with a country's financial structure. For example, Schmukler and Vesperoni (2001) investigate whether firms' financing behavior, such as leverage ratios, debt maturity structure, and sources of financing, are different across bank-based and market-based systems in seven emerging economies. They find that in bank-based financial systems, long-term debt and debt-to-equity ratios increase significantly with firm size. However, in market-based countries, small firms' debt-to-equity ratio is not significantly lower. However, Demirguc-Kunt and Maksimovic (2002) consider funding growth of firms in bank-based and market-based financial systems and find no evidence that firms' access to external financing can be predicted by the relative development of stock markets and banking system. Their sample, though, is composed of the largest publicly traded manufacturing firms. Differing from their sample, our sample has a wide coverage of small and medium-sized firms, and we find that small firms' retained earnings and net savings are significantly influenced by the financial structure. In contrast, in accordance with Demirguc-Kunt and Maksimovic (2002), we find that the effect of financial structure on large firms is mostly not significant, no matter in the survey data or in the listed firms' data. Beck et al. (2008) investigate firms' financing patterns around the world and find that small

firms and firms in countries with poor institutions use less external finance, especially bank finance. Although their focuses are different from our paper, the results of these studies lend empirical support to our line of story.

On the other hand, our approach is different from several papers that try to explain current account imbalances from the perspective of corporate savings. Bachetta and Benhima (2010) demonstrate in a theoretical model that the demand for liquid assets complements domestic investment. Thus, emerging countries with high growth and high investment rates can have both high corporate savings and high demand for foreign assets and experience capital outflows and current account surpluses. Sandri (2014) focuses on uninsurable risks that boost corporate savings in developing countries. Uninsurable risks force entrepreneurs to rely on self-financing. Hence, when there are many business opportunities, saving has to rise more than investment in order to allow also for the accumulation of precautionary assets. Angeletos and Panousi (2010) and Benhima (2010) also characterize net capital outflows as a result of precautionary savings caused by idiosyncratic risks. We differ from those papers by associating the characteristics of financial systems to corporate savings. Furthermore, we consider the heterogeneities among firms and avoid the ambiguity caused by the offsetting effects of firms with different sizes.

III. Financial Structure and the Current Account

In this section, we conduct a country-level analysis to establish the associations between the nature of a country's financial structure and its current account imbalances. In addition, we will show that corporate savings are a key component that drives the movement of a country's current account imbalances. The financial structure affects the current account mainly by affecting corporate savings as opposed to household or government savings.

A. *Data and Econometric Specifications*

We have compiled a panel dataset of 66 countries for the period 1990 to 2007. We intentionally exclude the period of the recent global financial crisis to avoid irregularities in the current account. Data are obtained from the following sources: the World Bank's database on Financial Development and Financial Structure,[5] Chinn and Ito (2008), the World Bank World Development Indicators and the national account statistics from the statistics division of the United Nations Department of Economic and Social Affairs. We will provide more detailed information about data sources when we discuss the specific variables.

To study how a country's current account is linked with its financial structure, we construct the following dynamic panel model as our baseline specification:

$$CA_{it} = \gamma CA_{it-1} + \alpha FS_{it} + \beta X_{it} + \nu_i + \eta_t + \varepsilon_{it} \quad (1)$$

where the subscript i and t are indices for countries and years, respectively; CA is current account balance/GDP; FS stands for financial structure; X is a set of control variables; ν and η are, respectively, country and year fixed effects; γ, α and β are parameters to be estimated; and ε is the error term. We include the lagged value of the dependent variable to capture the time-persistent component of a country's current account.

The variable of interest is the financial structure. Following Beck and Levine (2002), we define FS as a continuous variable measuring the relative size of market-based finance over bank-based finance. We experiment with three variants of this measure. The first is the log ratio of the stock transaction value to bank loans issued to the private sector (or the claims of the banking sector on the private sector) in a year; the second changes the numerator to stock market capitalization; and the third is the first principal component of the above two variables. Higher values of these three variables indicate a financial system that is more reliant on the capital market.[6] Data are obtained from the World Bank's database on Financial

[5] Beck, Demirguc-Kunt, and Levine (2000) give a detailed description about the database.

[6] Because bond market is also an important component of capital market, one may be concerned with what the effect of bond market is. We check the correlation between bond market development (measured by private domestic debt securities issued by financial institutions and corporations as a share of GDP) and stock market development (measured by stock market capitalization as a share of GDP) in 2005 and 2006. We rank countries by their bond market development indicator and stock market development indicator. The correlation coefficient of the two series (rankings) is 0.53 and 0.52 in 2005 and 2006, respectively, which are reasonably large. Because

Development and Financial Structure. We have conducted our analysis using all three measures and found that they obtain similar results. To save space, we will only report the results of the second measure in the text.

In *X*, we have included the usual suspects that determine a country's current account balance: financial development (sum of stock market capitalization to GDP ratio and private credits to GDP ratio),[7] financial depth (M2/GDP), government budget balance/GDP, log GDP per capita and its square, growth rate of GDP per capita, old age dependence ratio (population over 65/population between 15 and 65), young age dependence ratio (population under 15/population between 15 and 65), log real effective exchange rate, trade (imports and exports)/GDP, capital account control and net foreign asset/GDP. The first two variables are meant to account for the theoretical predictions put forward by the financial development literature such as Cabarrello et al. (2008) and Mendoza et al. (2009). We obtain data of these variables from the World Bank's database on Financial Development and Financial Structure and the International Monetary Fund's (IMF) International Financial Statistics (IFS) database. The next six variables are to control for a country's internal economic and social status. Government budget balance/GDP is added to control the impact of government deficit on current accounts. Per-capita GDP, its square and its growth rate are included to account for the stage of a country's living standards and the impact of growth prospects on the current account implied by the theoretical prediction proposed by Engel and Rogers (2006). The dependence ratios are meant to control a country's demographic transition whose effects on the current account are discussed by studies such as Henriksen (2005). Data for these six variables are from World Bank's World Development Index (WDI). The last four variables, log real effective exchange rate, trade/GDP, capital account control, and net foreign asset/GDP, are to control for a country's external economic and financial positions as well as its policies toward economic opening. Data for real effective exchange rate, trade/GDP, and net foreign asset/GDP are from the WDI. Real effective exchange rate is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs. Increase in the real effective exchange rate indicates appreciation. Because the real

bond market data are less available than stock market data, we only use the stock market data in our analysis.

[7] The pairwise correlation coefficient between financial development and financial structure is 0.33. There is no serious multicollinearity problem if we add these two variables to the right-hand side simultaneously.

effective exchange rate, as defined here, is likely to be influenced by a country's trading activities and thus may be correlated with the error term in Equation (1), we will try regressions with or without it. Capital account control is from an updated version of Chinn and Ito's financial openness index (Chinn and Ito, 2008), which is an index measuring a country's degree of capital account openness. It is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Higher value of the index indicates higher degree of openness. Table 1 presents summary statistics for all the variables involved in Equation (1).

[Table 1 about here]

B. *Baseline Results*

Before conducting regression analysis, it is illuminating to first take a look at the bivariate correlation between the current account/GDP ratio and the financial structure. For that, we present a scatter plot for these two variables in Figure 1. The figure is constructed in the following way. To get rid of the impact of noises, we first sort observations (country-year) into equal-sized groups by the values of the variable on the horizontal axis and then plot the average values of the variable on the vertical axis against the mid-value of the bin on the horizontal axis. We use the Frisch-Waugh theorem to exclude the impact of financial development, real effective exchange rate, and the two-way fixed effects. It is clear that a negative relationship exists between the two variables. That is, countries with a relatively less developed capital market are more likely to run a current account surplus. This pattern appears to be robust to excluding outliers, so it is neither driven by one or two countries nor by one or two time periods.

[Figure 1 about here]

We then estimate Equation (1) by several methods. The first is to directly apply the generalized method of moments (GMM) to estimate the equation; the second is the static panel model method (with the lagged dependent variable deleted); and the third is the pooled ordinary least squares (OLS) method based on five-year or three-year

averages as suggested by Chinn and Prasad (2003). All the three methods return qualitatively similar results. To save space, we only report the GMM results.

The validity of additional instruments in system GMM requires that the changes of instrumental variables are uncorrelated with the fixed effects. In our context, it requires that previous changes in the current account are uncorrelated with a country's geography, which is a relatively strong assumption and is hard to justify because geographical location determines the scarcity of natural resources, such as oil, and is likely to affect the adjustment of current account. Thus, we adopt the difference GMM estimations. Because some countries, such as Armenia, Bulgaria, and Georgia, experienced large current account imbalances in some years, we have tried to either delete outliers whose current account imbalances belong to the lowest 5 percentiles or the highest 5 percentiles of the current account imbalances or winsorize them. They produce similar results. We report the results when we exclude the outliers in Table 2. In the first column of Table 2, we only include financial structure, financial development, and financial depth in the regression and use country and year fixed effects as controls. In Columns (2)–(6), we progressively add more control variables.[8] In Columns (7) and (8), we conduct the analysis in the subsample of developing countries and developed countries respectively. According to the last two rows of Table 2, the error term of the difference equation is first-order correlated and second-order uncorrelated, which means that the classical assumption about the error term of level equation is satisfied. In the table, we report the robust standard errors, so the Sargan test of over-identification cannot be performed. We also use the conventional GMM standard errors and calculate the Sargan statistic. The test does not reject the null hypothesis of no over-identification. Furthermore, the Hansen test does not reject the null hypothesis in any of the specifications.

[Table 2 about here]

Financial structure is shown to significantly and negatively affect the current account in all regressions in the full sample, regardless of which groups of controls

[8] We also add labor compensation cost to GDP ratio on the basis of column (6)—to control the labor costs and effects of labor division. And financial structure is also significant at the 1% level.

are included. To gauge the economic significance of its effect, let us compare China and the United States in the period 1990–2007. The average values of financial structure of China and the United States in 1990–2007 were −0.75 and 0.77, respectively. If we use the parameter provided by Column (6) of Table 2, then the difference between these two countries' current account/GDP ratios should be 2.10 percentage points in the long run,[9] ceteris paribus. The observed average difference was 6.4 percentage points. Thus, financial structure accounts for about 32.8 percent of the difference between these two countries' current accounts.

Further analysis based on subsamples (Columns (7) and (8) of Table 2) shows that the impact of financial structure is significantly negative in developing countries, rather than in developed countries. This finding may provide some support for the financial service views: the bank-based versus market-based debate is of second-order importance for developed countries. According to this view, the first-order issue is the ability of the financial system to ameliorate information and transaction costs, not whether banks or markets provide these services (Levine, 1997). Financial structure may not be important for developed countries because, after many years of learning and cross-breeding, bank-based and market-based countries have both established their own advanced financial systems (the marginally significant coefficient for financial development suggests that this is the case). In contrast, in developing countries, the impact of financial structure is significant beyond the traditional measurement of financial development. These countries often adopted a dominant form of finance, either bank-based or market-based, from a particular early industrialized country (e.g., China from Japan and India from the United Kingdom) in their earlier days of modernization. They are still on the way of convergence so their financial structures still matter. Please note, however, that pooling developed and developing countries together does not significantly reduce the correlation between financial structure and the current account. This lack of significant reduction is so because developed countries generally have more developed capital markets than

[9] The effect is calculated as [0.77− (−0.75)]*0.999/ (1−0.277) =2.10. If we add labor compensation cost to GDP ratio as a control variable, the effect is [0.77− (−0.75)]*1.424/ (1−0.456) =3.98.

developing countries.

