

NBER WORKING PAPER SERIES

THE CHINESE CORPORATE SAVINGS PUZZLE:  
A FIRM-LEVEL CROSS-COUNTRY PERSPECTIVE

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Working Paper 16432  
<http://www.nber.org/papers/w16432>

NATIONAL BUREAU OF ECONOMIC RESEARCH  
1050 Massachusetts Avenue  
Cambridge, MA 02138  
October 2010

We thank Vivek Arora, Olivier Blanchard, Stijn Claessens, Nigel Chalk, Joseph Fan, Randall Morck, David Romer, Ning Zhu and seminar participants at the IMF, HKMA, Tsinghua University, and NBER Conference on Capitalizing China for helpful comments. We thank Jeanne Verrier for excellent research assistance and Joy Glazener for editorial help. The views expressed herein are those of the authors and should not be attributed to the IMF, its Executive Board, its management, or the National Bureau of Economic Research.

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NBER Working Paper No. 16432  
October 2010  
JEL No. E2,F3,F4,G32

**ABSTRACT**

China's high corporate savings rate is commonly claimed to be a key driver for the country's large current account surplus. The mainstream explanation for high corporate savings is a combination of windfall profits in state-owned firms, especially in resource sectors, and mis-governance of state-owned firms represented by their low dividend payout. The paper casts doubt on these views by comparing the savings of 1557 Chinese listed firms with those of 29330 listed firms from 51 other countries over 2002 to 2007. First, Chinese firms do not have a significantly higher savings rate (as a share of total assets) than the global average because corporations in most countries have a high savings rate. The rising corporate savings rate is also consistent with a global trend. Second, there is no significant difference in the savings behavior and dividend patterns between Chinese majority state-owned and private listed firms, contrary to the received wisdom.

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## 1. Introduction

China's national savings rate, at 50% of GDP in 2007, is among the world's highest for any economy of a significant size. This has been said to be an underlying cause of the U.S. housing price bubble during 2002-2007 (Bernanke, 2005; and Greenspan, 2009), and by extension, of the current global financial crisis. This illustrates the attention that has been paid to global implications of China's savings issue. It is therefore useful to understand China's high savings rate.

Several authors have noted that a significant part of China's high national savings rate come from its large corporate savings, which by 2007 accounted for roughly half of the national savings. According to Hofman and Kuijs (2006), what makes China stand out is the high savings by its enterprises. Furthermore, low dividend payments by state owned enterprises (SOEs), due to a large-scale agency problem, are the primary cause of the large corporate savings. Martin Wolf, an influential Financial Times commentator, asserts (Financial Times, October 3, 2006) "But we must then also ask why China is running such large surpluses. ... the frugality of Chinese households is not the chief explanation for China's surplus savings ..., the principal explanation is China's huge corporate savings."

As far as we can see, the first claim – that the large corporate savings rate in China is what drives its high national savings relative to other countries – is based on the flow-of-funds data released by China's National Bureau of Statistics (NBS), which cannot be checked independently by a third party. When it issued revisions to the flow of funds data, the magnitude of the revisions could be large. For example, the recent revision in 2009 changed the Chinese corporate savings in 2003 from 13% to 18% of GDP, or a revision on the order of US\$ 700 billion. The second claim – that a combination of windfall profits received by state-owned enterprises and their low dividend payout due to mis-governance – is based mostly on a hunch, as we have not seen any study that formally compares the profits and dividend practices across Chinese firms by ownership and sector.

In this paper, we examine these claims by adopting a firm-level cross-country perspective: comparing the savings patterns between 1557 Chinese publicly listed firms with 29330 listed firms in 51 other countries during 2002-2007, and comparing state-owned enterprises with majority privately-owned firms within China. Unlike the NBS flow-of-funds data, the financial statements of listed firms are at least subject to independent auditing. The

listed firms, collectively, are also an important part of the economy. According to the China Security Regulatory Commission (October 4<sup>th</sup>, 2009), the profits of the listed firms' revenues accounted for 37.7% of the GDP in 2008, and their profits accounted for 36.3% of all enterprise profits. As far as we know, this is the first paper that adopts the firm-level comparative perspective.

Our results cast doubt on the reliability of both claims. First, we find that Chinese listed firms do not seem to have higher gross savings (as a share of total assets) than listed firms in other countries during our sample period. Moreover, the gross savings rate for a typical listed Chinese firm declined from 2002 to 2007, albeit insignificantly, even though China's current account surplus rose significantly over the same period. This is inconsistent with the view that a rise in the corporate savings rate drives China's rising current account surplus. Second, from a comparison of state-owned versus non-state Chinese firms, we do not find significant differences between these two groups in terms of their savings and dividend patterns. If anything, privately owned firms appear to have a higher savings rate on average.

The finding that the Chinese corporate savings rates are not much higher than those in other countries is not surprising from the viewpoint of the empirical corporate finance literature in recent years. For example, J.P. Morgan (2005) and the IMF (2005) have noted that corporations in G-7 economies have all exhibited a rise in undistributed profits. Bates, Kahle and Stulz (2009) note that a typical firm in the United States had so much cash holdings by 2005 that it could pay off its entire corporate debt and still have some cash left over. The corporate finance literature does not presume that high corporate savings per se reflect inefficiency or corporate mis-governance. Indeed, Bates et al. hypothesize that it could be a rational (optimal) response to rising working capital needs faced by corporations. Moreover, Fama and French (2001) document a pattern of disappearing dividends in the U.S. from 1978 to 1999. The fraction of firms paying cash dividends falls from 66.5% in 1978 to 20.8% in 1999. Part of the reason is a rising population of small firms with strong growth opportunities. Hoberg and Prabhala (2007) argue that a rising risk and therefore an increased need for risk control are the main explanation. Interestingly, the studies that focus on Chinese corporate savings rates appear unaware of this literature and of the fact that the high corporate savings rates in China are part of the global phenomenon.

The firm-level comparative approach in this paper has its limitations. In particular, it doesn't account for unlisted firms. It is theoretically possible that both existing claims are

correct through the actions by non-listed firms. We note, however, that most non-listed firms are private firms. If the savings by non-listed Chinese firms are much higher than non-listed firms in other countries, it is unlikely to be driven primarily by the mis-governance issues associated with state-owned firms. A more likely candidate would be financial constraints faced by privately-owned firms. In any case, our results should be interpreted with the caveat that non-listed firms are not part of the analysis.<sup>2</sup>

Our findings have important implications for policy discussions. First, the existing claims advocate that state-owned firms need to pay more dividends. But if they save for whatever reasons that have led non-state-owned Chinese firms and firms in other countries to save, then forcing them to do less could lower economic efficiency. Second, the existing claims have led to the view that Chinese corporate savings are the primary driver for its large current account surplus, and a reduction in corporate savings would be key to reducing the current account surplus. However, if the Chinese corporate savings rates are actually not much higher than in other countries, then one needs to turn to households and government savings in understanding cross-country differences in national savings. As an analogy, even though the skin is the biggest part of an elephant's body, to understand why an elephant doesn't run as fast as a leopard, we would not want to focus on an elephant's skin. Similarly, even though Chinese corporate savings is the biggest part of its national savings, it need not be the driver for why the Chinese national savings rate is so much higher than other countries.

The rest of the paper is organized in the following way. In Section 2, we analyze savings patterns with macro-level data based on flow of funds or national income accounts. In Section 3, we turn to firm-level data when we have a much better way to control for various determinants of corporate savings, and can separate gross versus net corporate savings. In Section 4, we conclude.

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<sup>2</sup> Also, our results examine the level of savings but not the quality of its allocation. Future research can further examine whether Chinese enterprises use their savings more or less efficiently than firms in other countries, along the line suggested in Wurgler (2000) and Durnev, Morck, and Yeung (2004).

## 2. The Patterns from the Flow-of-Funds Data

We start by presenting patterns of corporate savings rates from the flow-of-funds data for China from the CEIC dataset from 1992 to 2007 (the latest available data), the same dataset used in Hofman and Kuijs (2006) and virtually all other papers on the topic in the literature. Figure 1 presents China's national savings rate (total savings/GDP) during this period, and decomposes it into gross corporate savings, gross household savings and gross government savings. Corporate as a share of GDP rose over time from 11.7% in 1992 onwards, peaked at 23.5% in 2004, and declined gradually thereafter to 18.8% in 2007. The household savings as a share of GDP experienced more ups and downs. It became less important than corporate savings in 2003 and 2004, but exceeded corporate savings again after 2005.

In spite of limitations about the flow-of-funds data, it may be useful to perform some simple cross country comparisons based on the macro data. The top panel of Figure 2 compares the aggregate corporate gross savings (as a share of assets) from 1995-2007 for China, Japan, Korea, Germany, Australia, United Kingdom, and the United States. The Chinese data show a faster increase in the savings rate up to 2004 which then started to decline in the next three years. Note that the corporate savings rates in Japan and Korea are higher than China's in every year during the sample period. In fact, in most years, the Chinese aggregate gross corporate savings rate tends to be lower than the Japanese corporate savings rate by about 5% of GDP, and lower than the Korean corporate savings rate by about 10% of GDP.

