

# Profitability, Saving and Investment of Non-Financial Firms in Turkey

March 2012

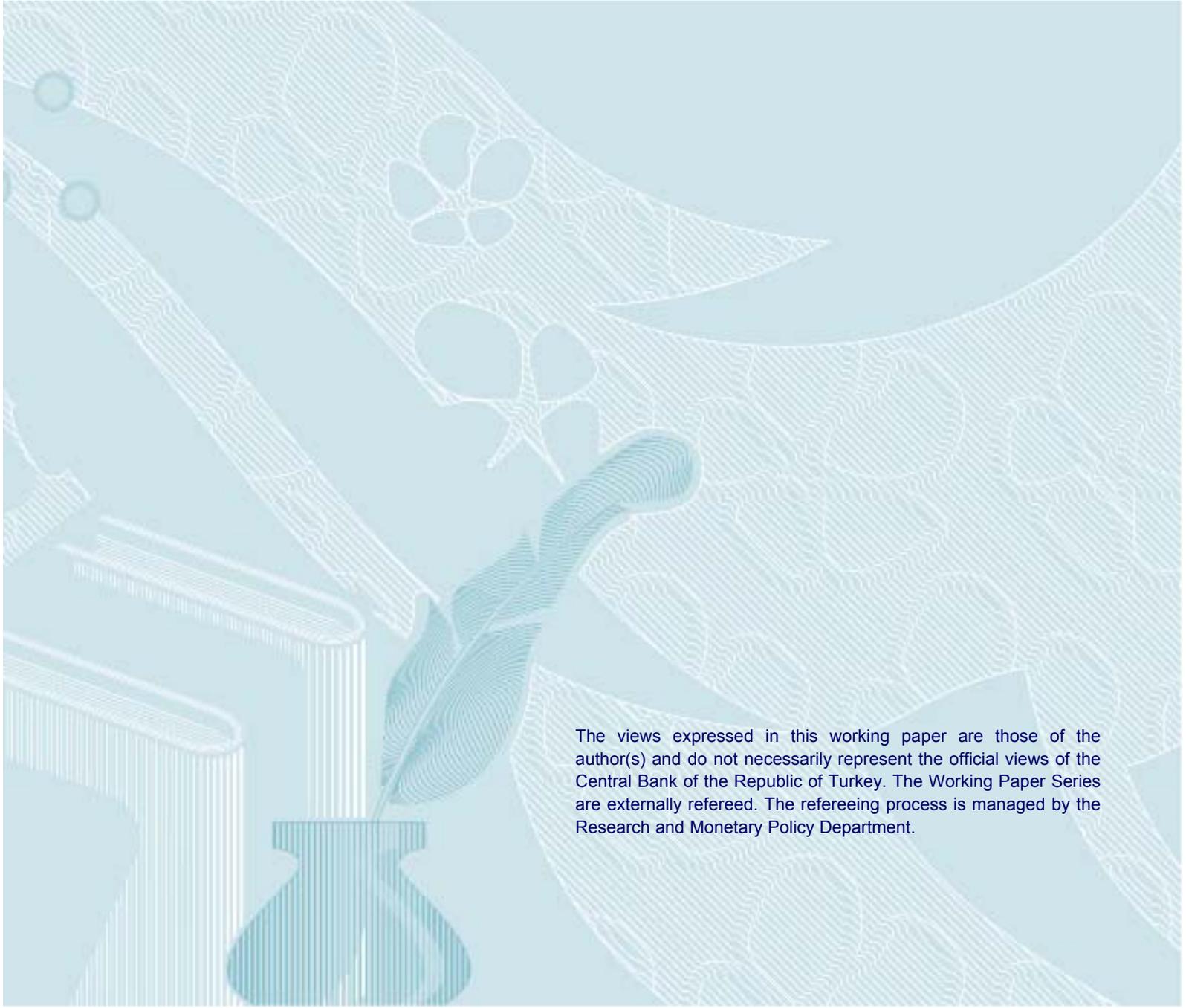
Erdal ÖZMEN  
Saygın ŞAHİNÖZ  
Cihan YALÇIN

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Address:  
Central Bank of the Republic of Turkey  
Head Office  
Research and Monetary Policy Department  
İstiklal Caddesi No: 10  
Ulus, 06100 Ankara, Turkey

Phone:  
+90 312 507 54 02

Facsimile:  
+90 312 507 57 33



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# Profitability, Saving and Investment of Non-Financial Firms in Turkey<sup>1</sup>

Erdal Özmen, Saygın Şahinöz, Cihan Yalçın<sup>2</sup>

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## Abstract

How investment is financed matters a great deal to growth, especially in countries like Turkey, where domestic savings are low and financial systems are not deep enough in supplying the funds needed for growth-generating corporate investment. In these countries there is a close link between self-generated corporate savings and investment activity, since access to external funds may be difficult, especially for firms that have little to offer in the way of collateral. When the funds available in the financial system are limited and there is a high external finance premium, corporate savings become even more important to fixed investment. This study analyzes the determinants of corporate savings and whether they enhance investment and ultimately growth.