What about the effects of financial development and financial depth? As a matter of fact, they are either insignificant or unstable. Financial development (measured by the sum of private credit and stock market capitalization over GDP) is only marginally significant in the developed country subsample. Financial depth (measured by M2 over GDP) fares better, being weakly significant in some regressions. We have also tried to control for the ratio of private credit to GDP and stock market capitalization to GDP separately. The results do not change qualitatively. In sum, standard measures of financial development do not adequately capture the effects of a country's financial system on its current account.

As for other control variables, the real effective exchange rate and government budget balance are significant and have the expected signs. To avoid its confounding effects because of possible endogeneity, we only add the real effective exchange rate in Column (6). Real depreciation is found to be strongly associated with a higher current account surplus. The current account displays an inverse U curve with respect to the log of income per capita, although the nonlinear part of the effect is not statistically significant in most regressions. The impacts of the two demographic measures are not significant.

C. *Identifying Separate Effects on Corporate, Household, and Government Savings*

A country's national savings is the sum of its corporate, household, and government savings. In this subsection, we examine the financial structure's effects on corporate, household, and government gross and net savings, respectively. Following the method of the Organization for Economic Co-operation and Development (OECD) Economic Outlook No. 82 (OECD 2007), gross corporate savings are defined by "gross value added − compensation of employees − taxes less subsidies on production − net interest paid − dividend paid − direct taxes paid + net property income received + net other current transfers received." Subtracting capital formation in the corporate sector from gross corporate savings, we then get net

corporate savings. Gross savings of households and the government are defined by subtracting their respective consumption expenditure from their respective disposable income. Their net savings are obtained by deducting capital depreciation from their gross savings. Dividing the various categories of savings by GDP, we get the relevant saving rates. Each item of sector savings is obtained from the national account statistics of the United Nations (UN) statistical department.

We first investigate which sector contributes more significantly to the current account. Pairwise correlations between the current account/GDP ratio and sectoral saving rates are shown in Table 3. The left-side panel is for the gross saving rates, and the right-side panel is for the net saving rates. Government savings, whether they are measured in gross terms or in net terms, are not shown to have any significant impact on the current account. In contrast, the current account is significantly linked with both corporate and household savings regardless of how they are measured. However, the correlation coefficients are much larger when they are measured in net terms. In addition, corporate savings have larger correlation coefficients than household savings.

[Table 3 about here]

Furthermore, the scatter plots of current account to GDP ratio and the corporate saving rate and of current account to GDP ratio and the net corporate saving rate, which are shown in Figure 2 and Figure 3 respectively, also demonstrate that there exists a clear and positive connection between corporate savings and the current account.

[Figures 2 and 3 about here]

Then we conduct an econometric study for the impacts of financial structure on the net saving rate by sectors. The econometric model is basically the same as the one in Equation (1) with the only difference being the change of the dependent variable. The results are shown in Table 4. To save space, we only present the regression coefficients for financial structure, financial development, and financial depth. For each type of savings, we run two regressions, one with the whole sample and the other with the 5 percent of the two tails of the dependent variable excluded. Financial

structure has a significant and negative effect on the net corporate saving rate in both samples, but has no significant effect on either household or government saving rate. That is, financial structure influences the current account mainly by affecting corporate savings. In contrast, neither financial development nor financial depth has a consistent effect on any of the three types of savings. If anything, financial development is shown to even boost net household and government saving rates when outliers are excluded.

[Table 4 about here]

D. *Robustness Checks*

Our baseline results in Section III.B warrants further econometric and economic scrutiny. In this and the next subsections, we conduct a rich set of robustness checks. The first set of results is presented in Table 5. For each robustness check, we rerun all the six full-sample regressions in Table 2 by GMM. To save space, we only report the coefficients on financial structure, financial development and financial depth based on the specification of Column (5) of Table 2.

[Table 5 about here]

Our first concern is that the correlation between financial structure and the current account may be driven by different time trends that individual countries experienced in the sample period. To exclude this possibility, we add the interaction term of country dummies and the calendar year to control country-specific time trends. As the first column of Table 5 shows, the effect of financial structure is still highly significant.

Our second concern is the role of financial centers. Caballero et al. (2008) show that countries with international financial centers are more likely to run deficits. At the same time, such countries usually have a more market-based financial system. This could create a spurious correlation between financial structure and the current account. In our sample, the United States, the United Kingdom, Japan, Germany, Singapore, and Switzerland are financial center countries. We exclude these countries and present

the new results in Column (2) of Table 5. The results are qualitatively unchanged. In particular, the coefficients of financial structure not only remain significant, but also do not change much in magnitude.

Next, we exclude oil producers and African countries from our sample because previous studies, such as Chinn and Prasad (2003), have found that the analysis of current account imbalances may be sensitive to the inclusion of these resource-rich countries. We define oil producers as countries whose oil production exceeds 1 percent of the world output. Column (3) of Table 5 presents the results. Financial structure is still significantly negative.

Our fourth concern is firms' overseas listing. Firms may not be subject to domestic financial frictions if they are listed overseas. In other words, the financial structure of a particular country may matter less if more of its firms are listed overseas. But if firms can be listed overseas, they are usually big ones. As a result, overseas listing will not affect a country's current account balances because our empirical results in the next section will demonstrate that financial structure's effect on corporate savings is mainly through small and medium-sized firms. However, to provide a robust exclusion of this potential factor, we compile a dataset of the country origins of companies listed in NASDAQ and match it with our country dataset. NASDAQ is one of the main stock markets where foreign firms are listed overseas and provides a good sample for our purpose. We adopt two methods to measure a country's reliance on NASDAQ. The first is simply a dummy indicating whether a country has companies listed in NASDAQ, and the second is the number of companies listed in NASDAQ of a country divided by its GDP. The two measures return similar results. Column (4) of Table 5 presents the results using the second measure.

Our fifth concern is whether our baseline results are robust to the consideration of financial crises. Our sample period is from 1990 to 2007, during which the effects of the recent global financial crisis had not yet been realized. However, to prevent any financial crisis from contaminating the effect of financial structure, we add a dummy for financial crises in the baseline regression as a robustness check. The dummy is defined in the following way: it equals 1 if a country experienced a financial crisis in

a specific year, otherwise it equals 0. The definition of crisis follows the method of Beck et al. (2006). We try all the three definitions of the financial structure and obtain similar results. Indeed, the coefficients before financial structure even increase slightly in absolute value. Column (5) of Table 5 presents the results.

Our last robustness check is about the relationship between current account and investment. A possibility is that a market-based economy tends to run deficits because its investment rate is high. This concern can be dealt with by either studying net corporate savings or studying the investment rate itself. The former is done in Section III.C where we find that the net corporate saving rate is still negatively correlated with the financial structure. In the latter case, we regress the investment rate on financial structure using the specification of Equation (1). None of the regressions shows that financial structure has a significant impact. For the record, Column (6) of Table 5 presents the results obtained by replicating the specification of Column (5) of Table 2.

An additional issue demands attention. From a general-equilibrium perspective, it is possible that corporate savings are lower in market-based economies because corporations have to directly face investors and thus may distribute more of their profits to shareholders (which imply some substitution between household and corporate savings). As a result, the effect of financial structure on national saving rate may become indeterminate or even smaller if the household saving rate is high. That is, corporations save less not because it is easier for them to get external finance, but because they distribute more profits and household savings may be affected as a consequence. However, empirical evidence implies that this is unlikely to be an issue. First, from last subsection, financial structure's impact on the household sector is not significant. Moreover, in the subsequent sections where we study firm-level data, we will show that firms' saving behavior is heterogeneous; smaller firms are affected by financial structure whereas large firms, which distribute their profits more often, are not. This means that the practice of profit distribution is not systematically linked with financial structure. Furthermore, in Section V, we will show that even if we take into account dividend payout and use firms' net savings as the dependent variable, the financial structure's effect is still evident and statistically significant.

E. *Additional Robustness Checks*

We have thus far explored within-country variations. We now also report some between-country results to strictly avoid spurious correlations caused by time trends.

First, we convert our main measure of financial structure (stock market capitalization/bank loans to the private sector) into a dummy variable and rerun regression (5) of Table 2 employing the fixed-effect static panel model. The dummy variable equals 1 if our main measure of financial structure is larger than the median value of the sample in a particular year and it equals 0 otherwise. The results are presented in the first column of Table 6. Again, only the results related to the financial sector are shown in the table and other results are omitted.

Second, we run a static panel regression on Equation (1) to get the between-estimator for financial structure. We also average out over the whole sample period and run a cross-sectional regression. The former excludes within-country variations contributing to the regression but, in the meantime, allows cross-board time variations to contribute whereas the latter even excludes cross-board time variations. Their results are presented in the second and third columns of Table 6.

Our last concern is that our baseline results of financial structure can still suffer from the omitted variable problem even if we have added many controls. In addition, there could also be a simultaneity problem between the current account and financial structure. To deal with these problems, we adopt an instrumental variable approach on the cross-sectional data and report the results in Column (4) of Table 6. Following La Porta et al. (1997, 1998) and Acemoglu and Johnson (2005), we use a country's legal origin as the instrumental variable (IV) for its financial structure. La Porta et al. (1997, 1998) demonstrate that common law countries have more developed capital markets. So our IV is constructed as a dummy variable for the common law. In the meantime, a country's legal origin was usually determined before the Second World War and thus is predetermined relative to our sample. For this reason, we can treat it as exogenous. Furthermore, there is no theory or empirical evidence suggesting that legal origins

have a direct effect on countries' current account balances. Therefore, the legal origin is a robust IV for a country's financial structure.

[Table 6 about here]

In Table 6, the financial structure is still significant even if we convert it into the dummy variable, which does not vary much over time. Although the between-estimator for financial structure is not significant, its direction remains negative. The cross-sectional OLS regression for financial structure is marginally significant. But more reassuringly, the method of two-stage least squares (2SLS) yields a significant result. In contrast, financial development and financial depth's impacts on current account are not stable and, in most cases, not significant. To summarize, a country's financial structure appears to be a more robust predictor for its current account balances than the size and depth of its financial sector.

IV. Financial Structure and Internal Finance: Evidence from the World Business Environment Survey

In the previous section, we have found that a country's financial structure significantly affects its aggregate corporate savings. In this section, we use firm-level data to provide a more structured study. Our theoretical model in Appendix 2 suggests that large firms have access to external finance regardless of a country's financial structure. Below, we will show that smaller firms have more restricted access to external finance in countries with a relatively less developed capital market, and therefore have to rely more on retained savings to finance their investment. This provides a concrete channel for a country's financial structure to affect its aggregate corporate savings and current account.

The World Bank's World Business Environment Survey (WBES) in 1999 covered firms in both developed countries and developing countries and had a wide coverage of small and medium-sized enterprises (SMEs). Information on financing patterns and

firm-level basic information is available for nearly 2,000 firms in 43 countries,[10] 11 of which are developed countries. The proportions of large, medium, and small firms in the survey are about 20 percent, 40 percent, and 40 percent, respectively. In the survey, enterprise managers were asked to identify the shares of firms' financing in the most recent investment coming from retained earnings, equity, local commercial banks, and so forth. This information allows us to directly construct the dependent variable, the share of retained earnings in a firm's overall financing, which we are interested in.