The lower panel of Figure 2 plots the net savings rates (gross savings/asset – investment/asset) for the same set of countries. The most striking feature is that China is the only economy in the group that has a significantly negative net savings rate in every single year. This reflects not only the high investment rates in China, but also the greater desire to hoard cash by firms in other economies (rather than to invest or to issue dividends). Overall, what stands out the most is not how much more Chinese firms save than their counterparts in other economies, but how much less they save, conditional on the investment need. (One may argue about whether Chinese investment is more or less efficient than investments elsewhere, but one cannot conclude that the corporate sector in China, on net, has contributed more to its current account than their counterparts in other countries.)

Besides corporate savings, the other two components of national savings are household savings and government savings. Figure 3 plots the time series of these two components for China and the other countries. For household savings as a share of GDP, it is clear that China is in a league of its own. It is often higher than the average of the rest of the group by 10% of GDP, and higher than the next highest country by 5% of GDP. For government savings, China is one of the three highest countries in recent years. For most years, however, Korea has been the clear leader in the government savings rate.

To summarize, even if one takes the flow-of-funds data at face value, it is not clear that China's corporate sector is the biggest contributor to the country's current account surplus, once one adopts a country-country perspective, especially when one looks at the net corporate savings rate. Both household and government savings must have played a quantitatively important role in driving the current account balance.

### **3. A Close Look at Firm-level Data**

#### 3.1 Data and summary statistics

We employ data on 1557 publicly listed firms in China and compare them with 29330 firms in 51 other countries from 2002 to 2007. The data source is the Worldscope. Table 1 presents the number of firms for each country in our sample, together with national savings/GDP, investment/GDP, current account/GDP, and government fiscal balance/GDP, averaged over 2005-2007.

A major advantage of examining firm-level data is that we can better control for determinants of corporate savings. An important drawback is that we exclude savings by non-listed firms. However, if the principal reason for high corporate savings in China is hypothesized to be the high savings rates of its majority state-owned firms, we have an opportunity to observe this even with publicly listed firms only, since most big state-owned firms are now listed.

Table 2 lists the summary statistics for variables on corporate savings. We define firm gross savings as profits minus dividends.<sup>3</sup> Profit is defined as Net Income (WS 01551) plus Depreciation (WS01151). Dividends are the sum of cash preferred dividends (WS 05401) and cash common dividends (WS 05376). The net savings is gross savings minus capital expenditure (WS 04601). For Chinese listed companies, cash dividends are the product of dividends per share (WS05101) and the number of common shares (WS05301, which includes both tradable and non-tradable shares). To conduct comparisons across firm ownership, we classify a firm as majority state-owned if the state is the largest shareholder (when non-tradable shares are also considered).

We define gross or net savings rate as savings relative to gross asset, rather than savings relative to profit, because firm-level profits can be zero or negative. Table 2 reports the summary statistics on the gross savings rate (gross savings/assets), its components (profit rate and dividend rate), investment/asset, and net savings/asset for non-financial firms in China and other regions of the world. A few features are noteworthy. First, while the corporate savings rates in Asia are somewhat higher on average than those outside Asia, the savings rates by Chinese firms are not different from those in other Asian economies<sup>4</sup>. Second, within China, there is no significant difference between majority state-owned Chinese firms and majority privately-owned Chinese firms in their median gross or net savings rates.

We can also compare dividend payout practices in Table 2. An important feature for our purpose is that an average or median Chinese firm issues dividends no less than its counterparts in other countries. The median/mean of dividends over assets is 0.005/0.016 for Chinese firms, compared to 0/0.011 for firms in other countries. The percentage of Chinese firms issuing dividends was 52% in 2007, while the comparable number for the rest of the world was 49%. In other words, while it is true that many Chinese firms do not pay

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<sup>3</sup> We adopt this definition of firm-level corporate savings to match more closely with that of aggregate corporate savings in the flow of funds data. The definition of corporate savings could be different in other settings. For example, if the question is related to a corporation's access to liquidity, then it would be appropriate to include minority stock investment and inter-corporate loans in addition to deposit and internal cash as savings. To the extent that these financial assets are liquid and significant, corporate savings may be higher than currently reported under our definition. Also, due to data limitation, we cannot address issues like the contributions to enterprise savings of cross-holdings, subsidiary-to-parent SOE dividends, repos, M&A, plausible tunneling scenarios, FDI, etc.

<sup>4</sup> The difference in the corporate savings rates between Asia and the rest of the world lies in the mean but not in the median, suggesting that the difference in mean is driven by a few outliers.

dividends, it is part of the common corporate practice around the world<sup>5</sup>. In addition, considering that the Chinese economy is growing at a faster rate than most economies in the world, indicative of better investment opportunities in China, the optimal dividend payout in China can be expected to be lower than elsewhere. A second interesting feature comes from comparing the dividends of state-owned Chinese companies with those of non-state-owned Chinese companies. State-owned companies issue slightly larger dividends than non-state-owned companies. In 2007, 56% of state-owned companies issued cash dividends, while 45% non-state-owned companies did the same. Hence the mainstream view that state-owned firms are particularly reluctant to issue dividends due to mis-governance is not consistent with the summary statistics.

Corporate savings rates are affected by firm size and other factors. For example, firms in resource sectors may have extra savings due to commodity price booms in the past few years. Also, firms in sectors with an intrinsically higher demand for external finance may also save more. To control for these possibilities, we now use econometric analyses to examine whether Chinese listed firms have more savings.

### 3.2 Econometric Specification

We start with a model for gross savings rate:

$$Savings / Assets_{ijkt} = \beta_1 Size_{ijkt} + China_k + Sector_j + Year_t + \varepsilon_{ijkt} \quad (1)$$

for firm  $i$  in sector  $j$  of country  $k$  at time  $t$ . Company size is the total value of book assets measured in current US dollars. Sector dummies are at the 3-digit level based on US Standard Industrial Classification (SIC 1987). There are 373 three-digit (non-financial) sectors in the sample. Year dummies control for the global trend. Based on this model, we will also check whether gross savings between Chinese state-owned and non-state-owned companies are systematically different.

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<sup>5</sup> An article in the Economist magazine (Oct 3<sup>rd</sup>, 2009) mocked the dividend practices of Chinese firms by noting that “almost 45% of listed companies did not pay a dividend last year,” without apparently realizing that the pattern was consistent with corporate practices around the world.

We perform cross-country comparisons of the components of gross savings: profits and dividends, using the same specification as above. Finally, we perform comparisons of investment rate and net corporate savings. To summarize, we conduct a sequence of conditional comparisons, using specification (1), but each component of the expression below as the dependent variable:

$$\begin{aligned} \text{Gross Savings} &= \text{Profits} - \text{Dividends} \\ &= \text{Net Savings} + \text{Investments} \end{aligned} \tag{2}$$

### 3.3 Corporate gross savings

In Table 3, we report the results from a regression analysis where we control for determinants of corporate savings. We cluster the standard errors at the country level. In Column 1, we compare China with the rest of the world. Chinese firms have a higher coefficient of gross savings (as a share of gross assets) than other countries, but not statistically significant.

We then compare China with each country by adding 51 country dummies, except for the U.S. which serves as our baseline case. For 21 countries with the largest numbers of observations, we plot their coefficients in Figure 4. We find that, conditional on sector and year fixed effects and firm size, the average Chinese corporate savings rate (0.44) is close to the median of the spectrum. Corporations in India (0.74), Australia (0.63) and the United Kingdom (0.46) all have higher gross savings rates. Meanwhile, these three countries all experienced a current account deficit during the sample period. From 2004 to 2007, the average current deficit over GDP was -1%, -6% and -3% for India, Australia and the UK respectively. This illustrates the idea that even with a high corporate savings rate, there need not be a current account surplus.

Figure 4 helps to address the power of the test for the China dummy in Column 1. In Column 1, the coefficient of the China dummy is insignificant, so we cannot reject the hypothesis that Chinese firms behave in the same way as firms in other countries. But a problem of Type I versus Type II errors means we can't necessarily conclude that the coefficient definitively equals zero either, and the data might be too noisy to allow any conclusion. Figure 4 alleviates this concern by estimating the coefficient for each country.

We find that China's corporate savings rate is not different from the global average after comparing the magnitude of the China dummy with those of other countries.

So far we look at the average effect over the sample period. In Column 2, we examine the trend in Chinese firms' gross savings by interacting the time trend with the China dummy. This interaction is negative (but insignificant), suggesting that the gross savings of Chinese firms did not rise from 2002 to 2007. This pattern of a relatively flat time profile of corporate savings contrasts with the profile of China's current account surplus, which rose gradually from 2002 to 2004 and more dramatically after 2005. This is an additional feature of the data suggesting that China's corporate savings rates (relative to corporate savings rates in other countries) did not go up in tandem with its rising current account surplus.

We now compare state-owned versus non-state-owned firms in Column 3. Conditional on sector and time fixed effects and firm size, there is no significant difference between the two groups, which is consistent with the unconditional pattern in Table 2. In Column 4, we look at the time pattern by adding the interaction of time trend and state-owned dummy. This interaction has a negative coefficient and is significantly different from zero at the 10% level. Meanwhile, the state-ownership dummy has a weakly positive coefficient. Taken together, this suggests that state-owned companies have slightly higher gross savings rates than private firms at the beginning of the sample period, but the gap declines gradually to become negligible.