Empirical analysis of data from listed firms shows that in Turkey the savings of nonfinancial firms as a percent of net sales are lower than those of nonfinancial firms in major developing countries. In addition, the financial sector in Turkey is far from adept at attracting savings and mobilizing funds for firms that have to depend on external financing. In fact, the ratio of commercial credits extended to bank dependent firms to GDP is not high even though it has been increasing in recent years. These two factors are the main barriers to investment by nonfinancial firms. In other words, investment activity of financial firms proves to be highly sensitive to cash flows, which suggests that financially constrained firms invest less and thus grew slowly.

In many countries corporate savings constitute about half of total savings. Policies that encourage efforts to raise corporate savings can enhance both investment and economic growth. The results of dynamic panel data regressions suggest that both firm-specific and macroeconomic variables explain savings of non-financial firms. For instance, firms' saving rates seem to increase significantly with profitability, firm size, Tobin's q, the GDP growth rate, and financial depth. They decline significantly with the ratio of tangible to total assets, the leverage ratio, the ratio of public debt to GDP, and real exchange rate appreciation.

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<sup>1</sup> Background paper prepared for The World Bank's Turkey Country Economic Memorandum (CEM) – Sustaining High Growth: The Role of Domestic Savings. We would like to thank conference participants organized by the World Bank for their valuable comments and anonymous referees for their careful reading. The views expressed in the paper are those of the authors and should not be attributed to their institutions.

<sup>2</sup> Erdal Özmen is affiliated with the Department of Economics, Middle East Technical University, Ankara, Turkey. Saygın Şahinöz and Cihan Yalçın are affiliated with the Research and Monetary Policy Department Central Bank of the Republic of Turkey, Ankara.

Corresponding author: Cihan Yalçın, Central Bank of Turkey, Ankara, Turkey. e-mail: [cihan.yalcin@tcmb.gov.tr](mailto:cihan.yalcin@tcmb.gov.tr).

## 1. Introduction

The economic theory suggests that in a financially integrated world, the link between domestic savings and investment disappears. However, early empirical evidence did not verify this theoretical claim as suggested by Feldstein-Horioka puzzle literature. Although recent empirical findings show that this link has significantly weakened during last decade, countries it is still strong in developing countries where the degree and the quality of financial integration is still weak (Hevia, 2010).

Although there has been a significant improvement in the degree of financial integration with world during the last decade, there is still a strong link between domestic savings (or more specifically corporate savings) and business investment in Turkey. The fact that business investment has been very volatile in Turkey, also resulted in a volatile growth pattern. The volatility in investment and thus growth rate was largely shaped by capital flows, which is amplified by large presence of financially constrained agents or the lack of internal funds. We think that, alongside with improvements in the quality and degree of financial integration, raising internal funds would help reduce the volatility of business investment in the case of sudden stop or capital reversal in Turkey.

Research on savings demonstrated that the plunge in private savings in Turkey in the last decade was largely driven by households saving (see discussion on this view in World Bank (2012)). This paper investigates the trend and determinants of business savings.

There are obviously some links between corporate and household savings. Firms and banks are directly or indirectly owned by households, and savings by one party can be transferred to another in a number of ways. For instance, a portion of corporate profits are transferred to households as dividends. Or individuals may use their accumulated personal savings (wealth) to start up a business. The ownership structure of a significant number of medium and small-scale firms in Turkey gives solid evidence of the tight link between firms and households. On the other hand, although raising corporate profits may not guarantee higher corporate savings,<sup>3</sup> high-return investments, and high-growth rate, there is also evidence of a close strong link between corporate profits and corporate savings in Turkey.

Although the link between firm and household income seems to be strong in Turkey, the change in the composition of private savings itself in the form of firm and household savings may have implications for high return investment and growth. This is especially true because the financial sector is not developed enough to reduce transaction costs, remove financial constraints, and attract savings in Turkey. Previous studies have often argued that firms prefer to use internal funds to finance investment because external finance carries higher

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<sup>3</sup> In a typical income statement of a firm, gross saving is defined as after-tax profits plus interest payments minus dividend payments, or the sum of net lending, net capital formation, and other capital expenditure minus net capital transfers received (Figure 3).

costs with contribution of high risk premium. In good times, when there is less uncertainty and more high-return projects are available, firms may retain their income for investing so that the shareholder equity in their balance sheets (the solvency ratio) increases. In bad times, however, uncertainty may lead firms to avoid using internal funds to finance fixed investment. Instead, they may prefer to transfer savings to shareholders as dividends or invest in financial assets that enjoy liquidity. This is consistent with evidence that in Turkey the share of financial assets in firm balance sheets jumps during recessions and falls as the economy stabilizes.