A. *Baseline Results*

The WBES was a one-time survey, so only a cross-sectional analysis is possible. This limitation is not a fatal drawback, as our main concern is cross-country variations anyway. Our main explanatory variable is still a country's financial structure. To avoid the noises caused by annual data, we take the average of this variable for the period 1995–1999; Beck et al. (2008) adopt similar methods. Consistent with the three measures for financial structure we introduced in the last section, we have three kinds of averages. Here we first get the log ratio of average stock market total value to average private credit and the log ratio of average stock market capitalization to average private credit, and then we use the first principal component of these two log ratios as the measure for financial structure. We have also tried other indicators and found that the results are similar. For a comparison, we also include financial development in our regressions, which is also the average in the period 1995–1999.[11]

Following Beck et al. (2008), our control variables fall into two categories: country-level variables and firm-level variables. At the country level, we control GDP per capita and the growth rate of GDP per capita. We also add two firm-level variables measuring firms' perception of judiciary quality and corruption to reflect a country's general institutional environment. Both are obtained from the WBES survey. On a

[10] The list of country names are reported in Appendix 1.
[11] Financial depth is not included because we've found that it was not significant at all, and the literature usually focuses on financial development's impacts on firms' financing behavior.

scale of 1 to 4, firms were asked to rate the obstacles created by the judiciary system and government corruption, respectively, where *1* means no obstacle and *4* indicates major obstacles. La Porta et al. (1997, 1998) emphasize the role of legal determinants in external finance. Among the other firm-level variables, we have total sales in 1998, firm age and its square, growth of investment in 1999, as well as four dummies indicating, respectively, whether the firm is a manufacturing firm, a foreign-owned firm, a government-owned firm, and an exporter firm. We also control regional dummies.[12] Lastly, we cluster standard errors at the country level to allow for correlations among firms in the same country.

[Table 7 about here]

We employ OLS in our baseline estimations.[13] Table 7 reports three sets of results obtained on three samples: the full sample, the sample of SMEs and the sample of large firms.[14] For each sample, two regressions are conducted, one controlling for financial development and the other not. Consistent with our hypothesis, financial structure is shown to significantly impact firms' reliance on retained earnings to finance their investment in the full sample and the SMEs sample, but not in the sample of large firms.

To gauge the economic significance, let us consider the difference between China and the United States again. The values for the financial structure of China and United States are −1.07 and 0.95, respectively. If we use the point estimate in the second column of Table 7, the difference in the fractions of financing coming from retained earnings between these two countries is 3.19, ceteris paribus. The average values of Chinese and American firms' retained earnings are 57.79 and 34.94, with a difference of 22.85. Therefore, financial structure accounts for 14 percent of the observed dispersion between the two countries.

The effects of the financial structure can be contrasted with the effects of financial

[12] We have following regions: Central and Eastern Europe, East Asia, South Asia, Latin America, and OECD.

[13] Because the observations are censored between 0 and 100 for the share of retained earnings, we also use a two-sided Tobit model in our estimation and found similar results.

[14] The WBES defines small firms, medium-sized firms, and large firms as those whose employees are 5–50, between 51 and 500, and more than 500, respectively.

development. It is striking to find that financial development is shown to have no significant effect on the share of retained earnings in any of the three samples. Beck et al. (2008) study the effect of financial institutions' credit to the private sector divided by GDP (private credit) and the value of shares traded on the stock exchange to GDP on firms' external financing and only find that private credit plays a significant role. They did not take into account the impact of financial structure, though.

B. Endogeneity of Financial Structure

Our firm-level study may also suffer from the kind of endogeneity problem we coped with for our country-level study. In particular, the WBES does not provide data for us to have a complete set of firm-level controls that are commonly used in the corporate finance literature, such as the tangibility and financial health of firms. As in our country-level study, we still use the common law dummy as the IV for financial structure. We drop financial development in IV regressions because it is not significant in Table 7 and it may also be endogenous, and we have only one IV. The results are displayed in Table 8.

[Table 8 about here]

Since the endogeneity test indicates that we reject the null hypothesis that financial structure is exogenous, IV method is a better alternative. In Table 8, we report both the first-stage and second-stage results. The legal origin is highly correlated with financial structure in the first-stage regressions. The F-statistics of the first-stage regressions are all significant at the 1 percent significance level, and they are larger than 10, satisfying the rule of thumb proposed by Stock, Wright, and Yogo (2002). That is, our instrumental variable is not a weak instrument. The second-stage regressions return qualitatively similar results to those presented in Table 7, although the magnitudes of the coefficients of financial structure have become much larger, a common problem observed in many IV regressions.

C. *More Robustness Checks*

Similar to our country-level analysis, our firm-level analysis may also be affected by the presence of financial centers. After excluding the United States, the United Kingdom, Germany, and Singapore, which are countries with financial centers in our sample, we continue to find that financial structure significantly affects the propensity to accumulate retained earnings by SMEs, paralleling with the results in Table 7 and Table 8. We do not report the regression results to save space.

The WBES contains information on firms' self-appraisals of the overall financial constraints that they faced. They are rated on a scale from 1 to 4 with larger values indicating more serious constraints. Because the transmission channel implied by our theory is all about the difficulties in accessing external finance, it is interesting to explore whether firms' self-appraisals match our theoretical underpinnings. Instead of running regressions, here we conduct several cross-group comparisons to highlight the results. First, we check the pairwise correlations between countries' financial structure and firms' appraisals on general financial constraints. The correlation coefficient is −0.08, which is significant at the 1 percent level. That is, firms in a more market-based country feel less constrained in getting external finance. Second, we compare the mean scores of the overall financial constraints between SMEs and large firms. SMEs do have higher scores of general financial constraints and the *t*-statistics for the gap is 5.18. Lastly, we check the pairwise correlations between countries' financial structure and SMEs' appraisals and large firms' appraisals, respectively. The correlation coefficient for SMEs is −0.09, significant at the 1 percent level, but the correlation coefficient for large firms is −0.04, not significant at the 10 percent level. That is, financial structure affects SMEs, but not large firms. All these results are consistent with our theory and provide supplementary evidence for our firm-level analysis.

V. Financial Structure and Corporate Savings: Evidence from the GCICAD

We showed in the last section that SMEs in a more market-based country tend to

rely less on retained earnings to conduct investment than their counterparts in a country with less developed capital market. In this section, we will use data provided by the Global COMPUSTAT Industrial and Commercial Annual Database (GCICAD) to explore the relationship between financial structure and firms' saving behavior. In addition to allowing us to directly compute a firm's net savings, the GCICAD also offers a panel structure. The sample we have obtained covers the period 2000–2007. We chose this time window for practical reasons. First of all, it is the period that we can compile a complete panel. In addition, we are more concerned with the cross-sectional variations of financial structure than its variations across time, so a long panel may not help us much. Moreover, the original financial figures in the dataset are denominated in national currency and the euro-zone countries experienced a shift from their previous currencies to the euro in 1999 or 2000, depending on their timetables of adopting the euro. Lastly, we have intentionally avoided the years after the recent global financial crisis.

The GCICAD covers financial information for more than 10,000 listed firms in 30 countries, 16 of which are developed countries.[15] We study net corporate savings/net assets to match the theoretical predictions of the model. Following Bayoumi et al. (2010), net corporate savings is calculated as "net income + depreciation − dividends − capital expenditure." All financial figures are converted into dollars using the nominal exchange rates obtained from the IMF's IFS database. We omit financial firms (SIC codes between 6000 and 6999) from our analysis as their saving behavior is likely to be quite different from other firms. We do not include U.S. firms in our sample because the number of U.S. firms in the database is much larger than the number of firms from any other country. In addition, the U.S. has the largest and strongest financial centers in the world; excluding U.S. firms thus allow us to avoid the potential issues caused by a strong financial center.

We perform two sets of analysis using the GCICAD data. The first set is panel analysis that controls for firm and year fixed effects. The second set of analysis explores the cross-sectional pattern of firms' net savings. Specifically, we average out

[15] The country list is in the Appendix 1.

the firm level data across time by country and carry out OLS and 2SLS regressions on the cross-sectional data thus created. To avoid the issue of simultaneity, macro variables (financial structure, financial development, log GDP per capita and the growth rate of GDP per capita) take their values of 1999. Similar to what we did with the WBES data, we also run 2SLS regressions using the common law legal origin as the IV for financial structure.

In addition to the macro controls introduced above, we add in the regressions a set of controls at the firm level. The GCICAD allows us to impose a large set of controls. Following Bates et al. (2009) and Baum et al. (2011), we include log assets, leverage (debt to asset) ratio, working capital to asset ratio, sales to capital ratio, cash to asset ratio, and net income growth, which control, respectively, firm size, external financing, liquidity, profitability, and firm growth. As market to book indicators may be subject to measurement errors (Erickson and Whited, 2000), we use one or two lags of growth of sales to control firms' investment opportunities as robustness checks.

[Table 9 about here]

Table 9 presents the results of the two-way fixed-effect analysis. Two sets of analysis have been carried out, one with the whole sample and the other deleting countries with financial centers. In each set of analysis, three regressions are conducted on the whole sample, small firms, and large firms, respectively. Small and large firms are defined by their log asset values using the median of the sample as the cutoff value. Although listed firms are usually large firms in terms of absolute numbers, there could be differences between relatively large firms and relatively small firms. We lag all the controls by one period to avoid the problem of reverse causality or simultaneity. Financial structure is shown to significantly reduce net corporate savings no matter whether we include financial centers or not. It is also significant in both the small firm sample and the large firm sample when financial centers are included, although its coefficient is larger in absolute value for small firms than for large firms. When financial centers are excluded, it is then only significant for small firms, but not for large firms.

In contrast, the effects of financial development are unstable at the best. For

example, financial development is significant for the whole sample and the small firm sample when financial centers are included, but is only significant for the whole sample when financial centers are excluded. That is, the impacts of financial development depend more on financial centers than those of financial structure.

We have done a wide range of robustness checks and found broadly similar results. Those include (a) lagging macro-level right-hand-side variables alone or firm-level control variables alone, (b) not taking lags of control variables, (c) controlling inventories and equipment assets to account for the tangibility of firms' assets, (d) substituting capital for assets to control for firm size, (e) excluding regulated firms or quasi-public firms, (f) excluding firms whose assets or sales growth rates are higher than 100 percent, and (g) defining the upper 30 percentiles of log asset as large firms and lower 30 percentiles as small firms. In addition, we study total corporate savings instead of net savings where total savings is defined as "net income + depreciation − dividends." The negative impacts of financial structure are preserved. Owing to space limit, we don't report those results in tables.

We then come to the results of cross-sectional analysis, which are shown in Table 10. In Columns (1)–(3), we report the regression results based on the full sample, and in Columns (4)–(6), the regression results based on the sample without financial centers are presented. Germany, Japan, Singapore, Switzerland, and the United Kingdom are financial centers in the sample. Because financial development may also be endogenous, but we only have one IV and it is mostly not significant in the previous analysis, we no longer control for financial development in the cross-sectional analysis.

[Table 10 about here]

From Table 10, we can see that financial structure is significantly negative both in the full sample and the sample excluding financial centers. Furthermore, taking into account the endogeneity problem, which is discussed in the previous section in detail, the use of IV estimations yields qualitatively similar results.[16]

To deal with the case of outliers, we also conduct the analyses based on subsample

[16] The control of industry fixed effect doesn't alter the qualitative results.