As corporate savings is the difference between profits and dividend payout, we now look at the two components separately.

#### 3.4 Decomposing gross savings: Profits and dividends

The patterns of coefficients for profits in Table 4 are similar to those for gross savings rates. China's firms have somewhat higher profit but not significantly so (Column 1 of Table 4). To find the country-level conditional average dividend rate, we perform a version of the regression in Column 1 by adding individual country dummies (regression results not reported to save space). We plot the estimated individual country fixed effects in the top panel of Figure 5. China, while below the median, is not far from it. India, Australia and the U.K. still have higher profit over asset ratios than China.

In Column 2 of Table 4, we compare the trend in China's corporate profits rates during 2002 to 2007 to the global time fixed effects. The coefficient on the interaction between the China dummy and the time trend is statistically insignificant, suggesting that the time profile of Chinese firms' profit rates is not that different from the global trend.

In Column 3 of Table 4, we compare majority state-owned versus non-state-owned firms within China. We find that majority state-owned firms have a similar profit ratio as non-state-owned companies over the sample period. To see the time trend, we add an interaction term between the state-ownership dummy and the time trend. It appears that the majority state-owned firms used to have a higher profit rate than majority private-owned firms, but the pattern reversed in the later part of the sample period.

Now we look at the dividend practices conditional on sector and year fixed effects and firm size (Table 5). The coefficient for the China dummy is positive but insignificant, suggesting that Chinese firms issue dividends at an amount at least as large as the global average. To find the country-level conditional average dividend rate, we perform a version of the regression in Column 1 by adding individual country dummies (regression results not reported). The estimates of the individual country effects are plotted in the bottom panel of Figure 5. There, Chinese firms' conditional dividend payoff rates, on average, lie in the middle: for example, they are larger than those in France, Germany, Korea, Japan and the United States, but smaller than Thailand, South Africa, Brazil, and Sweden.

In Column 2 of Table 5, we add the interaction term of a time trend and the China dummy. This interaction term is negative and significant but very small (-0.00097), suggesting a moderate decline over the sample period.<sup>6</sup> To gain further insight, we compute the fraction of listed Chinese companies that issued dividends in a year. The fraction is 55%, 49%, 55%, 47%, 50% and 52% respectively from 2002 to 2007. In other words, there was a mild reduction in the fraction of dividend-paying firms, but the change is overwhelmed by year-to-year fluctuations. We also compute the average cash dividend per share (DPS) for Chinese firms. The average DPS increased over the years, from 4.74 in 2002 and 4.96 in 2003 to 6.34 in 2006 and 7.47 cents in 2007 (the numbers of shares per company are held constant

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<sup>6</sup> In October 2008, the China Securities Regulatory Commission (CSRC) required listed firms that applied for refinancing to pay cash dividends annually in an amount no less than 30 % of its distributed profits over the past three years. As it is outside our sample period, we are not able to test the effect of the policy.

as stock splits and reverse splits and new shares are adjusted). Note from Column 2 in Table 4, there is a modest (but insignificant) decline in the profit rate of Chinese firms during the same period. In any case, recall from Column 2 of Table 3, there is no significant change in the gross savings rate over time for Chinese firms.

In Column 3 of Table 5, we compare the dividend payout rates between majority state-owned firms and other companies, conditional on the sector and year fixed effects and firm size. Contrary to the mainstream view, we see that state-owned companies issue more dividends. The coefficient on the state ownership dummy is 0.002, significantly different from zero at the 10% level. In Column 4 of Table 5, we examine whether and how the difference between state-owned and other firms changes over time. The negative but insignificant coefficient on the interaction term suggests that there might be a narrowing of the gap over time, but the evidence is not statistically significant.

### 3.5 Investment and net savings

To understand the corporate sector's contribution to a country's current account, one ultimately needs to look at net corporate savings--the difference between gross savings and capital investments. We now examine China's corporate investments over assets by using the same set of right-hand-side variables for gross savings. In Column 1 of Table 6, the China dummy is positive and significant at the 1% level, suggesting that Chinese firms invest more than the global average. To find the country-level conditional average investment rate, we perform a version of the regression in Column 1 by adding individual country dummies (regression results not reported). Again, the estimates of the individual country effects are plotted in Figure 5 (top panel). It is clear that Chinese firms invest more than firms in all other countries save two (India and Canada). From Column 2 of Table 6, Chinese firms appear to decrease their investment relative to assets over time when compared with a global year fixed effects (of generally rising investment).

In Column 3 of Table 6, we compare the conditional investment rate by majority state-owned firms with non-state owned firms in China. Interestingly, an average state-owned firm invests less than an average non-state firm. The gap in the investment ratio between state and non-state firms does not shrink over the sample period (column 4 of Table 6).

We now examine the net savings rate in Table 7. There is little evidence that Chinese firms have higher net savings as a share of total assets than firms in other countries. The estimated coefficient is positive but insignificant (Column 1 of Table 7). To find the country-level conditional average net savings rate, we perform a version of the regression in Column 1 by adding individual country dummies (regression results not reported). The estimates of the individual country effects are plotted in the bottom panel of Figure 6. We see that China's net savings are smaller than more than half of the countries in the sample, including India, Australia and the U.K. From Column 2 of Table 6, the insignificant interaction term suggests that the gap between net corporate savings in China and the global average has not narrowed over time.

In Column 3 of Table 7, we compare state-owned companies with non-state-owned ones in China. There is no significant difference between the two groups on corporate net savings. Column 4 of Table 7 suggests that the net savings rate might be higher for state-owned firms at the beginning of the sample. The trend is negative but insignificant. Since there is no difference between state and non-state firms averaged over the entire sample, we surmise that state-owned firms may have a lower net savings rate than non-state firms in the latter part of the sample. The insignificant trend term reflects that year-to-year fluctuations are large (producing a relatively large standard error).

### 3.5 Do financial constraints raise the savings by non-state firms?

Recall that a key conclusion so far is that within China, private firms do not save less than state-owned firms. One reason that private firms need to save is concern for future financing constraints when good investment opportunities come along.

We now test these arguments. The first question is how to measure external finance needs in a cross-country setting. Following the literature on empirical corporate finance, we use an index for intrinsic dependence on external finance for investment (DEF\_INV). Specifically, we construct a sector-level approximation of a firm's intrinsic demand on external finance for capital investment following a methodology developed in Rajan and Zingales (1998):

$$\text{Dependence on external finance for investment} = \frac{\text{capital expenditures} - \text{cash flow}}{\text{capital expenditures}},$$

where Cash flow = cash flow from operations + decreases in inventories + decreases in receivables + increases in payables. All the numbers are based on U.S. firms, which are judged to be least likely to suffer from financing constraints (during a normal time) relative to firms in other countries. While the original Rajan and Zingales (1998) paper covers only 40 (mainly SIC 2-digit) sectors, we expand the coverage to around 250/373 SIC 3-digit sectors (following Tong and Wei, 2010).

To calculate the demand for external financing of US firms, we take the following steps. First, every firm in the COMPUSTA USA is sorted into one of the SIC 3-digit sectors. Second, we calculate the ratio of dependence on external finance for each firm from 1990-2006. Third, we calculate the sector-level median from firm ratios for each SIC 3-digit sector that contains at least 5 firms, and the median value is then chosen, to be the index of demand for external financing in that sector. Conceptually, the Rajan-Zingales (DEP\_INV) index aims to identify sector-level features, i.e. which sectors are naturally more dependent on external financing for their business operation. It ignores the question of which firms within a sector are more liquidity constrained. What the DEP\_INV index measures could be regarded as a “technical feature” of a sector, almost like a part of the production function. To capture the economic concept of the percentage of capital expenditure that has to be financed by external funding, we winsorize the DEP\_INV index to range between 0 and 1.

We then interact this DEP\_INV index with the China dummy and later with the state-ownership dummy. The results are presented in Tables 8a and 8b. Within those sectors with a higher external financial dependence (i.e, higher DEP\_INV), Chinese firms have higher gross savings than other countries (Column 1). This is because in these sectors, Chinese firms are making relatively higher profits than their global counterparts (Column 2). A reason might be that Chinese listed firms have relatively lower financing costs. Moreover, within these sectors, Chinese firms issue relatively higher dividends than global counterparts (Column 3), consistent with the argument that Chinese firms may have more access to external finance.

Another possible interpretation on the positive coefficient on the China\*DEP\_INV interaction term in the profit function is that the contemporaneous profit rate may be a predictor of future investment opportunities. This regression suggests that unexplored investment opportunities are particularly good for Chinese firms in sectors with a higher

intrinsic dependence on external finance (Column 2). As a result, these firms also save more (Column 1). To check the validity of this hypothesis, we look at Column 3 and find that the investment in these sectors is not particularly higher in China. As a result, all the gross savings show up as net savings as well.