The history of Turkey also demonstrates that mismanagement of public finances seems to be an influential factor for the composition of private savings. In the late 1990s when financial markets were relatively shallow, high public borrowing and limited policy credibility put pressure on the cost of domestic funds, largely crowding out private activities. During that period the corporate sector invested heavily in interest-bearing rather than fixed investment because the return on government bonds was very attractive, and interest-bearing assets remained solvent and liquid in an extremely uncertain economic environment. The result was higher private saving but far fewer high-return fixed investments and lower economic growth.

In many countries corporate savings constitute about half of total private savings. High-income OECD members and developing countries are both among countries that have raised total savings by raising corporate savings. Raising firm profitability and ability to compete by improving the investment climate and building up institutions has been shown to boost corporate savings (IMF 2009). However, raising corporate savings may not assure high growth unless the internal funds are mobilized to finance high-return investment projects and more efficient production. Since internal finance is considered as a component of firms' collateral, increasing the share of internal finance affects investments positively not only because it avoids inefficiencies originated from adverse selection or moral hazard problem, and thus a high external finance premium, but also because it makes possible investment in high-return projects even for firms that are financially constrained.<sup>4</sup> In essence, the literature suggests that firms with high collateral would have low default risk.

Small-scale Turkish firms have been found to be financially constrained, which reinforces the association between internal funds (cash flow) and fixed capital formation (investment). Policies or initiatives that promote generation of internal funds would counteract financial constraints and thus contribute to economic growth. In this respect, policies that directly affect firm balance sheets (such as lower tax burden and dividend payout requirements) or that improve the investment climate, competition, and institutions are critical because they both motivate corporate saving and promote high-return investments.

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<sup>4</sup> We assume a close association between internal financing and corporate savings.

Corporate savings data are available only for listed firms in Turkey. Therefore, in this study we use net profits (retained earnings plus dividend payments) as a proxy for retained earnings to analyze trends in corporate savings for firms that are not listed and thus do not report dividend payments. The analysis also assumes that dividend payments as a portion of net profits do not vary much over time. The findings suggest that the decline in household savings in the 2000s coincided with a rise in corporate net profits and cash flows.

In this paper we analyze the determinants of corporate savings as a component of private savings and as a candidate for policy use to rise private saving rate, as suggested by Rodrik (2010), which is currently at historical low. We use three datasets: a sample of listed firms across countries including Turkey (the Worldscope dataset); nonfinancial firms listed on the Istanbul Stock Exchange (ISE); and a very large sample of nonfinancial firms compiled by the Central Bank of the Republic of Turkey (CBRT). The Worldscope dataset is used to compare average firm savings rates in selected countries. The ISE dataset allows us to check the developments in the firm savings and whether it played a role in the recent decline in private saving in Turkey, to investigate whether the investments of nonfinancial firms are sensitive to their internal funds (cash flows) and to test determinants of corporate saving by firm group. The CBRT dataset, which contains balance sheets for over 6,000 nonfinancial firms but not information on dividend payments and corporate savings, is used to check the robustness of the analysis of listed firms. The empirical analysis of the CBRT dataset incorporates regressions to analyze determinants of net profit margins.

The rest of the paper is made up of four sections. In Section 2 we briefly discuss international evidence on recent trends in corporate saving and analyze firm-level evidence extracted from the Worldscope dataset. Section 3 zeroes in on nonfinancial firms in Turkey, looking at profitability, external finance, and growth. Section 4 presents empirical analysis using dynamic panel data techniques. Finally, Section 5 analyzes the policy implications of our findings.

## **2. International Evidence on Corporate Saving**

Corporate savings constitute about half of total private savings in many countries (IMF 2009) and their share has been increasing in recent years as household savings have been declining.<sup>5</sup> In high-income OECD countries the rise in corporate savings has been accompanied by a surge in profitability and net lending and a decline in corporate fixed investments (OECD 2007; IMF 2006).<sup>6</sup> Corporate savings in G7 countries and current account surpluses in emerging Asia helped to lower the cost of capital globally and to contribute to the high global growth rate before the global crisis hit (IMF 2009). Buoyant global demand in

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<sup>5</sup> According to the IMF (2009), corporate savings constitute 45 percent of private savings in Asian countries and over 55 percent in non-Asian countries.