I, which keeps the 5th percentile to 95th percentile of net savings, cash ratio, and net income growth, and subsample II, which keeps the 5th percentile to 95th percentile of other firm level control variables and restricts to firms whose sales growth rate and asset growth rate are less than 100 percent. To save space, we don't report these results separately.

As a further robustness check, we have also tried to substitute the continuous measure of financial structure by the dichotomous dummy defined in Section III.E and rerun the regressions in Table 10. The results demonstrate that even with the dichotomous measure, financial structure is still significantly negative. The net savings of firms in a market-based country are significantly less than their counterparts in a bank-based country. Because of space limits, we do not report these results in separate tables.

Next we investigate the heterogeneities among firms of different sizes using the cross-sectional data. We rerun previous regressions in each sample by OLS and 2SLS and present the results in Table 11. From Table 11, the financial structure still poses a negative impact on firms' net savings, and such influence applies to small firms rather than large firms. Reassuringly, such patterns are robust to both OLS regressions and 2SLS regressions.

[Table 11 about here]

On balance, from the GCICAD of listed firms, we conclude that corporate savings in more market-based financial systems are significantly lower than those in more bank-based financial systems. Our results complement the evidence found with survey data.

VI. Conclusion

This paper empirically explores the current account imbalance from the perspective of financial structure and corporate savings. Our results show that a country's relative development level of its capital market has important implications for its corporate savings and current account. In particular, more market-based countries tend to run a

larger current account deficit (or a smaller surplus) than countries with an under-developed capital market. We also provide evidence for the underlying mechanism: with a less developed capital market, SMEs have to accumulate more retained earnings to finance their investment. Since SMEs are numerous in any economy, they collectively produce a higher level of corporate savings in countries with underdeveloped capital markets. In this sense, a current account surplus is not necessarily a sign of economic strength, but a reflection of its deficient financial system.

Our study has enriched the financial literature of global current account imbalances. Contrasting to the existing literature that emphasizes the absolute strength of the financial sector, our study has found that the structure of the sector plays a more significant role. Whereas we are not intended to refuse the existing literature, our results do suggest that a more structured view of the financial sector is warranted if we are to have a fuller picture of its links with global current account imbalances.

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TABLE 1. SUMMARY STATISTICS OF VARIABLES

	Mean	Std. dev.	Minimum	Maximum
Current account (% of GDP)	−0.53	7.26	−27.16	32.54
Financial structure	−0.41	0.96	−6.20	1.64
Financial development	1.35	0.96	0.06	4.71
Financial depth (M2 as % of GDP)	63.96	35.86	6.02	208.97
Gov. budget balance (% of GDP)	−1.49	3.93	−21.65	19.32
Log per capita GDP	9.05	1.48	5.46	11.19
Growth rate of per capita GDP (%)	3.91	2.77	−9.03	14.00
Old age–dependence ratio (%)	17.52	7.12	3.73	30.30
Young age–dependence ratio (%)	36.65	17.76	19.39	103.49
Trade (% of GDP)	49.00	124.00	0.02	102.10
Net foreign assets (% of GDP)	−27.93	55.14	−268.26	190.48
Log real effective exchange rate	4.58	0.12	4.01	4.95
Capital control	1.35	1.41	−1.14	2.50

Notes: GDP = gross domestic product; M2 = measure of money supply that includes cash, checking deposits, and “near money”; Std. dev. = standard deviation.

TABLE 2. FINANCIAL STRUCTURE AND THE CURRENT ACCOUNT: DYNAMIC PANEL REGRESSIONS BY GMM

Dependent variable: current account to GDP ratio								
	Full sample						Developing economies	Developed economies
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag of current account	0.350***	0.347***	0.341***	0.348***	0.367***	0.277***	0.387***	0.449***
	(0.068)	(0.066)	(0.068)	(0.068)	(0.073)	(0.091)	(0.075)	(0.094)
Financial structure	−0.780**	−0.808**	−0.744**	−0.778**	−0.855***	−0.999**	−0.927***	0.637
	(0.340)	(0.335)	(0.335)	(0.327)	(0.290)	(0.481)	(0.316)	(0.373)
Financial development	−0.199	−0.594	−0.949	−0.865	−0.453	−0.833	0.302	−1.379*
	(1.087)	(1.124)	(0.999)	(0.965)	(1.112)	(1.182)	(1.770)	(0.767)
Financial depth	−0.052*	−0.045*	−0.056**	−0.057**	−0.060*	−0.010	−0.052	−0.034
	(0.028)	(0.026)	(0.025)	(0.025)	(0.032)	(0.031)	(0.049)	(0.022)
Gov. budget balance		0.293***	0.325***	0.329***	0.349***	0.260**	0.414***	−0.013
		(0.091)	(0.088)	(0.087)	(0.084)	(0.111)	(0.092)	(0.052)
Log of GDP per capita			8.013	9.710	4.198	5.930	1.649	1.603
			(6.610)	(6.986)	(7.245)	(8.336)	(13.768)	(27.496)
Log of GDP per capita			−0.658*	−0.758*	−0.439	−0.151	−0.366	−0.373
squared			(0.395)	(0.417)	(0.436)	(0.501)	(0.863)	(1.403)
Growth of GDP			−0.187**	−0.189**	−0.204**	−0.038	−0.235**	−0.087
per capita			(0.078)	(0.078)	(0.082)	(0.086)	(0.095)	(0.113)
Dependence ratio				0.315	0.292	0.363	0.948	0.032
(old)				(0.283)	(0.256)	(0.280)	(0.610)	(0.250)
Dependence ratio				0.133	0.108	0.097	0.132	0.065
(young)				(0.112)	(0.098)	(0.155)	(0.157)	(0.188)
Trade/GDP					0.205	0.467*	0.192	1.194
					(0.183)	(0.244)	(0.209)	(1.931)
Capital controls					0.022	0.182	0.078	−0.178
					(0.272)	(0.405)	(0.358)	(0.215)
Net foreign assets/GDP					0.038**	0.044*	0.068***	−0.001
					(0.017)	(0.023)	(0.021)	(0.012)
Log real effective						−10.74***		
exchange rate						(2.806)		
Observations	1001	935	931	931	901	600	588	313
1st order s.c. *z* statistics	−4.39***	−4.41***	−4.42***	−4.52***	−4.64***	−3.84***	−4.33***	−3.49***
2nd order s.c. *z* statistics	−1.09	−1.10	−1.14	−1.12	−1.23	−1.43	−1.08	−1.38

Notes: GDP = gross domestic product; GMM = generalized method of moments; s.c. =serial correlation. The Hansen overidentification test does not reject the null hypothesis in any specification. We use the sum of private sector credit to GDP and stock market capitalization to GDP ratios as the measurement for financial development. The results are similar if we control these two variables separately. Robust standard errors are in parentheses; *, **, and *** indicate significance levels of 10%, 5%, and 1% respectively.

TABLE 3. PAIRWISE CORRELATIONS BETWEEN CURRENT ACCOUNT AND SECTORAL SAVINGS RATES

	Sectoral gross saving rate			Sectoral net saving rate		
	Household	Corporate	Government	Household	Corporate	Government
Correlation coefficient	0.176***	0.266***	0.033	0.249***	0.374***	−0.01
Observations	376	433	585	358	428	566

Notes: We report pairwise correlation coefficients in the table. *** indicates significance level of 1%. Corporate savings is calculated as gross value added − compensation of employees − taxes less subsidies on production − net interest paid − dividend paid − direct taxes paid + net property income received + net other current transfers received. Subtracting capital formation in the corporate sector from above indicator, we can get the net savings of corporate sector. We take the ratio of corporate savings and corporate net savings to GDP to get a country's gross corporate savings rate and net corporate savings rate. Gross savings by household and government sectors are estimated by subtracting consumption expenditure from disposable income. Net savings are obtained after deducting consumption of fixed capital (depreciation). Dividing them by GDP we get the relevant rates. Each item of sector savings for different countries across years (unbalanced panel data) is obtained from national account statistics from the statistical department of United Nations.

TABLE 4. FINANCIAL STRUCTURE AND THE SAVING RATE BY SECTORS

Dependent variable	Corporate net saving rate		Household net saving rate		Government net saving rate	
	Whole sample	5%–95% of dep. var.	Whole sample	5%–95% of dep. var.	Whole sample	5%–95% of dep. var.
Financial	−0.943*	−0.958**	−0.531	0.251	0.080	0.052
structure	(0.65)	(0.53)	(0.75)	(0.47)	(0.31)	(0.32)
Financial	0.768	1.477	0.824	0.970***	0.361	0.561**
development	(1.17)	(1.10)	(0.56)	(0.43)	(0.33)	(0.33)
Financial	−0.006	−0.030	−0.004	0.005	0.012	0.010
depth	(0.05)	(0.04)	(0.02)	(0.01)	(0.01)	(0.01)
Other regressors	yes	yes	yes	yes	yes	yes
Observations	236	232	194	180	284	273

Notes: Corporate savings are calculated as gross value added − compensation of employees − taxes less subsidies on production − net interest paid − dividend paid − direct taxes paid + net property income received + net other current transfers received. Subtracting capital formation in the corporate sector from above indicator, we can get the net savings of corporate sector. We take the ratio of corporate net savings to GDP to get a country's net corporate savings rate. Gross savings by household and government sectors are estimated by subtracting consumption expenditure from disposable income. Net savings are obtained after deducting consumption of fixed capital (depreciation). Dividing them by GDP we get the relevant rates. Other control variables are the same as those in the last column of Table 2. They are not listed to save space. Robust standard errors are in parentheses. *, **, and *** indicate significance levels of 15%, 10%, and 5%.

TABLE 5. ROBUSTNESS CHECKS

Dependent variable:	Current account					Investment
	(1) Adding country-specific time trends	(2) Financial centers excluded	(3) Oil producers & Africa excluded	(4) Considering overseas listing	(5) Considering financial crises	(6) Investment channel
Financial structure	−0.759**	−0.989**	−1.068**	−0.954**	−1.044**	0.394
	(0.31)	(0.50)	(0.43)	(0.48)	(0.48)	(0.29)
Financial development	−0.843	−0.562	−0.98	−0.687	−0.737	1.275**
	(0.75)	(1.40)	(1.00)	(1.13)	(1.10)	(0.59)
Financial depth	−0.123***	−0.022	−0.060**	−0.015	−0.014	−0.004
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)
Other regressors	yes	yes	yes	yes	yes	yes
Observations	703	547	306	616	616	637

Notes: In Column 1, we add the interaction term of country dummies and the calendar year to control country-specific time trends. The United States, the United Kingdom, Japan, Germany, Singapore, and Switzerland are countries with financial centers, and we exclude them in Column 2. For Column 3, we define oil producers as countries whose oil production exceeds 1% of the world output. Column 4 adds the number of companies listed in NASDAQ scaled by a country's GDP per capita, and Column 5 adds the dummy for financial crisis. The dependent variable is national investment to GDP ratio in Column 6. Robust standard errors are in parentheses.*, **, and *** indicate significance levels of 10%, 5%, and 1%.