Now we focus on the sample of Chinese firms and include an interaction term of state dummy and external finance dependence. There we find that state companies and non-state companies have similar gross savings, profits and dividends payouts, which are not affected by whether they are in a sector with high dependence on external finance or not.

At least for publicly listed firms, there is no evidence that those Chinese firms in sectors that are intrinsically more dependent on external finance issue smaller dividends in order to save more than counterparts in other countries. If corporate savings reflects concerns for credit constraints, the evidence suggests that Chinese firms are not more concerned about credit constraints than their peers in other countries. Publicly traded private firms do not appear to face more credit constraints than their majority state-owned counterparts. Of course, small non-listed private firms may very well be credit constrained and therefore need to save more. However, this is true everywhere in the world. In any case, the evidence is not consistent with the contention that mis-governance in state firms and favorable price shocks are the primary cause of a high and rising corporate savings rate.

### 3.6 Do Politically Connected Firms Save Less?

The savings rates may be uneven across privately-owned firms. One reason may be different degrees of political connection by firm owners, which may result in uneven access to financing. In other words, while private firms may have a more challenging task in accessing finance when they need to than state-owned firms, those private firms with better political connections may need to save less.<sup>7</sup>

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<sup>7</sup> Other corporate governance factors may affect corporate savings too. For example, Morck, Yeung and Zhao (2007) suggest that enterprise insiders may hide cash from their superiors or successors by tunneling it to tax havens. This could induce the insiders from the beginning to increase corporate savings by reducing dividend payoffs.

We examine this possibility by utilizing a measure of political connection constructed by Fan, Wong, and Zhang (2007). The political connection is a dummy for companies whose chairman is a former government official.

The results are presented in Table 9. From Column 1, it is clear that politically better connected private firms do save significantly less. As Columns 2 and 3 reveal, however, the lower level savings does not come from less dividend payout, but instead from a lower profit rate. In other words, firms with better political connection simply perform worse. With a smaller profit, they do not pay smaller dividends or do less investment than firms without a strong political connection. As a result, these firms have a lower gross savings rate and a lower net savings rate.

#### **4. Conclusion**

Chinese companies maintain a high gross savings rate in absolute terms, and often account for as big a share of GDP and household savings. This has led to the mainstream view that (a) corporate savings in China is a key driver of its current account surplus, and (b) high corporate savings is mainly a result of high savings rates by state-owned firms due to mis-governance.

This paper casts doubt on both parts of the mainstream view. Using the aggregate flow-of-funds data, we show that corporate gross savings rates are high and have been rising in a number of countries. At least Korea and Japan tend to have substantially higher savings rates by their corporate sectors than China's. Moreover, relative to the investment rate (investment/GDP), China has, in fact, the lowest net savings rate (gross savings rate – investment rate) among the group of major economies. It is the only country that had a negative net corporate savings rate every year during 1995-2007.

Micro firm level evidence could provide better controls for sector and year effects on corporate savings patterns. Once we do that, we see that Chinese corporate savings rates, both gross and net, are not that different from those in other economies.

Overall, the notion that Chinese corporate savings drives its current account surplus is not supported by a careful look at the data.

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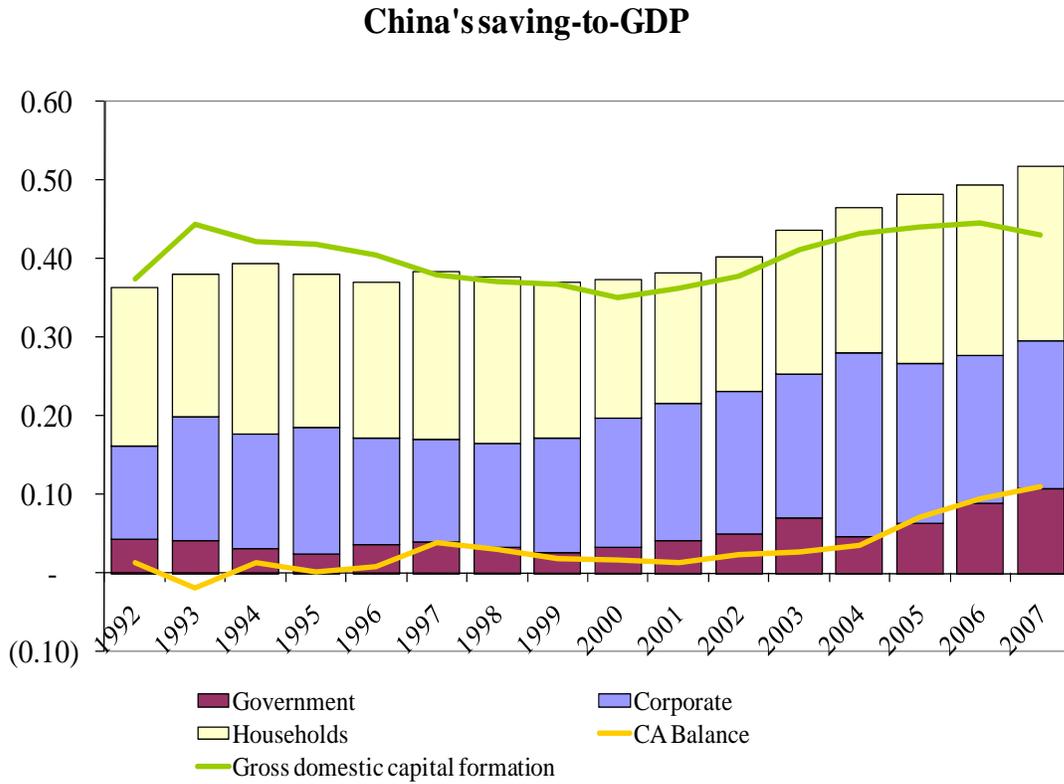
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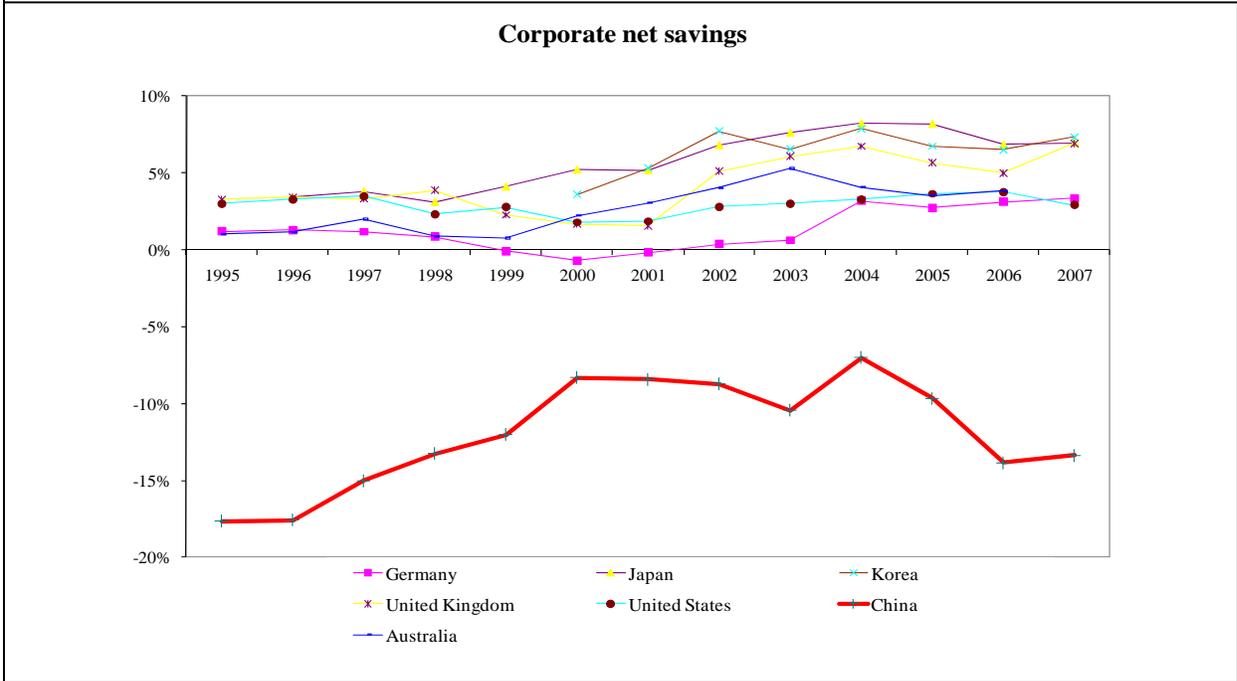
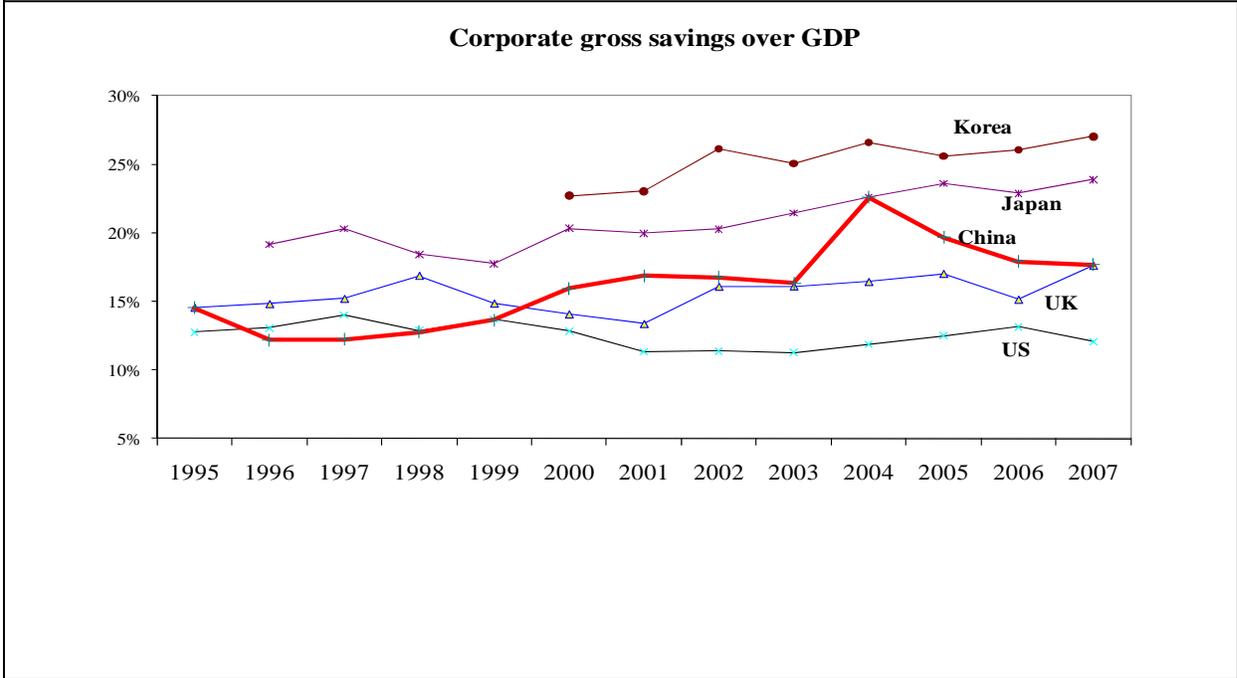
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**Figure 1: Decomposing China's Savings/GDP Ratio Using the Flow-of-Funds Data**