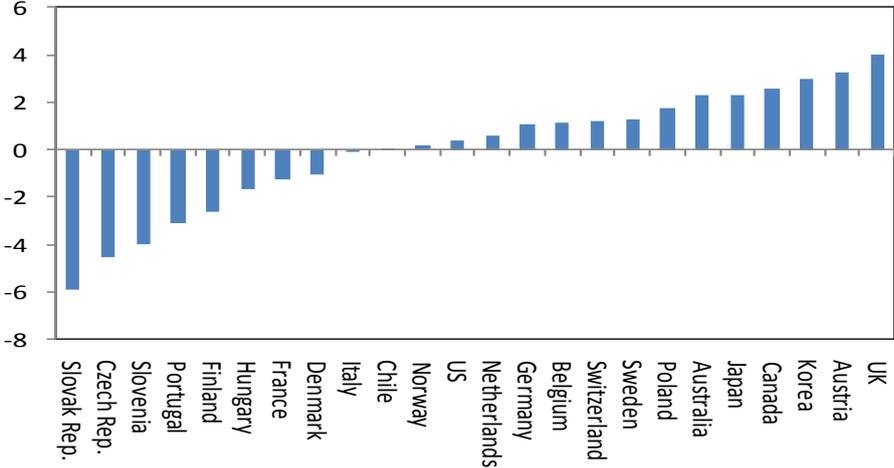
<sup>6</sup> Countries in the sample are Australia, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, the United Kingdom, and the United States.

turn encouraged economic activity and corporate profitability even in some emerging economies like Turkey that are not oil producers. Moreover, in G7 countries the rise in corporate savings (or net lending) was persistent over the business cycle (OECD 2007).

Bates, Kahle, and Stulz (2006) argue that firms in high-income countries tend to hold more liquid assets as profits surge. The cash to assets ratios of US industrial firms increased about 129 percent between 1980 and 2004, which helped reduce their debt. Firms with high corporate savings (or net lending) searched for high-return investment opportunities abroad, which encouraged capital flows in the form of net foreign direct investment (FDI) and in turn reduced fixed investment in FDI countries of origin (especially high-income OECD countries). The share of liquid assets has tendency to increase globally. This is consistent with a search for investment opportunities because it provides flexibility for investing abroad. This was a primary factor behind the surge in non-debt global capital flows in recent decades.

Figure 1 shows changes in the share in GDP of corporate savings for OECD member countries between two periods: 2003–08, when global economic activity was very strong and 1995–2002. Clearly, corporate savings in selected high-income countries increased generally in each period but declined in relatively low-income countries. This is consistent with the fact that firms in high-income countries reduced dividend payments and exported capital for new investment opportunities (IMF 2009; OECD 2007).

**Figure 1. Change in Average Corporate Savings Rates Between 2003–08 and 1995–2002 (pps)**



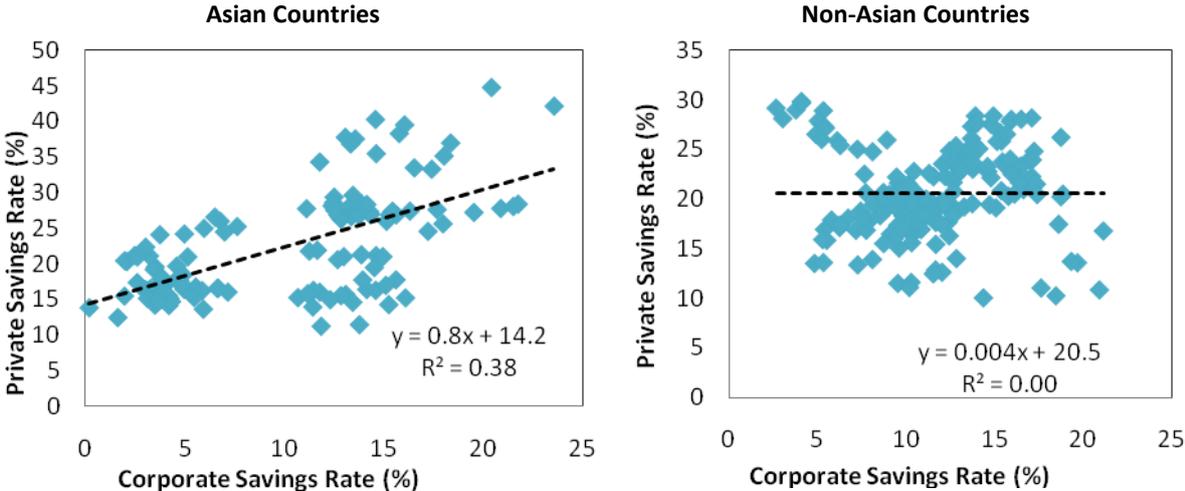
Source: OECD.