TABLE 6. ADDITIONAL ROBUSTNESS CHECKS

Dependent variable: current account to GDP ratio				
	Dummy for financial structure	Between estimator	Cross-sectional OLS	Cross-sectional 2SLS
Financial structure	−0.744**	−0.532	−0.817^{+}	−4.170*
	(0.33)	(0.69)	(0.52)	(2.32)
Financial development	−1.103	2.173*	1.107	4.952
	(0.75)	(1.21)	(0.88)	(4.05)
Financial depth	−0.113***	−0.008	0.004	−0.058
	(0.02)	(0.02)	(0.02)	(0.11)
Other regressors	yes	yes	yes	yes
Observations	703	703	28	28

Notes: Dummy for financial structure equals 1 if our main measure (log ratio of stock market capitalization to private credit) is larger than its median value in the sample in each year and it equals 0 otherwise. We use the legal origin as the IV for financial structure. If we drop financial development, the results are similar. ***, **, ***, indicate significance level at 1%, 5%, and 10% respectively; + indicates that the *p* value is 0.12. Robust standard errors are in parenthesis.

TABLE 7. FINANCIAL STRUCTURE AND RETAINED EARNINGS BASED ON THE WBES

Dependent variable: retained earnings						
	Full sample		SMEs sample		Large firms sample	
financial	-1.554**	-1.579**	-2.154**	-2.188**	0.597	0.571
structure	(0.75)	(0.74)	(0.93)	(0.92)	(0.85)	(0.84)
financial	-1.545		-1.719		-4.063	
development	(4.69)		(4.94)		(3.95)	
Sales	-5.233	-5.094	-6.311*	-6.161	-3.406	-3.117
(lag value)	(3.48)	(3.52)	(3.62)	(3.68)	(4.45)	(4.32)
investment	0.009	0.009	0.019	0.019	0.003	0.002
growth	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Age	0.056	0.056	-0.057	-0.054	0.095	0.094
	(0.05)	(0.05)	(0.11)	(0.10)	(0.08)	(0.07)
Age	-0.0002*	-0.0002*	0.001	0.001	-0.0003**	-0.0003**
(square term)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
corruption	0.849	0.886	0.355	0.394	2.864	2.962
constraint	(0.74)	(0.75)	(0.93)	(0.93)	(2.00)	(1.99)
judicial	-0.228	-0.174	0.552	0.619	-3.932	-3.841
constraint	(1.07)	(1.06)	(1.08)	(1.09)	(2.53)	(2.52)
GDP per	0.001**	0.001**	0.001*	0.001*	0.001**	0.001**
capita	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP	-0.010	-0.002	-0.069	-0.061	0.167	0.193
growth rate	(0.15)	(0.15)	(0.16)	(0.16)	(0.16)	(0.15)
manufacture	0.220	0.194	-0.204	-0.280	2.736	2.800
	(2.81)	(2.81)	(3.56)	(3.59)	(4.21)	(4.22)
government	-4.815*	-4.780*	-2.364	-2.313	-6.981	-6.922
	(2.77)	(2.75)	(2.66)	(2.67)	(6.44)	(6.43)
foreign	1.276	1.290	1.620	1.621	2.245	2.340
	(1.97)	(1.98)	(2.56)	(2.57)	(3.79)	(3.78)
export	-3.856**	-3.898**	-3.356*	-3.430*	-2.178	-2.205
	(1.64)	(1.64)	(1.98)	(2.00)	(4.36)	(4.37)
Constant	44.88***	44.42***	43.82***	43.25***	45.34***	44.22***
	(6.07)	(6.15)	(6.98)	(7.00)	(8.37)	(8.29)
Observations	1927	1927	1477	1477	447	447

Notes: WBES = World Business Environment Survey. We report OLS regression results in the table. Tobit results are qualitatively similar. Financial structure is measured by the principal component of log ratio of average stock market total value to average private credit and average stock market capitalization to average private credit in 1995–1999. If we use other indicators of financial structure, which are introduced in the paper, the results are similar. We use the sum of private credit to GDP and stock market capitalization to GDP ratios as the measurement for financial development. The results are similar if we control these two variables separately. We control for region dummies and the coefficients before them are not reported to save space. Three firms in full sample don't provide information about their number of employees so we are unable to classify them into subcategories. Robust standard errors clustered at the country level are in parentheses. *, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.

TABLE 8. FINANCIAL STRUCTURE AND RETAINED EARNINGS BASED ON THE WBES: IV REGRESSIONS

Dependent variable: retained earnings						
	Full sample		SMEs sample		Large firms sample	
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
Financial		−12.73**		−14.55*		−9.349
structure		(6.38)		(7.52)		(5.96)
Legal origin	0.840***		0.811***		0.908***	
	(0.23)		(0.24)		(0.21)	
Sales	−0.106	−9.281*	−0.171	−10.23**	0.080	−7.354
(lag value)	(0.14)	(4.95)	(0.15)	(5.06)	(0.15)	(5.85)
Investment	−0.0004	0.013	−0.0003	0.017	−0.0007	0.008
Growth	(0.0004)	(0.02)	(0.0004)	(0.02)	(0.0007)	(0.03)
Age	0.001	0.020	0.004	−0.102	0.001	0.100
	(0.00)	(0.07)	(0.01)	(0.15)	(0.002)	(0.08)
Age	−0.0000001	−0.0001	−0.00003	0.0009	0.00001	−0.0003**
(square term)	(0.00001)	(0.0001)	(0.00004)	(0.001)	(0.00004)	(0.0002)
Corruption	−0.006	0.492	0.004	0.189	−0.055	2.048
constraint	(0.05)	(1.03)	(0.05)	(1.07)	(0.07)	(2.26)
Judicial	−0.059	−1.025	−0.063*	−0.411	−0.037	−3.875
constraint	(0.04)	(1.41)	(0.04)	(1.50)	(0.06)	(2.45)
GDP per	0.00002	0.0006*	0.00002	0.001	0.00002	0.001
capita	(0.00001)	(0.0004)	(0.00002)	(0.0004)	(0.00001)	(0.0004)
GDP	0.003	0.076	0.003	0.070	0.003	0.124
growth rate	(0.01)	(0.16)	(0.01)	(0.21)	(0.01)	(0.17)
Manufacture	−0.156	−4.036	−0.086	−3.361	−0.341	−0.937
	(0.15)	(3.56)	(0.12)	(4.19)	(0.24)	(5.14)
Government	−0.028	−1.103	−0.136	−0.284	0.143	−2.182
	(0.15)	(3.12)	(0.17)	(4.06)	(0.16)	(4.52)
Foreign	0.072	0.833	0.091	1.578	0.018	2.043
	(0.07)	(2.17)	(0.08)	(2.71)	(0.07)	(3.63)
Export	−0.078	−3.536*	−0.077	−3.012	−0.072	−2.418
	(0.07)	(1.98)	(0.08)	(2.31)	(0.08)	(4.25)
Constant	−0.704***	37.06***	−0.752***	37.18***	−0.566**	34.72***
	(0.24)	(5.40)	(0.25)	(6.52)	(0.24)	(7.12)
Endogeneity test	3.93*		3.68*		3.36*	
F in 1st stage	12.72***		11.54***		18.31***	
Observations	1927	1927	1477	1477	447	447

Notes: SME = small- and medium-sized enterprises; WBES = World Business Environment Survey. We use the English (common-law) legal origin of a country (dummy) as the instrument variable for financial structure and employ 2SLS estimation. If we control other indicators of financial structure, the results are similar. Three firms in full sample don't provide information about their number of employees so we are unable to classify them into subcategories. Robust standard errors clustered at the country level are in parentheses. *, **, and *** indicate significance levels of 10%, 5% and 1%, respectively. F in 1st stage regression tests whether the instrument is weak. The H_0 of the endogeneity test is that variables are exogenous.

TABLE 9. FINANCIAL STRUCTURE AND NET CORPORATE SAVINGS BASED ON THE GCICAD: PANEL ANALYSIS

Dependent variable: net savings to asset ratio						
	Whole sample			Financial centers excluded		
	All firms	Small firms	Large firms	All firms	Small firms	Large firms
Financial structure	−0.055***	−0.078***	−0.024***	−0.026***	−0.053***	0.004
	(0.006)	(0.009)	(0.009)	(0.009)	(0.015)	(0.013)
Financial development	−0.058***	−0.072***	−0.007	−0.048**	−0.013	−0.001
	(0.013)	(0.021)	(0.018)	(0.023)	(0.032)	(0.031)
Log GDP per capita	0.014***	0.007	0.018**	−0.040***	−0.048***	−0.033**
	(0.005)	(0.008)	(0.008)	(0.012)	(0.018)	(0.017)
GDP growth rate	−0.003***	−0.001	−0.004***	−0.007***	−0.006***	−0.42***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	−0.012	−0.026	0.087***	−0.019	−0.032**	0.083***
	(0.020)	(0.017)	(0.023)	(0.015)	(0.013)	(0.028)
Working capital	−0.051**	−0.085***	−0.036*	−0.048**	−0.076**	−0.052*
to asset ratio	(0.023)	(0.032)	(0.021)	(0.020)	(0.031)	(0.027)
Log asset	−0.017***	−0.042***	−0.006	−0.010**	−0.048***	−0.002
	(0.005)	(0.011)	(0.005)	(0.004)	(0.010)	(0.004)
Sales to capital	−0.0001	0.01**	−0.0003***	−0.0001*	0.01**	−0.0002***
ratio	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash to asset ratio	−0.042**	−0.031	−0.023	−0.042*	−0.035	−0.034
	(0.019)	(0.028)	(0.025)	(0.023)	(0.033)	(0.035)
Net income growth	0.072***	0.105***	0.040***	0.081***	0.097***	0.051***
rate	(0.007)	(0.010)	(0.009)	(0.013)	(0.018)	(0.019)
Observations	29323	13938	15385	14647	7311	7336

Notes: GCICAD = Global COMPUSTAT Industrial and Commercial Annual Database. We control for firm and year fixed effects in all regressions. All the control variables are lagged by one period. Robust standard errors are in parentheses. *, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.