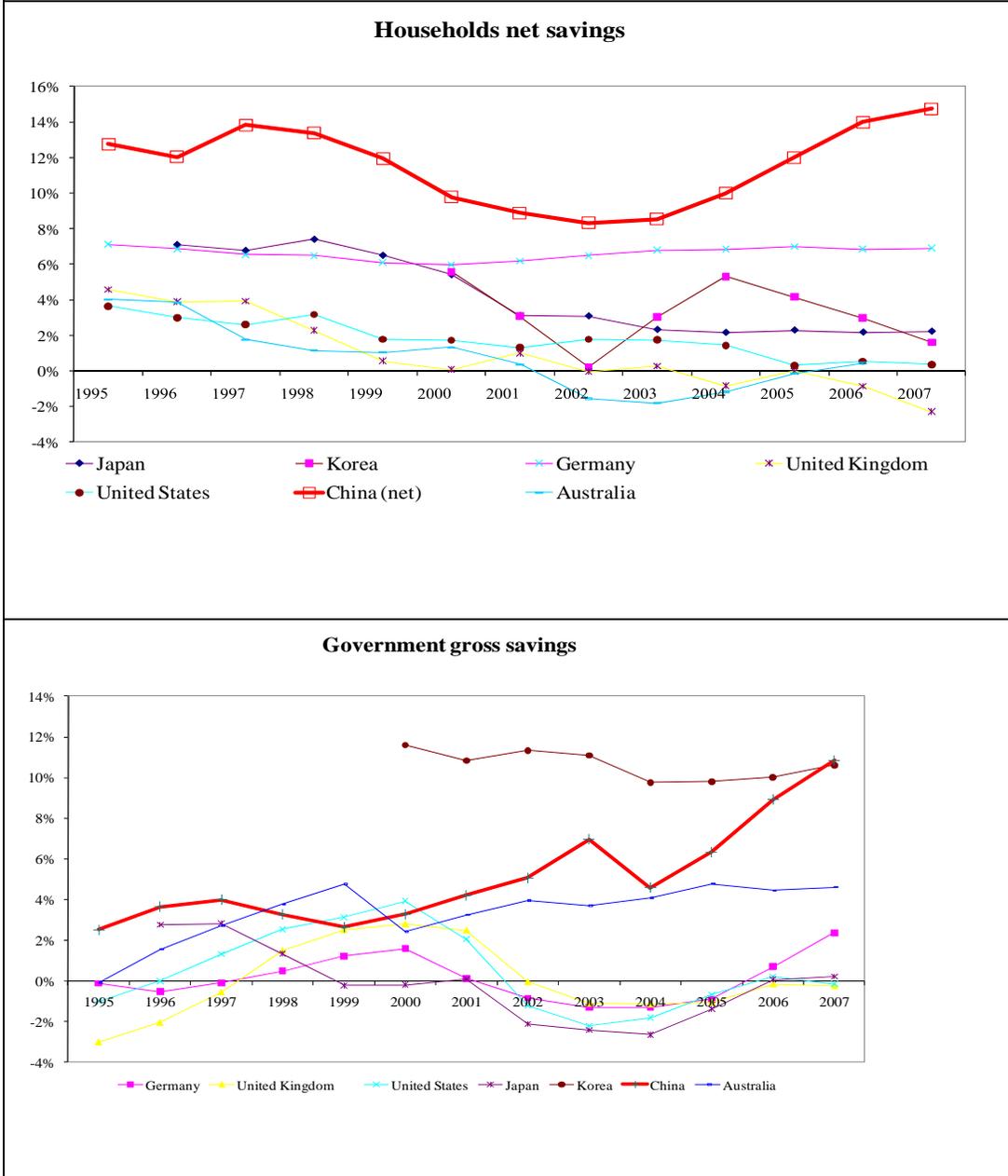


Note: The graph is based on the flow-of-funds data released by China National Bureau of Statistics in 2009

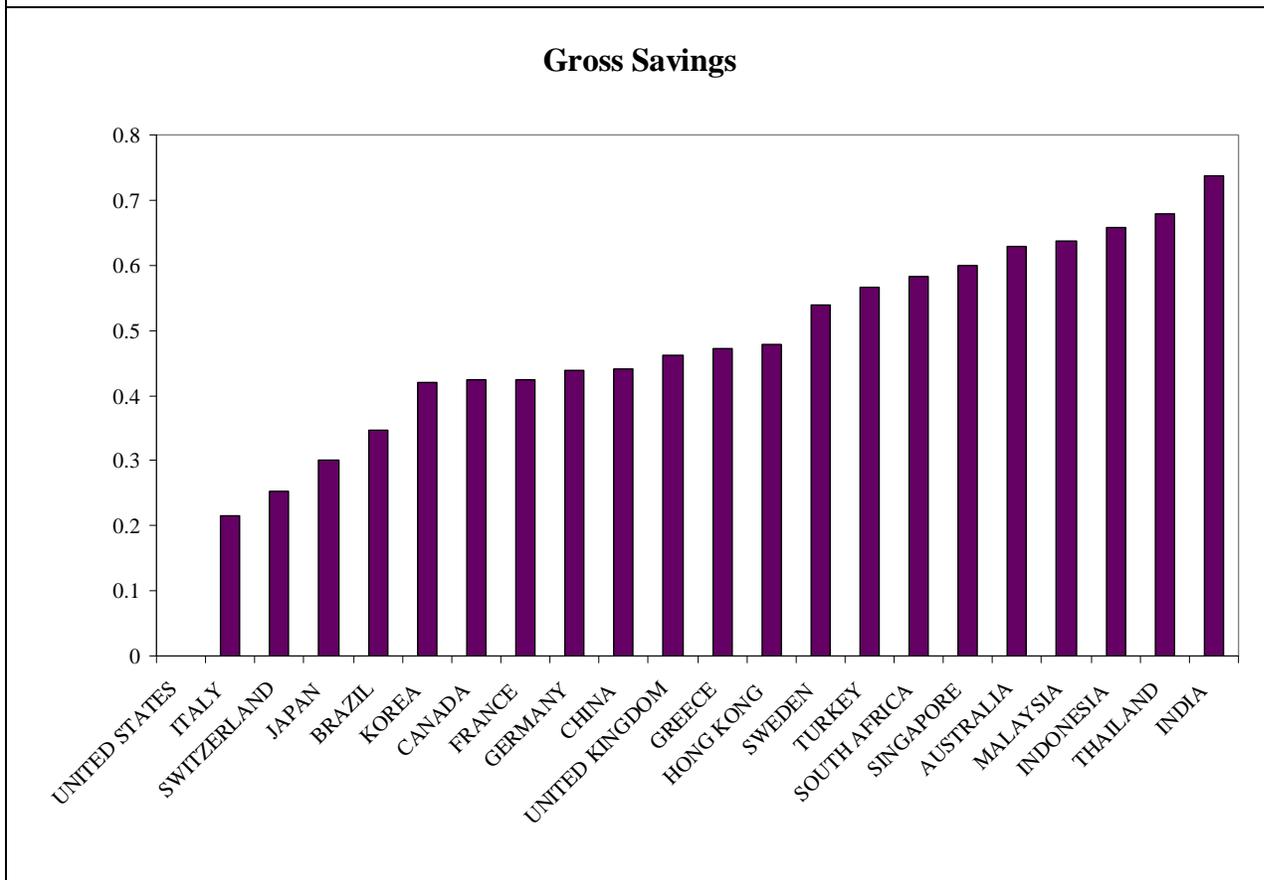
**Figure 2: Corporate Savings/GDP: China versus Selected Other Countries**