Various factors contributed to the surge in corporate savings in high-income countries. Moderation of wages; a rise in net profits (mainly from property income); and declines in corporate taxes as a percent of GDP, interest rates, and the transaction costs associated with globalization and technological change could be mentioned as the driving forces for the surge in corporate savings. Also, in countries where corporate savings surged, dividend

payments generally did not rise with net profits. On the other hand, the decline in fixed investment as a percent of GDP in these countries was closely associated with a decline in prices of capital goods and capital outflows into high-return projects in abroad. This apparently contributed to speed up the convergence across countries (IMF 2009).

The rise in corporate savings is also notable in South Korea, China, India, Japan, Australia, Taiwan, and the Philippines. The increase in corporate savings especially in China and India was accompanied by the rise in household savings, which pushed up total saving rates. As the IMF (2009) documented, however, the positive association between corporate and private savings observed in Asian countries is not seen beyond the region (Figure 2). Unlike non-Asian countries, private savings in East Asia significantly increased with corporate savings, which suggests that piercing the corporate veil argument was not valid in those countries.<sup>7</sup> The IMF (2009) linked the rise in corporate savings to robust growth, increased profitability, but low dividend payouts to reduce indebtedness. In essence, saving behavior of firms in East Asia has changed significantly after 1997 Asian crisis towards avoiding excessive indebtedness.

**Figure 2. Corporate and Private Savings Rates**



Source: IMF (2009).

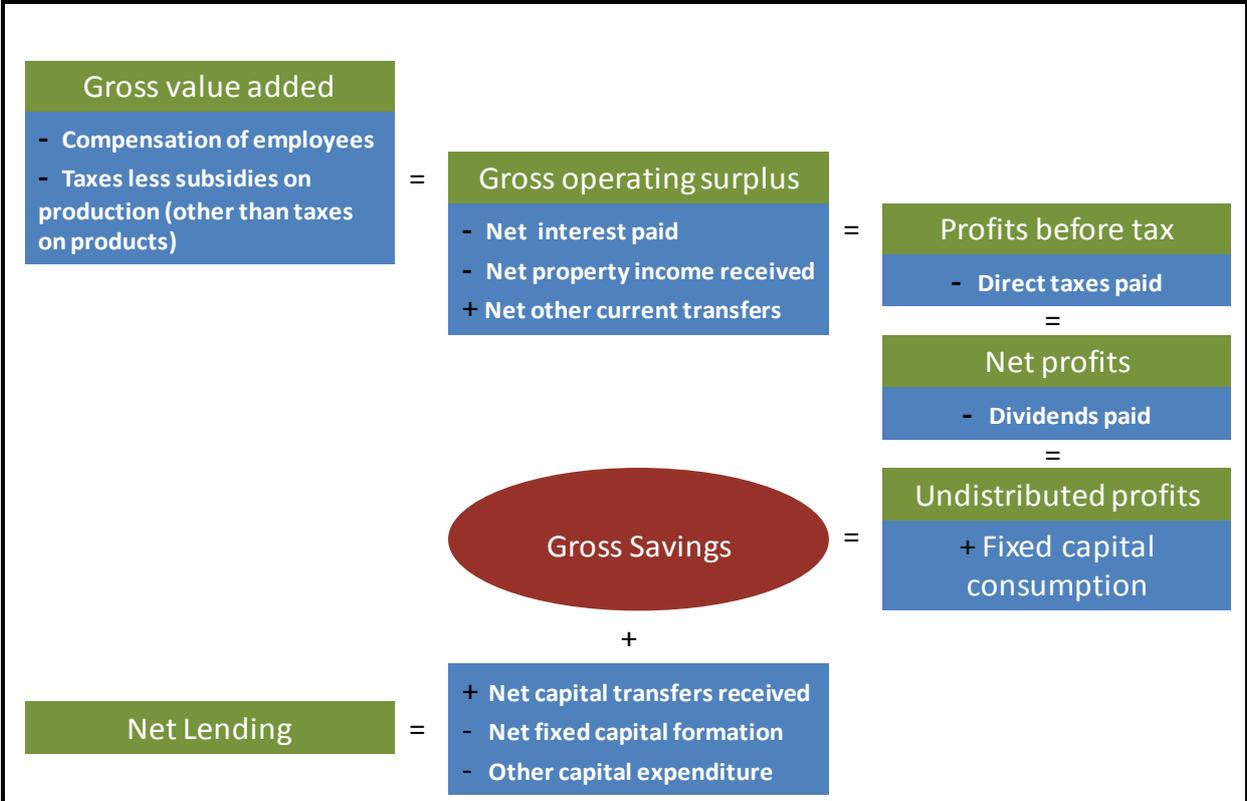
The trend to retain profits (corporate savings) within Asian firms is often attributed to underdeveloped financial markets and the lack of sound corporate governance. However, the main factor in the trend, particularly in China and India, was profitability: Corporations increased their savings not because they lowered their dividend payments but because their net profits rose. For example, in China corporate profits as a percent of GDP nearly quintupled in 1999–2007. Note that despite the rise in both corporate and household