TABLE 10. FINANCIAL STRUCTURE AND NET CORPORATE SAVINGS BASED ON THE GCICAD: CROSS-SECTIONAL ANALYSIS

Dependent variable: average net savings to asset ratio across 2000–2007						
	Full sample			Exclude financial centers		
	OLS	2SLS		OLS	2SLS	
		1st stage	2nd stage		1st stage	2nd stage
	(1)	(2)	(3)	(4)	(5)	(6)
Financial structure	−0.168**		−0.494***	−0.225**		−1.464***
	(0.064)		(0.150)	(0.097)		(0.540)
Legal origin		0.449***			0.174***	
		(0.012)			(0.014)	
Log of GDP per capita	−0.023	0.068***	0.003	−0.034	0.110***	0.096***
	(0.027)	(0.005)	(0.016)	(0.033)	(0.005)	(0.037)
GDP growth rate	0.001	0.065***	0.029**	−0.004	-0.016***	−0.022***
	(0.015)	(0.002)	(0.014)	(0.012)	(0.002)	(0.007)
Log of asset	0.083***	0.007*	0.076***	0.104***	− 0.002	0.084**
	(0.019)	(0.004)	(0.024)	(0.025)	(0.004)	(0.034)
Leverage ratio	0.768	0.098**	0.833*	0.973**	0.129	1.145***
	(0.528)	(0.045)	(0.503)	(0.445)	(0.080)	(0.388)
Working capital to asset ratio	2.987***	0.104**	3.057***	3.219***	0.136*	3.400***
	(0.687)	(0.045)	(0.750)	(0.649)	(0.079)	(0.710)
Sales to capital ratio	−0.000**	−0.001	−0.000***	−0.000***	0.002	−0.000***
	(0.000)	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)
Cash to asset ratio	−2.656***	−0.187	−2.805***	−2.597***	−0.085	−2.865***
	(0.284)	(0.046)	(0.523)	(0.291)	(0.056)	(0.733)
Net income growth	0.216	0.001	0.284	−0.001	− 0.343	−0.344
	(0.242)	(0.418)	(0.233)	(0.350)	(0.702)	(0.679)
Endogeneity test		7.42***			6.19**	
F in 1st stage		1293.1***			155.9***	
Observations	11534	7743	11146	7072	6388	7072
R-squared	0.661	0.329	0.662	0.674	0.361	0.660

Notes: GCICAD = Global COMPUSTAT Industrial and Commercial Annual database. We average the firm level indicators across 2000–2007 and carry out the firm level (Compustat global listed firms) cross-sectional analysis. Net savings is calculated as net income + depreciation – dividends − capital expenditure, as Bayoumi et al. (2010). In case of endogeneity problem, we take the value of macro variables (financial structure, financial development, log of GDP per capita and GDP growth rate) in 1999 and thus they are predetermined. We also run 2SLS regressions, with English (common-law) legal origin (dummy) as the IV for financial structure. In the columns (1)–(3), the regressions are conducted in the full sample. In the columns (4)–(6), we exclude countries with financial centers. These countries are Germany, Japan, Singapore, Switzerland, the United Kingdom, and the United States. Robust standard errors clustered at the country level are in parenthesis. ***, **, and * indicate significance level at 1%, 5%, and 10%, respectively.

TABLE 11. CROSS-SECTIONAL ANALYSIS OF FINANCIAL STRUCTURE AND NET CORPORATE SAVINGS BASED ON GCICAD: DICHOTOMOUS APPROACH

Dependent variable: average net savings to asset ratio across 2000–2007						
	OLS			2SLS		
	All firms	Small firms	Large firms	All firms	Small firms	Large firms
Financial structure	−0.208**	−0.278**	−0.011	−0.311***	−0.466***	−0.027
(dichotomy)	(0.08)	(0.13)	(0.04)	(0.10)	(0.17)	(0.03)
Log of GDP	−0.028	−0.009	0.007	−0.029	−0.002	0.006
per capita	(0.03)	(0.03)	(0.01)	(0.02)	(0.03)	(0.01)
GDP growth rate	−0.007	0.006	−0.021***	−0.001	0.022	−0.021***
	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)
Log of asset	0.067***	0.11	0.019***	0.071***	0.094	0.024***
	(0.02)	(0.10)	(0.01)	(0.02)	(0.11)	(0.00)
Leverage ratio	0.899**	1.172***	−0.233***	1.025**	1.306***	−0.295***
	(0.40)	(0.34)	(0.08)	(0.43)	(0.38)	(0.03)
Working capital	2.941***	3.231***	−0.168	3.224***	3.524***	−0.211***
to asset ratio	(0.63)	(0.63)	(0.12)	(0.72)	(0.73)	(0.07)
Sales to capital	−0.0001**	−0.0001***	−0.00001	−0.0001***	−0.0001***	−0.00001
ratio	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cash to asset	−2.687***	−2.870***	−0.527***	−2.684***	−2.827***	−0.474***
ratio	(0.25)	(0.26)	(0.14)	(0.48)	(0.56)	(0.07)
Net income	−0.0001	−0.0001	0.001	0.00003	0.00001	0.0011
growth	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Endogeneity test				4.37**	4.18**	1.48
F in 1st stage				7376.5***	2512.2***	3543.6***
Observations	12393	6164	6229	11850	5905	5945
R-squared	0.61	0.62	0.04	0.66	0.66	0.05

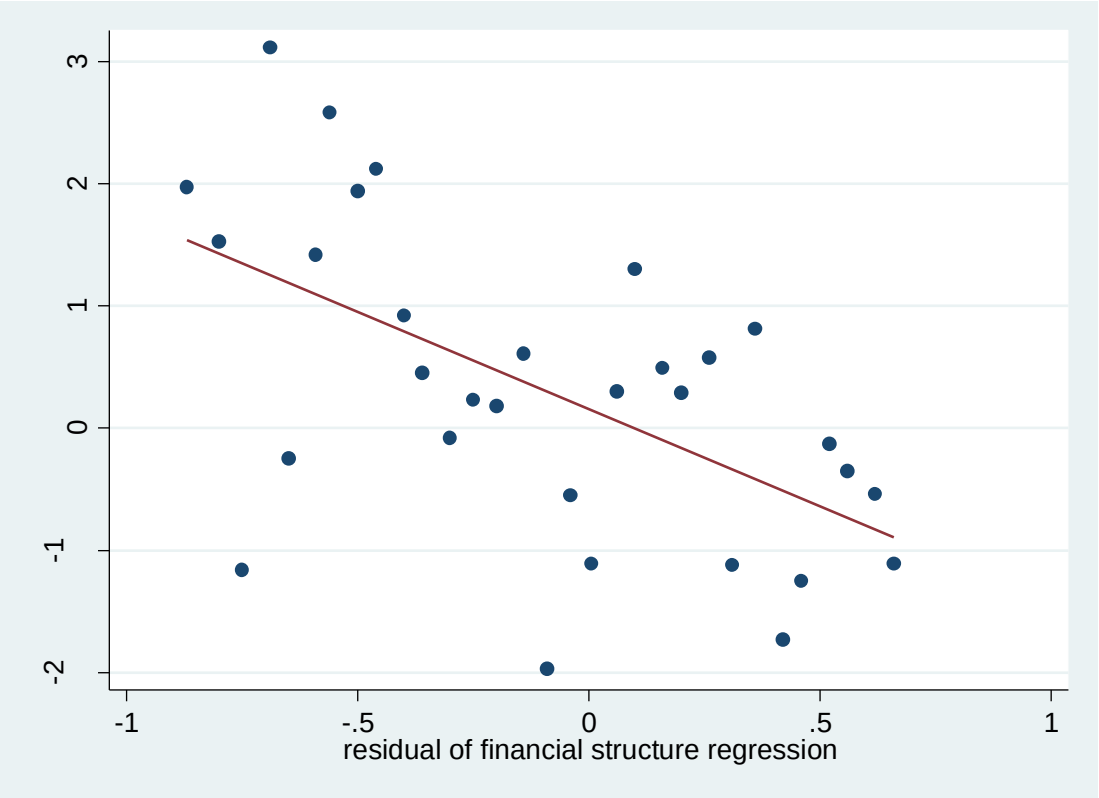
Notes: GCICAD = Global COMPUSTAT Industrial and Commercial Annual Database. Financial structure (dichotomy) equals 1 if financial structure is larger than the median value in the sample and it equals 0 otherwise. We divide firms into small firms and large firms according to their asset. If a firm's asset is larger than the median value of the asset in the sample, it is categorized into large firms sample and vice versa. We average the firm level indicators across 2000–2007 and carry out the firm level (Compustat global listed firms) cross sectional analysis in the full sample. Net savings is calculated as net income + depreciation – dividends − capital expenditure, as Bayoumi et al. (2010). In case of endogeneity problem, we take the value of macro variables (financial structure, log of GDP per capita and GDP growth rate) in 1999, and thus they are predetermined. We also run 2SLS regressions, with English (common-law) legal origin (dummy) as the IV for financial structure (dichotomy).

APPENDIX TABLE. THE MEAN VALUES OF KEY VARIABLES, 1990–2007

	Financial structure		Financial development		Current account balance		Corporate savings rate	
	1990–1999	2000–2007	1990–1999	2000–2007	1990–1999	2000–2007	1990–1999	2000–2007
Austria	−2.08	−1.46	1.02	1.34	−1.27	1.62	10.66	11.87
Bolivia	−2.97	−0.87	0.57	0.64	−5.91	2.73	7.68	18.11
Brazil	−0.48	0.38	0.59	0.75	−1.68	−0.50	11.57	10.94
Bulgaria	−3.03	−0.95	0.22	0.42	−2.41	−10.15	11.22	19.63
China	−1.07	−0.42	1.06	1.52	1.70	4.86	13.51	12.72
Colombia	−0.73	−0.26	0.43	0.51	−1.86	−1.18	8.22	9.83
Czech Republic	−1.03	−0.47	0.86	0.61	−2.95	−4.29	12.75	14.77
Denmark	0.00	−0.86	0.74	2.12	1.46	2.62	14.07	13.94
Estonia	−0.57	−0.48	0.49	0.85	−4.95	−10.85	9.04	16.20
Finland	−0.67	0.73	1.21	2.03	0.98	6.45	11.21	15.24
France	−1.03	−0.03	1.21	1.75	1.06	0.46	7.96	7.75
Germany	−1.28	−0.82	1.32	1.64	−0.56	3.27	8.06	9.16
Greece	−0.68	−0.08	0.53	1.23	−2.50	−8.38	6.17	10.08
Hungary	−1.25	−0.47	0.38	0.66	−4.47	−7.33	9.16	10.97
Italy	−1.08	−0.53	0.78	1.31	0.66	−1.28	6.76	7.64
Japan	−0.88	−0.38	2.58	2.01	2.36	3.36	12.01	16.69
Latvia	−1.04	−1.42	0.15	0.54	−1.56	−12.18	10.80	13.82
Lithuania	−0.15	−0.27	0.22	0.46	−7.28	−7.82	8.02	10.51
Mexico	0.24	0.52	0.53	0.40	−3.70	−1.49	9.10	10.58
Morocco	−0.65	−0.31	0.48	0.91	−1.26	1.91	11.50	12.70
Netherlands	−0.34	−0.32	1.51	2.61	4.10	5.41	12.13	15.08
Norway	−0.80	−0.48	0.86	1.18	3.94	14.73	12.96	12.56
Poland	−1.74	−0.25	0.24	0.52	−2.39	−3.40	7.13	9.33
Portugal	−1.29	−1.19	0.90	1.82	−2.81	−9.39	9.63	7.51
Romania	−1.59	−0.25	0.10	0.26	−5.27	−7.40	13.18	17.47
Slovenia	−1.66	−0.73	0.32	0.71	1.22	−1.81	9.35	11.23
South Africa	0.95	1.02	2.07	2.57	−0.02	−2.39	10.96	9.47
Spain	−0.87	−0.35	1.12	2.03	−1.79	−5.79	11.41	8.55
Sweden	0.44	0.23	1.12	2.05	0.17	6.12	13.44	12.76
Switzerland	−0.28	0.47	2.95	4.15	6.74	12.41	13.40	14.45
Tunisia	−1.66	−1.63	0.62	0.69	−4.24	−2.81	7.96	7.75
United Kingdom	0.06	0.00	2.32	2.87	−1.53	−2.32	9.60	11.17
United States	0.61	0.93	1.42	1.91	−1.57	−4.94	7.48	7.06