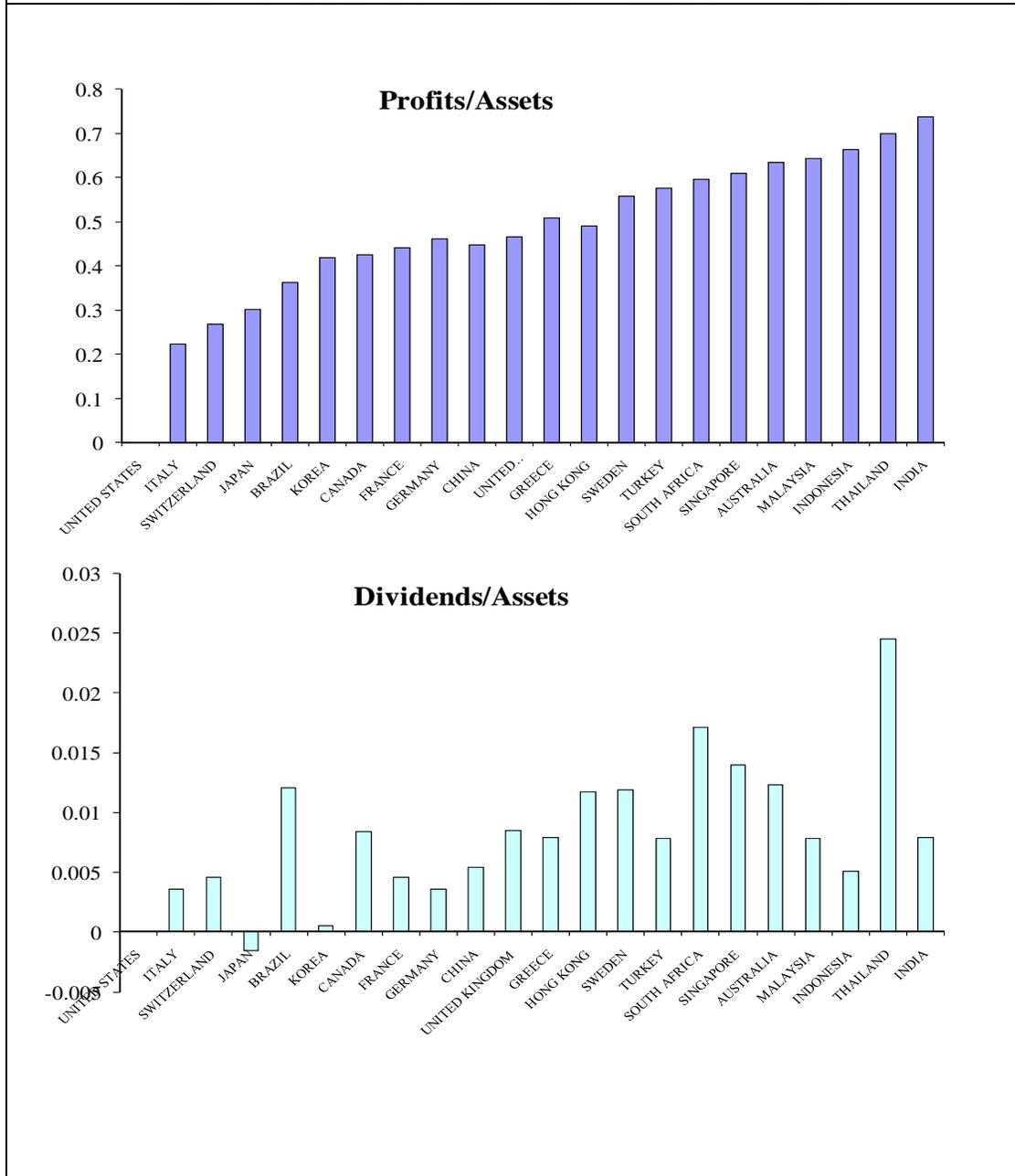
**Figure 3: Household and Government Savings: China and Other Selected Countries**



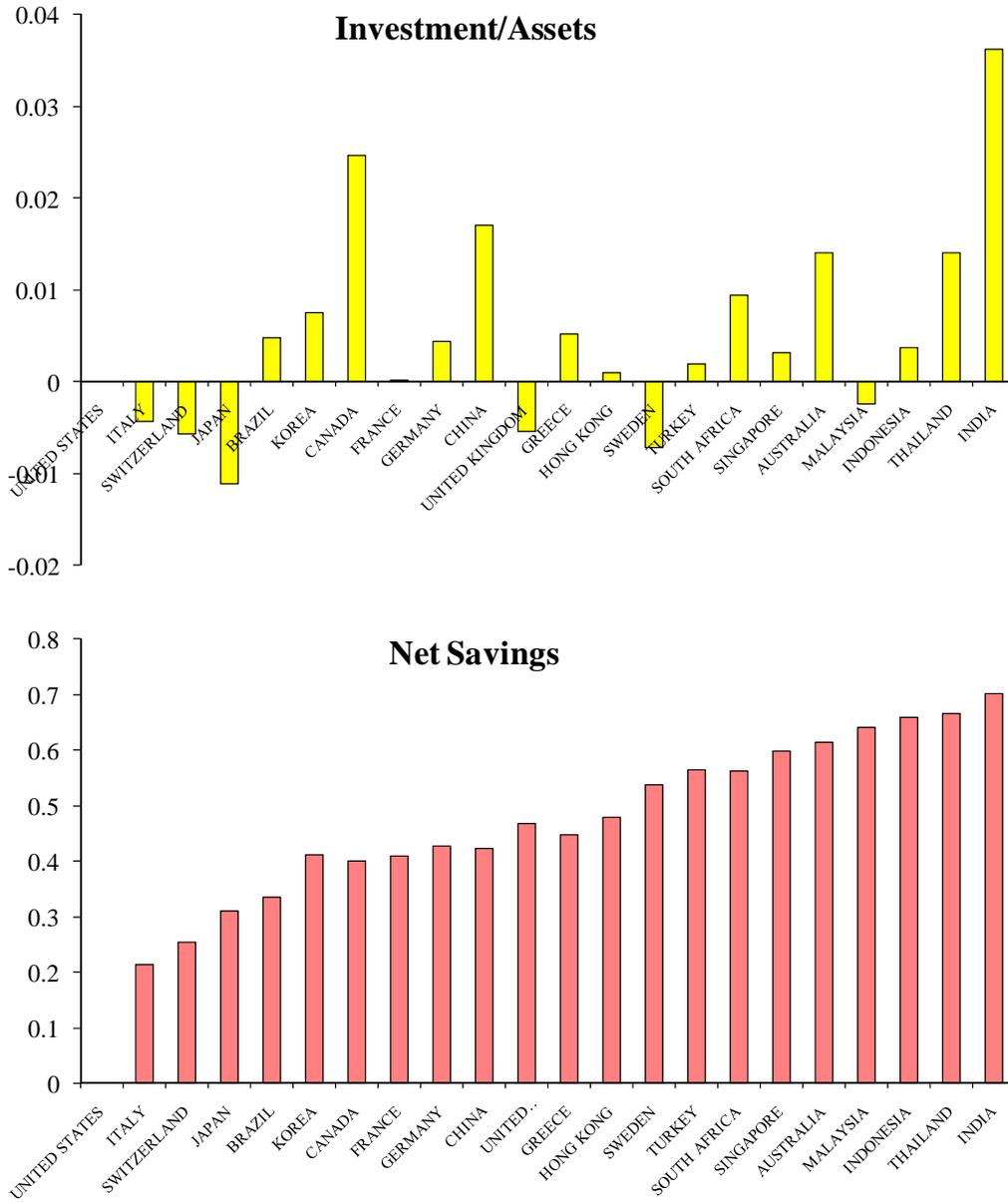
**Figure 4: Relative Gross Savings Rates across Countries  
Conditional on Common Sector and Year Fixed Effects and Firm Size**



**Figure 5: Relative Profit and Dividend Rates across Countries Conditional on Common Sector and Year Fixed Effects and Firm Size**



**Figure 6: Relative Investment Rates and Net Savings Rates across Countries Conditional on Common Sector and Year Fixed Effects and Firm Size**