<sup>7</sup> The term “piercing the corporate veil” suggests that the rights and responsibilities of a corporation are independent and distinct from the people who own or invest in them. Therefore, saving decisions of corporations are independent of the decisions of individuals or shareholders.

savings, emerging Asia investment stagnated after the East Asian crisis, feeding current account surpluses (IMF 2009). To clarify the link despite different definitions of profitability, savings, and dividends, Figure 3 shows the income statement of a typical nonfinancial firm.

It is often argued that private savings are not likely to be raised through corporate savings because it is easy to pierce the corporate veil. Unless net profits rise, increasing corporate savings may imply lower dividend payments. Such a negative property income shock to households might ultimately push down their savings, which would have at least some impact on private savings generally. The share of corporate in private savings in non-Asian countries is generally higher than in Asian countries and the argument for piercing the corporate veil seems to be valid in the former in that the association between corporate and private savings is very weak and the rise in corporate savings is balanced by a fall in household savings. These observations are consistent with the “savings glut” argument that growing US current account deficits were mainly balanced by rising current account surpluses in East Asia and oil-exporting countries, and buoyant economic activity in non-Asian countries before the global crisis was partly financed by high private savings in Asia. Turkey can be classified in the group where the rise in corporate savings was accompanied by a dramatic decline in household savings, which to a great extent explains growing current account deficits in recent years.

**Figure 3. Income Statement of a Typical Non-financial Firm**



Source: OECD (2007).

Although firm profitability in Turkey, as elsewhere, has been upward trend in recent years, private savings have fallen steeply—something that supports the corporate-veil-piercing argument in Turkey. However, rise in firms' savings did not compensate for the decline in household savings. This is not inconsistent with theoretical arguments that corporate savings may not affect savings generally, because firms decide to distribute or retain profits, and households decide whether to consume or save. Moreover, if firms save by changing the timing of dividend payments (reducing the dividend payout ratio) in order to invest in high-return projects, the growth impact could be higher than the return on consumption in countries like Turkey that have low capital output ratios.

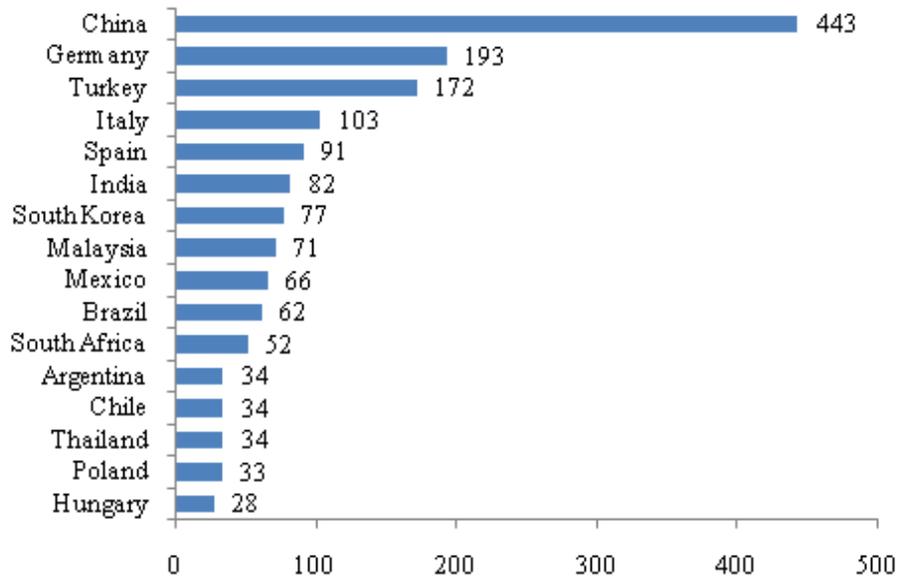
In what follows, we use Worldscope data to compare the savings of listed firms in selected countries with the savings of listed nonfinancial firms in Turkey. We use annual data for 1,575 firms in 16 countries for the period 1998–2009 (see Figure 4). The countries (China, South Korea, Malaysia, Thailand, Chile, Brazil, Argentina, Mexico, Poland, Hungary, South Africa, India, Spain, Italy, Germany, and Turkey) are either matured economies or emerging markets that resemble Turkey. We calculate several ratios over time, including saving rate, profit margins, cash flows ratio, investment ratio, effective tax margin, salary margin, and dividend payout-ratio. Total assets are used as a proxy for firm size, and all financial ratios are weighted by firm size in the firm-level data. Outliers in financial ratios are systematically excluded.