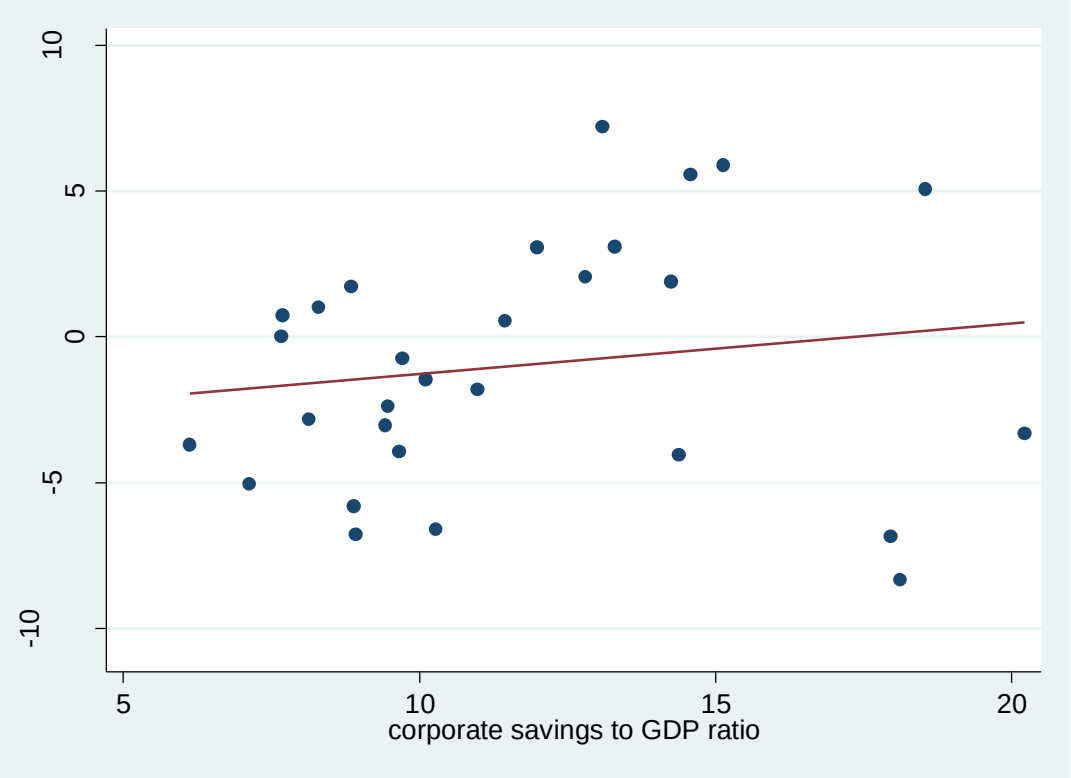
Notes: We only report countries whose corporate savings rate is available in both periods. Financial structure is the log of the ratio of stock market capitalization to private credit. Financial development is the sum of private sector credit to GDP and stock market capitalization to GDP ratios. Corporate savings is calculated as gross value added − compensation of employees − taxes less subsidies on production − net interest paid − dividend paid − direct taxes paid + net property income received + net other current transfers received. We take the ratio of corporate savings to GDP (percent) to get a country's corporate savings rate. The table reports the mean values of the above variables in the period of 1990–1999 and 2000–2007 separately.

FIGURE 1. CURRENT ACCOUNT/GDP AND FINANCIAL STRUCTURE



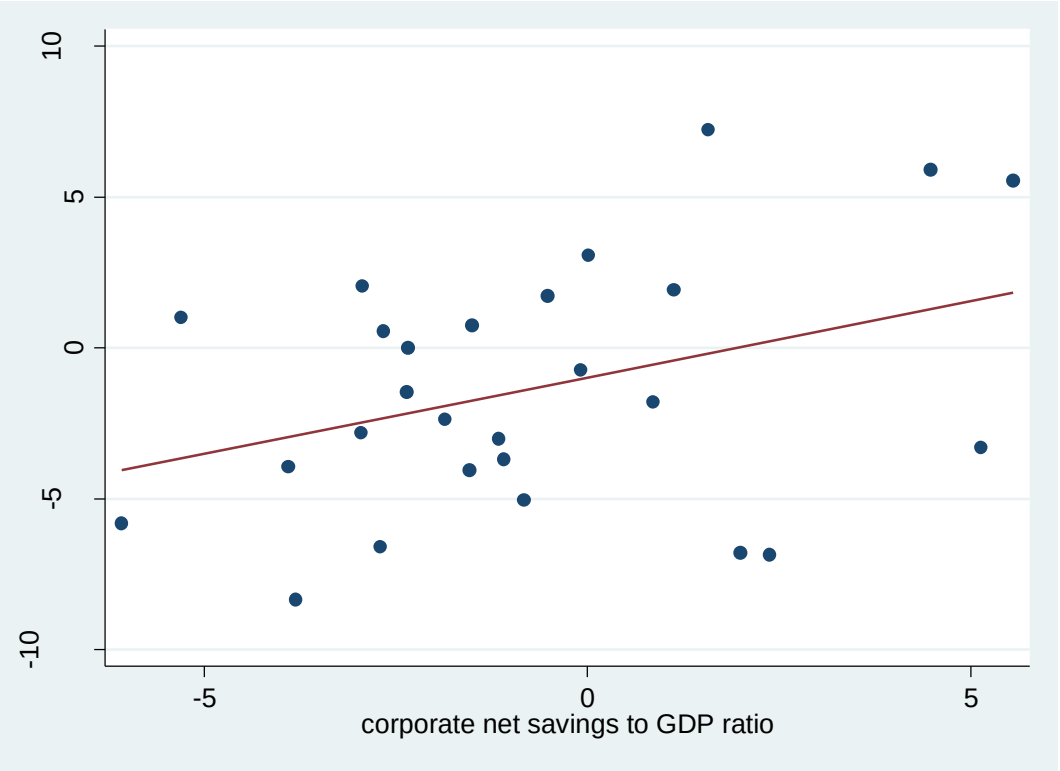
Note: We first sort observations (country-year) into equal-sized groups by the values of the variable on the horizontal axis, and then we plot the average values of the variable on the vertical axis against the mid-value of the bin on the horizontal axis. We use the Frisch-Waugh theorem to exclude the impact of financial development, real effective exchange rate, and two-way fixed effect. Financial structure is measured by the log ratio of stock market capitalization to private credit. Financial development is characterized by the sum of stock market capitalization to GDP and private credit to GDP ratios.

FIGURE 2. CURRENT ACCOUNT/GDP AND CORPORATE SAVINGS RATES



Notes: The two variables are averaged across 1990–2007 and aggregated to the country level. We exclude the two countries (Switzerland and Norway) with the largest current account surpluses (more than 10%). The slope is even steeper if we keep these two countries.

FIGURE 3. CURRENT ACCOUNT/GDP AND NET CORPORATE SAVINGS RATES



Notes: Notes are the same as those for Figure 2.

Appendix 1. List of Countries in the Firm-Level Analysis

(1) World Business Environment Survey:

Argentina, Bangladesh, Bolivia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Croatia, Ecuador, El Salvador, Estonia, France, Germany, Guatemala, Hungary, India, Indonesia, Italy, Kazakhstan, Lithuania, Malaysia, Mexico, Moldova, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Romania, Singapore, Slovenia, Spain, Sweden, Thailand, Trinidad and Tobago, Turkey, United Kingdom, United States, Uruguay

(2) Global COMPUSTAT Industrial and Commercial Annual Database:

Australia, Brazil, Chile, Denmark, Finland, Germany, Greece, India, Indonesia, Israel, Italy, Japan, Korea, Malaysia, Mexico, New Zealand, Norway, Pakistan, Philippines, Poland , Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Turkey, United Kingdom

Appendix 2. A Theoretical Model of Micro-foundations

In this appendix, we provide a theoretical model to offer the micro-foundations about firms' diverse internal financing behaviors in different financial systems, the main transmission channel of our empirical research. We demonstrate that firms in a market-based system face less external financing difficulties than their counterparts in a bank-based system, and as a result the corporate savings in a bank-based system are more than those in a market-based economy. Because current account imbalance is the difference between national savings and national investment and, as what will be exhibited in our empirical research, corporate saving is a critical component of national savings and contributes a great deal to the current account imbalance, the associations between financial structure (relative degrees of development of capital market and banking sector) and corporate savings explain why financial structure matters in the understanding of current account imbalance.

Our model is a simple extension of the Allen and Gale (1999) model. In the model, the main trade-off between choice of bank finance and market finance is the saving of information costs and the disagreement caused by delegation of decision rights. For the ease of the reader, in the following we reiterate most of the setup of the Allen and Gale (1999) model while presenting the new elements that we add to it.

Consider an economy where there is a continuum of risk neutral investors. Each investor is endowed with one unit of capital to invest. There are *K* different types of firms and projects (each firm has one project). Each type has a fixed number of projects. Each project needs *I* units of investment. The total number (measure) of investors is *MI*. Investors are ex ante identical. To highlight the role of financing costs in determining direct and indirect finance, we assume that investors can pay a uniform cost, *c*, say, instead of a project-specific cost as assumed by Allen and Gale (1999), to get to understand the project. After paying the cost, for projects of type *i* with probability $0 \leq \alpha_i \leq 1$, they are optimistic about the projects and think that these projects will obtain a net expected return of $H > 0$ per unit of investment and with probability $1-\alpha_i$, they are pessimistic about the projects and anticipate that the expected per-unit net return of the projects is $-H < 0$.[17] The opportunity cost of one unit of fund is zero, that is, the net return of one unit of fund is zero if investors don't invest and keep the money.

Under direct finance, individual investors pay the cost and become either optimists or pessimists and will only invest if they become optimists. Under indirect finance, individual investors form an intermediary (bank) and delegate the search to a randomly selected manager. For any informed manager who becomes an optimist, the probability that any uninformed investor agrees with him (i.e., being an optimist) is $0 \leq \beta_i \leq 1$. As Allen and Gale (1999) point out, β_i can be thought as the measure of correlation between individual investors' beliefs and $1 - \beta_i$ thus measures the diversity of opinions among investors. On the other hand, when the informed investor is a pessimist, the probability that an uninformed investor disagrees with him is β_i'. As in Allen and Gale (1999), we will see that only β_i matters for any project that receives indirect finance.

As a result, a project can be fully characterized by two parameters, α_i and β_i, the former describing an informed investor's probability of being an optimist about the project and the latter

[17] Instead of $-H$, Allen and Gale (1999) assume that the pessimistic return is *L*. We assume $-H$ purely for the ease of exposure.

describing the probability that any uninformed investor agrees with an informed investor when the informed investor is an optimist. In a sense, α_i is a measure of the average opinion about type-*i* projects among the investors and $1 - \beta_i$ is a measure of the dispersion of opinions among the investors. For theoretical tractability, it is instrumental to assume that any pair of α_i and β_i is a random draw from a bivariate uniform distribution in the region $[0 \leq \alpha_i \leq 1, 0 \leq \beta_i \leq 1]$.

The key change we have made to the Allen and Gale (1999) model is that now we assume that the cost an investor pays to become informed is uniform instead of project specific. In a sense, therefore, our model is a special case of the Allen and Gale (1999) model. We assume a uniform cost to broaden its interpretation. Allen and Gale (1999) give it a narrow interpretation of the cost incurred when one collects necessary information to get informed. We would like to broaden it to include any cost involved in the pre-investment period such as legal fees, insurance fees, and fees paid for regulatory procedures. As La Porta et al. (1997, 1998) have empirically shown, a significant factor determining the magnitudes of these costs is the protections offered by the legal system to individual investors; countries offering fewer protections or with weaker enforcement of laws have higher financing costs. La Porta et al. (1997, 1998) deliver empirical evidence that countries with higher financing costs (noticeably countries with the French legal tradition) tend to have smaller equity and bond markets than countries with lower financing costs (such as the countries with the common law tradition). That is, financing cost is a significant factor determining whether a country has a larger market of direct finance. In our case, we will show that the cost *c* (thereafter we will refer to it by the financing cost) shifts the ratio between direct and indirect finance for a given distribution of (α_i, β_i).