*Table 1. Country Coverage and Basic Information*

COUNTRY	# of listed firms	Current account/GDP	Savings/GDP	Public savings/GDP	Investment/GDP
ARGENTINA	62	0.02	0.25	0.05	0.23
AUSTRALIA	1697	-0.06	0.22	0.06	0.27
AUSTRIA	84	0.03	0.25	0.02	0.23
BELGIUM	128	0.02	0.24	-0.01	0.22
BRAZIL	276	0.01	0.18	0.03	0.17
CANADA	1656	0.01	0.24	0.05	0.23
CHILE	133	0.03	0.24	0.09	0.21
CHINA	1557	0.09	0.54	0.05	0.45
COLOMBIA	25	-0.02	0.21	0.05	0.23
CZECH REPUBLIC	18	-0.02	0.24	0.04	0.26
DENMARK	132	0.03	0.24	0.07	0.22
EGYPT	42	0.02	0.21	-0.03	0.19
FINLAND	131	0.04	0.26	0.06	0.21
FRANCE	820	-0.01	0.21	0.05	0.21
GERMANY	764	0.06	0.24	0.01	0.18
GREECE	294	-0.11	0.11	-0.02	0.22
HONG KONG	834	0.12	0.33	0.05	0.21
HUNGARY	32	-0.07	0.17	.	0.24
INDIA	1792	-0.01	0.36	0.03	0.37
INDONESIA	275	0.02	0.27	0.05	0.25
IRELAND	79	-0.04	0.23	0.04	0.27
ISRAEL	159	0.04	0.23	0.01	0.19
ITALY	248	-0.02	0.19	0.01	0.21
JAPAN	3982	0.04	0.28	0.06	0.24
KOREA (SOUTH)	1024	0.01	0.31	0.10	0.30
LUXEMBOURG	26	0.10	0.31	0.28	0.21
MALAYSIA	940	0.15	0.36	0.15	0.21
MEXICO	111	-0.01	0.25	0.03	0.25
MOROCCO	15	0.01	0.32	0.03	0.30
NETHERLANDS	181	0.08	0.28	0.03	0.20
NEW ZEALAND	120	-0.08	0.16	0.02	0.24
NORWAY	217	0.16	0.39	0.20	0.22
PAKISTAN	113	-0.03	0.18	0.01	0.21
PERU	60	0.02	0.22	0.05	0.20
PHILIPPINES	136	0.04	0.19	0.02	0.15
POLAND	226	-0.03	0.19	0.00	0.22
PORTUGAL	60	-0.10	0.13	-0.02	0.22
RUSSIAN	84	0.09	0.31	0.12	0.22
SINGAPORE	605	0.24	0.44	0.06	0.20
SLOVAKIA	8	-0.07	0.21	-0.01	0.28
SLOVENIA	12	-0.03	0.26	0.03	0.29
SOUTH AFRICA	357	-0.06	0.14	0.04	0.21
SPAIN	129	-0.09	0.22	0.05	0.30
SRI LANKA	18	-0.04	0.24	-0.01	0.28
SWEDEN	362	0.08	0.26	0.03	0.18
SWITZERLAND	210	0.13	0.34	0.04	0.22
THAILAND	436	0.01	0.30	0.07	0.29
TURKEY	193	-0.05	0.16	0.07	0.21
UNITED KINGDOM	2081	-0.03	0.15	0.00	0.18
UNITED STATES	7899	-0.06	0.15	0.00	0.20
VENEZUELA	16	0.14	0.39	0.13	0.25
ZIMBABWE	28	-0.13			

**Table 2: Summary Statistics on Corporate Savings and Related Variables**

	variable	median	mean	Std	# Obs
China Majority state-owned	Gross Savings /Asset	0.04	0.03	0.18	3893
	Profit/Asset	0.05	0.05	0.18	3924
	Dividend/Asset	0.01	0.01	0.02	3909
	Investment/Asset	0.05	0.07	0.07	3939
	Net Savings/Asset	-0.01	-0.03	0.18	3891
China Non_State_owned	Gross Savings /Asset	0.04	0.00	0.34	2509
	Profit/Asset	0.05	0.01	0.34	2525
	Dividend/Asset	0.00	0.01	0.02	2527
	Investment/Asset	0.04	0.06	0.07	2540
	Net Savings/Asset	-0.01	-0.06	0.33	2507
Asia (except China & Japan)	Gross Savings /Asset	0.06	0.02	0.36	26245
	Profit/Asset	0.07	0.04	0.36	26960
	Dividend/Asset	0.00	0.02	0.03	26329
	Investment/Asset	0.03	0.06	0.07	26542
	Net Savings/Asset	0.01	-0.04	0.38	26206
All countries Except China	Gross Savings /Asset	0.05	-0.18	1.06	125693
	Profit/Asset	0.06	-0.17	1.05	128234
	Dividend/Asset	0.00	0.01	0.02	126807
	Investment/Asset	0.03	0.06	0.08	127374
	Net Savings/Asset	0.00	-0.24	1.07	124939
All Countries	Gross Savings /Asset	0.05	-0.17	1.03	132812
	Profit/Asset	0.06	-0.16	1.03	135551
	Dividend/Asset	0.00	0.01	0.02	133963
	Investment/Asset	0.03	0.06	0.07	134722
	Net Savings/Asset	0.00	-0.23	1.04	132051

Note: Due to concerns for outliers, we winsorize all variables at the top/bottom 1% (in the sample for all countries) before computing the summary statistics for each group. The min/max values for gross savings are -8.37 and 0.35, respectively. The min/max values for profit/asset, dividend/asset, investment/asset and net savings/asset are -8.26/0.39, 0/0.15, 0/0.44, and -8.48/0.30, respectively.

*Table 3: Corporate Gross Savings over Assets*

	Case 1	Case 2	Case 3	Case 4
China dummy	0.0713 [0.0533]	0.105** [0.0491]		
China*Time Trend		-0.00916 [0.00624]		
State-owned dummy			0.00263 [0.0101]	0.0270* [0.0159]
State-owned dummy*trend				-0.00665* [0.00400]
Firm size	0.223*** [0.0754]	0.223*** [0.0754]	0.0582*** [0.0181]	0.0585*** [0.0182]
year==2003	0.0214*** [0.00497]	0.0218*** [0.00502]	0.00869 [0.0101]	0.013 [0.0114]
year==2004	0.0248 [0.0152]	0.0256 [0.0155]	-0.0149 [0.0158]	-0.00634 [0.0176]
year==2005	0.0171 [0.0177]	0.0184 [0.0182]	-0.0210* [0.0114]	-0.00842 [0.0153]
year==2006	0.00958 [0.0369]	0.0114 [0.0381]	-0.0176 [0.0173]	-0.00108 [0.0199]
year==2007	-0.0137 [0.0434]	-0.0113 [0.0450]	0.0109 [0.0125]	0.0311 [0.0188]
Sector fixed effects	Y	Y	Y	Y
Observations	132801	132801	6402	6402
R-squared	0.265	0.265	0.086	0.087

Notes: Standard errors in brackets; \*\*\*, \*\*, and \* denote p-value less than 1%, 5%, and 10%, respectively. Corporate gross savings over assets is winsorized at the 1% level. Sector fixed effects are at the 3-digit level. Standard errors are clustered at the country level.

*Table 4: Profits over Assets*

	Case 1	Case 2	Case 3	Case 4
China dummy	0.0699 [0.0538]	0.108** [0.0499]		
China*Time Trend		-0.01 [0.00601]		
State-owned dummy			0.00486 [0.0100]	0.0311* [0.0161]
State-owned dummy*trend				-0.00714* [0.00404]
Firm size	0.222*** [0.0744]	0.222*** [0.0744]	0.0586*** [0.0177]	0.0589*** [0.0177]
year==2003	0.0226*** [0.00501]	0.0230*** [0.00503]	0.00803 [0.0101]	0.0126 [0.0113]
year==2004	0.0257* [0.0149]	0.0265* [0.0151]	-0.0135 [0.0159]	-0.00438 [0.0176]
year==2005	0.0214 [0.0172]	0.0228 [0.0177]	-0.0228** [0.0115]	-0.0093 [0.0153]
year==2006	0.0167 [0.0360]	0.0187 [0.0372]	-0.0197 [0.0173]	-0.0019 [0.0199]
year==2007	-0.00411 [0.0405]	-0.00144 [0.0421]	0.0097 [0.0124]	0.0314* [0.0188]
Sector fixed effects	Y	Y	Y	Y
Observations	135540	135540	6449	6449
R-squared	0.267	0.267	0.092	0.092

Notes: Standard errors in brackets; \*\*\*, \*\*, and \* denote p-value less than 1%, 5%, and 10%, respectively. Profit is winsorized at the 1% level. Sector fixed effects are at the 3-digit SIC level. Standard errors are clustered at the country level.