Corporate savings by definition are associated with profits. We look at several measures of profit margins, each reflecting information at various points on the way to retained earnings (corporate savings). Operating profit margin is operating income divided by net sales or revenues. It measures the proportion of a company's revenue that is left over after operating costs (wages, raw materials, etc.) are paid but before taxes, interest payments, and other indirect costs. Similar information is extracted from the profit margin based on earnings before interest and tax payments (*EBIT*) and the profit margin after tax and interest payments (net profit margin). Higher profit margins imply more funds available for investments or dividend payments. Figure 5 shows country averages for three types of net profit margins for 2003–09. On average, firms in India, Malaysia, South Africa, Thailand, Brazil, Chile, and Argentina have high profit margins. Turkish firms have lower average profits than those of most emerging economies in the data set. The margin between net profits and *EBIT* is very large for China, Italy, Brazil, Argentina, Chile, and South Korea, which suggests that the cost of external financing and the tax burden on net sales relative to net profit margin is large in these countries.<sup>8</sup>

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<sup>8</sup> We trim the data for each country based on net sales, for which the profit rate of Turkish firms has the highest standard deviation.

**Figure 4. Number of Firms Analyzed per Country**



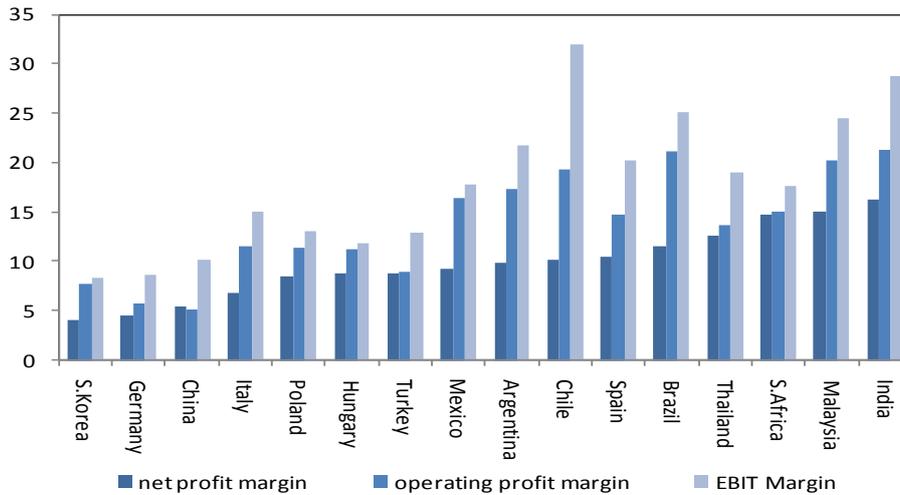
Source: Worldscope database.

We also calculate gross corporate savings by subtracting dividend payouts from net profits. On average Turkey saves less (Figure 6) than such other emerging countries as India, Malaysia, South Africa, Argentina, Brazil, Thailand, and Mexico. That finding is consistent with Turkey's low overall private saving rate. However, Chinese firms also save relatively less, which is not consistent with China's high private savings. These findings are consistent with those of Bayoumi, Tong, and Wei (2010), who used the same dataset with a different methodology to analyze corporate saving rates in selected countries. These findings do not give support to the argument that corporate savings are the source of high savings in China. Bayoumi et al. (2010) also suggest that the saving rate of listed firms in Turkey is low compared to many emerging countries, which is consistent with the average figures given in Figure 6.<sup>9</sup>

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<sup>9</sup> Bayoumi, Tong, and Wei (2010) in their analysis used firm-level data conditional on sector and year fixed effects, firm size, and country dummies. The coefficient of the country dummy provides information on the relative magnitude of corporate savings. The dummy for Turkey implies that savings of firms listed on the ISE are high compared to high-income countries and China and low compared to countries such as South Africa, Malaysia, Indonesia, Thailand, and India.