There is a sequence of dates t=1, 2, ... and the population of the projects and investors are constant in each date.[18] We strictly follow the assumptions of Allen and Gale (1999). The followings are some of the key assumptions. Firms are passive and they simply allow investors to investigate the projects until enough investors have been enrolled in. An investor investigates one project per period until one project is found that the investor wants to finance. The discounting factor is 1, and thus investors are indifferent about how long it takes to find a proper project. However, they do not delay unnecessarily. Investors, individually or in consortium, are randomly matched with projects. There are more projects than the amount of available capital, so each investor can find a project to invest in if desired. The firms that do not get external finance have to rely on their own funds (such as retained earnings) to finance. Some types of projects are more profitable than others, but because the number of each type is limited, firms with more profitable projects are able to collect some rents. Investors make a side payment p_i in per-capita terms to type-*i* projects in addition to the capital needed for the investment. Allen and Gale (1999) show in detail how p_i is determined in equilibrium by the marginal type of project that is just worth financing.

Investors can choose direct (market) finance or indirect (intermediated) finance. For direct finance, they make their own decisions about whether to invest. Therefore, after paying the cost *c*, if they are optimists, they will invest in type-*i* projects and get $H - p_i$, and if they are pessimists, they will keep on searching. We will use V^* to denote the value of continuing to search in equilibrium. It will also be the equilibrium payoff for a typical investor. Each investor has to pay *c* to evaluate a project each time. Thus, the payoff for direct finance for type-*i* projects is:

[18] That is, as soon as a project is funded, it is replaced by an identical project, and as long as an investor funds a project, that investor is replaced by an identical investor.

$$V_i^D = \alpha_i(H - p_i) + (1-\alpha_i)V^* - c$$

In equilibrium $V^* = V_i^D$ so we get:

$$V_i^D = H - p_i - \frac{c}{\alpha_i}. \quad \text{(A1)}$$

The advantage of employing indirect finance is to save the financing cost *c*. Following Allen and Gale (1999), investors only need to pay their own shares of the costs under indirect finance. The drawback of indirect finance is that investors delegate the decision rights to an agent who might invest in a project that the investors would not invest on their own decision. Information is valuable to the intermediary only if the investment decision depends on the outcome of obtaining information. Therefore, consistent with Allen and Gale (1999), we will focus on the case where $\beta_i' H + (1 - \beta_i')(-H) < 0 < \beta_i H + (1 - \beta_i)(-H)$. That is, if it is worthwhile to form an intermediary, the net return conditional on the manager being optimistic (pessimistic) is positive (negative) and everyone agrees to invest if and only if the manager is an optimist. This actually requires $1 \geq \beta_i > 0.5 > \beta_i'$.

The payoff for a type-*i* project under indirect finance is:

$$V_i^{ID} = \alpha_i[\beta_i H + (1-\beta_i)(-H) - p_i] + (1-\alpha_i)V^* - \frac{c}{I}.$$

Indirect finance is optimal if and only if $V^* = V_i^{ID}$. Thus, in equilibrium we get:

$$V_i^{ID} = (2\beta_i - 1)H - p_i - \frac{c}{\alpha_i I}. \quad \text{(A2)}$$

For any project type that does receive finance, p_i is nonnegative. For any project that is worth investing, V_i^D or V_i^{ID} has to be nonnegative and a comparison between them determines which kind of financing method is chosen. The following proposition then links the cost of finance and the choice of financing method.

Proposition 1: An economy with a smaller financing cost *c* tends to have more projects financed by direct finance and less by indirect finance. In other words, it is more market-based.

Proof: Taking the difference between the payoffs under direct finance and indirect finance for type-*i* projects we get:

$$V_i^D - V_i^{ID} = H - \frac{c}{\alpha_i} - [H(2\beta_i - 1) - \frac{c}{\alpha_i I}] = 2H(1-\beta_i) - \frac{c}{\alpha_i}(1 - \frac{1}{I}). \quad \text{(A3)}$$

As Figure A1 shows, for a given *c*, the region $[0 \leq \alpha_i \leq 1,\ 0 \leq \beta_i \leq 1]$ is divided by the curve $\alpha_i = c(I-1)/[2HI(1-\beta_i)]$ into two smaller regions. In region A, direct finance dominates indirect finance; in region B, indirect finance dominates direct finance. However, not all the

projects in region A get direct finance; in the same vein, not all the projects in region B get indirect finance because some of the projects cannot make a profit at all. To make a profit, one requires V_i^D or V_i^{ID} to be nonnegative. Notice that for the last project to be financed, the side payment p_i is zero. As a result, we have boundary conditions (the solid lines) shown in Figure A2 that define four regions regarding direct and indirect finance. The line $\alpha_i = c / H$, a result from equation (A1), defines the boundary condition for direct finance, and the line $\alpha_i = c/[(2\beta_i - 1)(IH)]$, a result from equation (A2), defines the boundary condition for indirect finance. Therefore, in region I, direct finance is feasible; in region II, indirect finance is feasible; in region III, both methods of finance are feasible; and in region IV, neither is feasible.

Overlapping Figure A1 onto Figure A2, one can see the role of the financing cost c in determining the ratio between direct and indirect finance. Because any (α_i, β_i) is a random draw from the region $[0 \le \alpha_i \le 1,\ 0 \le \beta_i \le 1]$, one can basically work with the areas of the various sub-regions defined above. A lower c enlarges the regions containing permissible projects qualified for direct or indict finance (regions I, II, and III), but it also enlarges the region in which direct finance dominates indirect finance (region A). The intersection of regions I, III, and region A (the lightly shaded area) is the region in which direct finance is both feasible and dominates indirect finance. It is clear that this region enlarges when c declines. That is, an economy with a lower financing cost tends to finance more projects by direct finance. Similarly, the intersection of regions II, III, and region B (the more heavily shaded area) is the region in which indirect finance is both feasible and dominates direct finance. It is also clear that this region shrinks when c declines. That is, an economy with a lower financing cost tends to finance a smaller number of projects by indirect finance. Q.E.D.

[Figures A1 and A2 about here]

The intuition that a lower financial cost leads to a higher ratio of direct finance is related to indirect finance's advantage of cost sharing. It is clear from equation (A3) that direct finance always dominates indirect finance if I is equal to one—that is, if a project only needs one unit of investment so no sharing is required at all for indirect finance. Given I, it is easy to understand that cost sharing becomes less attractive when the cost per project declines. The following proposition then establishes the relationship between the cost of finance and the number of projects that obtain external finance.

Proposition 2: More projects get financed in the more market-based economy than the more bank-based economy.

Proof: The proof is a straightforward application of the proof of Proposition 1. It is no more than pointing out that in Figure A2 the joint area of regions I, II, and III expands when c declines. Q.E.D.

Proposition 1 shows that an economy with a lower financing cost tends to finance more projects by direct (market) finance than by indirect (bank) finance. Therefore, by Proposition 2 we can conclude that more firms get external finance and thus a smaller number of firms rely on retained earnings for their investment in a country with a more market-based financial system than

in a country with a more bank-based financial system. This is what we will test in our empirical study. Because our theory shows that the choice of financial methods is endogenous to a country's financial costs, we will instrument the choice by countries' legal origins, which have been proved to be a significant determinant for the costs of finance and thus for countries' choices of financing methods.

A closer study of Figure A2 reveals two more interesting and empirically tractable results. The first is that projects with high α_i and β_i are always qualified for either direct or indirect finance. The boundary for feasible direct finance, c/H, should be low because c cannot be a large fraction of H. On the other hand, the boundary for feasible indirect finance $\alpha_i = c/[(2\beta_i - 1)(IH)]$ crosses line $\beta_i = 1$ at a point lower than c/H and has an asymptotic line of $\beta_i = 0.5$ when β_i declines. Therefore, the size of region III barely changes when the financial cost c increases. In addition, it is clear that direct finance dominates indirect finance in this region because the dividing boundary $\alpha_i = \frac{c(I-1)}{2HI(1-\beta_i)}$ has asymptotic line of $\beta_i = 1$ when β_i increases. The second result is that projects with small α_i and β_i, that is, those in region IV, can barely get any external finance. Here α_i is more important than β_i because a project with a large β_i but a small α_i is not going to be financed. This result is understandable when one realizes that α_i is a parameter describing the confidence that each investor puts on a project so that it matters for both direct and indirect finance, but β_i is a parameter measuring the agreement of opinions between any two investors so that it matters only for indirect finance. It is noticeable that the size of region IV increases as c becomes larger, a result contrasting to that for regions I and III.

Small firms' projects are riskier, so investors place less confidence on their prospects of making money on small firms' projects than on large firms' projects. In the meantime, investors also have more diverse opinions on small firms' projects than on large firms' projects because information about small firms is often opaque and scarce. However, large firms usually operate mature businesses so that investors have more confidence on them. Moreover, they have been on the market for some time and have better information disclosure systems than do small firms. So investors tend to have the same opinion on their profitability. We therefore summarize the above two results in the following proposition ready for empirical tests:

Proposition 3: Small firms are less likely to get external finance and, as a result, have to rely more on their own savings in a bank-based economy than their counterparts in a market-based economy; but there is no difference between large firms in the two kinds of economy.

FIGURE A1. CHOICE BETWEEN DIRECT AND INDIRECT FINANCE

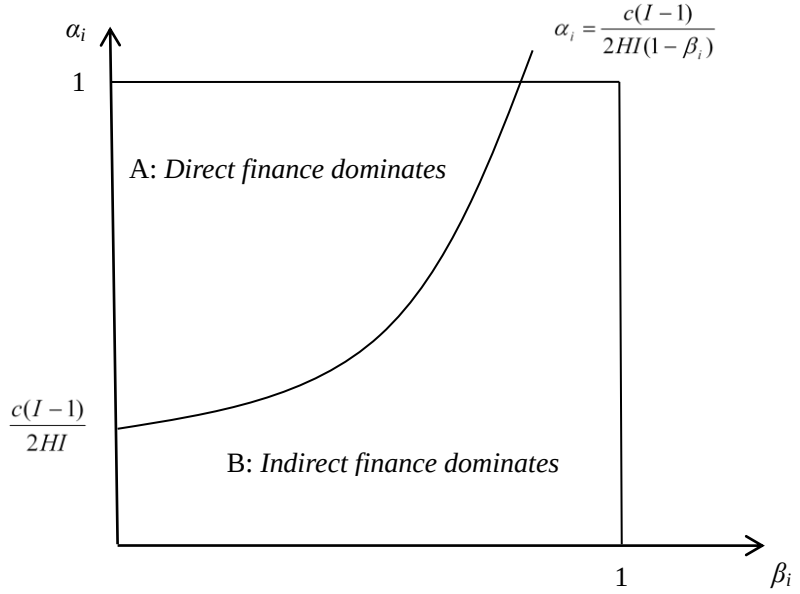


FIGURE A2. BOUNDARIES OF DIRECT AND INDIRECT FINANCE