*Table 5: Dividends over Assets*

	Case 1	Case 2	Case 3	Case 4
China dummy	0.000209 [0.00169]	0.00383** [0.00173]		
China*Time Trend		-0.000971*** [0.000106]		
State-owned dummy			0.00188* [0.00107]	0.00314** [0.00155]
State-owned dummy*trend				-0.000344 [0.000355]
Firm size	0.00119*** [0.000287]	0.00119*** [0.000286]	0.00168*** [0.000589]	0.00170** [0.000596]
year==2003	0.000766*** [0.000248]	0.000805*** [0.000245]	-0.00102* [0.000612]	-0.000799 [0.000719]
year==2004	0.00181*** [0.000360]	0.00190*** [0.000368]	0.000322 [0.000667]	0.000762 [0.000708]
year==2005	0.00278*** [0.000515]	0.00291*** [0.000496]	-0.00219*** [0.000836]	-0.00154* [0.000902]
year==2006	0.00309*** [0.000543]	0.00328*** [0.000515]	-0.00245*** [0.000734]	-0.0016 [0.000966]
year==2007	0.00334*** [0.000586]	0.00359*** [0.000544]	-0.00243*** [0.000834]	-0.00139 [0.00114]
Sector fixed effects	Y	Y	Y	Y
Observations	133952	133952	6436	6436
R-squared	0.061	0.061	0.106	0.107

Note: \*\*\*, \*\* and \* denote statistically significantly different zero at the 1%, 5% and 10% levels, respectively. Sector fixed effects are at the 3-digit SIC level. Standard errors are clustered at the country level.

**Table 6: Investment over Assets**

	Case 1	Case 2	Case 3	Case 4
China dummy	0.0140*** [0.00307]	0.0290*** [0.00209]		
China*Time Trend		-0.00400*** [0.000803]		
State-owned dummy			-0.00430** [0.00211]	-0.00476 [0.00439]
State-owned dummy*trend				0.000125 [0.000989]
Firm size	-0.000208 [0.000258]	-0.000208 [0.000257]	0.00947*** [0.00163]	0.00947*** [0.00162]
year==2003	-0.00207* [0.00104]	-0.00191* [0.00112]	0.000921 [0.00242]	0.00084 [0.00258]
year==2004	0.00243 [0.00175]	0.00278 [0.00185]	-3.45E-05 [0.00295]	-0.0002 [0.00332]
year==2005	0.00504** [0.00213]	0.00561** [0.00223]	-0.00805*** [0.00288]	-0.00829** [0.00345]
year==2006	0.00750** [0.00311]	0.00829** [0.00318]	-0.0142*** [0.00260]	-0.0145*** [0.00367]
year==2007	0.00856** [0.00361]	0.00965** [0.00381]	-0.0120*** [0.00269]	-0.0124*** [0.00444]
Sector fixed effects	Y	Y	Y	Y
Observations	134711	134711	6479	6479
R-squared	0.163	0.164	0.178	0.178

Note: \*\*\*, \*\* and \* denote statistically significantly different zero at the 1%, 5% and 10% levels, respectively. Sector fixed effects are at the 3-digit SIC level. Standard errors are clustered at the country level.

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**Table 7: Net Savings over Assets**

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	Case 1	Case 2	Case 3	Case 4
China dummy	0.0596 [0.0517]	0.0789 [0.0482]		
China*Time Trend		-0.00519 [0.00578]		
State-owned dummy			0.00694 [0.00982]	0.0310** [0.0155]
State-owned dummy*trend				-0.00656 [0.00405]
Firm size	0.225*** [0.0756]	0.225*** [0.0756]	0.0491*** [0.0182]	0.0494*** [0.0183]
year==2003	0.0229*** [0.00494]	0.0231*** [0.00499]	0.00766 [0.0104]	0.0119 [0.0116]
year==2004	0.0217 [0.0155]	0.0221 [0.0158]	-0.0146 [0.0158]	-0.00621 [0.0175]
year==2005	0.0117 [0.0182]	0.0124 [0.0187]	-0.013 [0.0118]	-0.000604 [0.0158]
year==2006	0.00131 [0.0364]	0.00234 [0.0375]	-0.00318 [0.0176]	0.0131 [0.0202]
year==2007	-0.0235 [0.0427]	-0.0222 [0.0440]	0.0228* [0.0129]	0.0427** [0.0189]
Sector fixed effects	Y	Y	Y	Y
Observations	132040	132040	6398	6398
R-squared	0.264	0.264	0.068	0.068

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Note: \*\*\*, \*\* and \* denote statistically significantly different zero at the 1%, 5% and 10% levels, respectively. Sector fixed effects are at the 3-digit level. Standard errors are clustered at the country level.

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**Table 8a: Dependence for External Finance and Corporate Savings Behavior**

	Gross savings	Profits	Dividends	Investment	Net savings
China dummy	0.043**	0.039**	-0.002*	0.016**	0.029
	[0.018]	[0.018]	[0.001]	[0.003]	[0.019]
China dummy*DEP_INV	0.121**	0.129**	0.005**	-0.007	0.129**
	[0.053]	[0.053]	[0.002]	[0.005]	[0.050]
Firm Size	0.227***	0.225**	0.001**	-0.0002	0.229**
	[0.023]	[0.023]	[0.0001]	[0.0004]	[0.023]
year==2003	0.024**	0.025**	0.0008***	-0.0023**	0.026**
	[0.011]	[0.010]	[0.0001]	[0.0008]	[0.011]
year==2004	0.027*	0.028*	0.0018**	0.0021	0.024
	[0.015]	[0.015]	[0.0002]	[0.0013]	[0.016]
year==2005	0.019	0.023	0.0028***	0.0046**	0.0144
	[0.018]	[0.018]	[0.0003]	[0.0017]	[0.0191]
year==2006	0.012	0.019	0.0031**	0.0069**	0.0043
	[0.021]	[0.021]	[0.0003]	[0.0017]	[0.0221]
year==2007	-0.013	-0.004	0.0034**	0.0075**	-0.022
	[0.017]	[0.018]	[0.0004]	[0.0016]	[0.0182]
Sector fixed effects	Y	Y	Y	Y	Y
Observations	119598	121988	120589	121302	118952
R-squared	0.267	0.268	0.059	0.169	0.266

Note: \*\*\*, \*\* and \* denote statistically significantly different zero at the 1%, 5% and 10% levels, respectively. Sector fixed effects are at the 3-digit level. DEP\_INV is the dependence on external finance for investment.

**Table 8b: Financial Constraints for State and Non-State Firms in China**

	Gross savings	Profits	Dividends	Investment	Net savings
State Dummy	-0.0124 [0.0137]	-0.0105 [0.0138]	0.00191 [0.00171]	-0.00065 [0.00308]	-0.0118 [0.0131]
State Dummy*DEP_INV	0.0426 [0.0304]	0.0421 [0.0300]	-0.00121 [0.00279]	-0.0110** [0.00470]	0.0539* [0.0311]
Firm Size	0.0594*** [0.0193]	0.0595*** [0.0188]	0.00161*** [0.000605]	0.00915*** [0.00171]	0.0506*** [0.0194]
year==2003	0.0121 [0.0111]	0.0111 [0.0111]	-0.00117* [0.000613]	0.00137 [0.00258]	0.0104 [0.0114]
year==2004	-0.0154 [0.0176]	-0.014 [0.0176]	0.000306 [0.000698]	-0.00057 [0.00314]	-0.0148 [0.0176]
year==2005	-0.0179 [0.0125]	-0.0202 [0.0125]	-0.00257*** [0.000833]	-0.00828*** [0.00306]	-0.00974 [0.0129]
year==2006	-0.0178 [0.0193]	-0.0202 [0.0192]	-0.00275*** [0.000778]	-0.0149*** [0.00267]	-0.00296 [0.0196]
year==2007	0.0118 [0.0138]	0.0108 [0.0137]	-0.00219** [0.000891]	-0.0119*** [0.00285]	0.0233 [0.0142]
Sector fixed effects	Y	Y	Y	Y	Y
Observations	5738	5783	5769	5811	5735
R-squared	0.085	0.089	0.094	0.163	0.067

Note: \*\*\*, \*\* and \* denote statistically significantly different zero at the 1%, 5% and 10% levels, respectively. Sector fixed effects are at the 3-digit level. DEP\_INV is the dependence on external finance for investment.

*Table 9: Do Politically Better Connected Private Firms Save Less?*

	Gross savings /assets	Dividend /assets	Investment /assets	Net savings /assets
Political Connection dummy	-0.485** [0.180]	-0.0004 [0.0028]	-0.0386* [0.0197]	-0.492** [0.196]
Firm size	0.414** [0.123]	0.007** [0.002]	0.00324 [0.0129]	0.436** [0.141]
year==2003	-0.048 [0.0320]	-0.009** [0.002]	-0.0474** [0.0194]	-0.004 [0.034]
year==2004	-0.402* [0.225]	-0.008** [0.002]	-0.0711** [0.0194]	-0.371 [0.262]
year==2005	-0.556** [0.233]	-0.015** [0.003]	-0.100** [0.0162]	-0.499* [0.270]
year==2006	-0.510** [0.142]	-0.014** [0.003]	-0.0988** [0.0215]	-0.422** [0.154]
year==2007	-0.454 [0.343]	-0.013** [0.003]	-0.101** [0.0242]	-0.403 [0.358]
2-digit SIC sector fixed effects	Yes	yes	yes	Yes
Observations	1269	1276	1278	1269
R-squared	0.08	0.14	0.09	0.08

Note: \*\* and \* denote statistically significantly different zero at the 5% and 10% levels, respectively. Political connection of a firm is measured by whether the chairman of the company has political connections. Source of the data: Fan, Wong, and Zhang (2007)