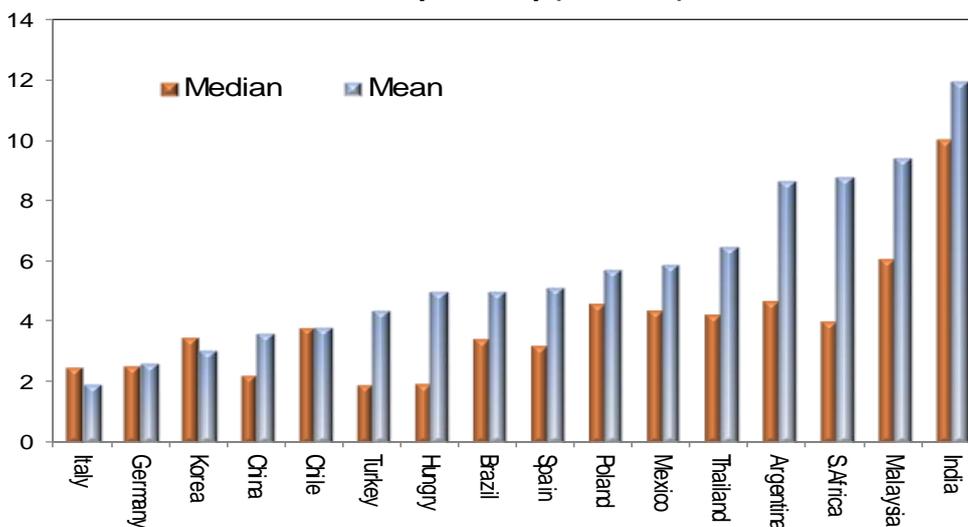
**Figure 5. Weighted Average Profit Margins of Firms by Country (2003–09)**



Source: Worldscope database.

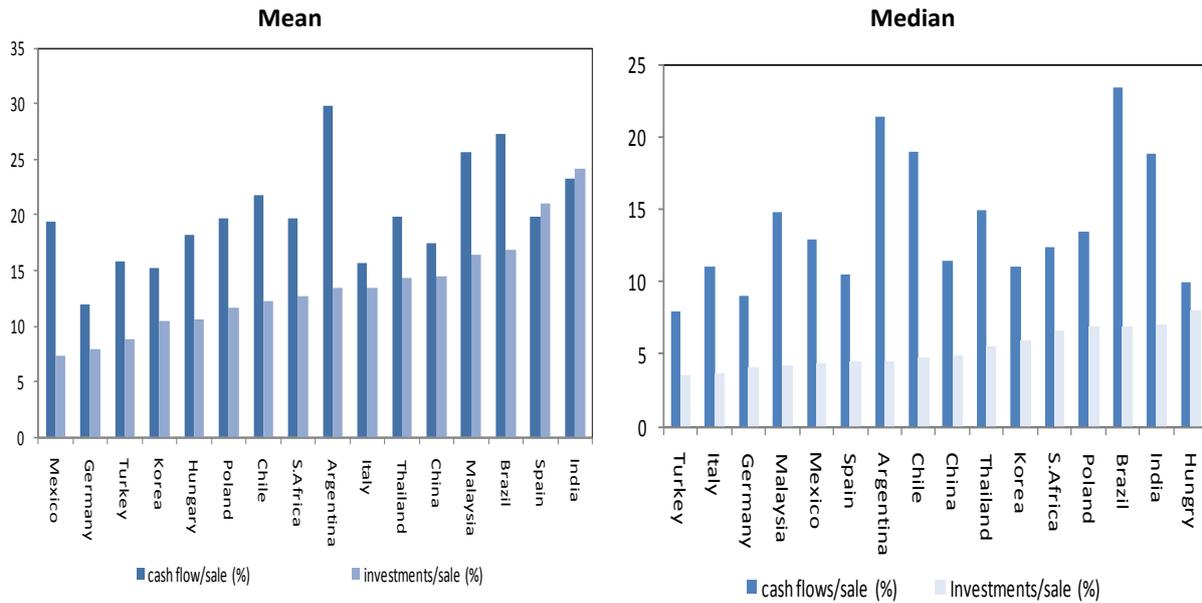
Savings or cash flow reflects the supply of internal funds available for investment. Investment may not be limited significantly by the level of savings or cash flow unless firms face difficulties in accessing external finance. There have been numerous studies in the literature, as some examples are given below, showing that corporate investment is sensitive to internal funds. Figure 7 reports the country averages of cash flow and capital expenditures to net sales ratio; as is apparent, capital expenditures (as percent of net sales) of Turkish firms are very low compared to those of firms in most countries, and the correlation between the cash flow ratio and capital expenditures (fixed investments) ratio is over 0.5. We think both difficulties in accessing to external finance and low cash flow may be reasons for the low investment performance of Turkish firms.

**Figure 6. Average and Median Gross Savings Rates of Firms by Country (2003–09)**



Source: Worldscope database.

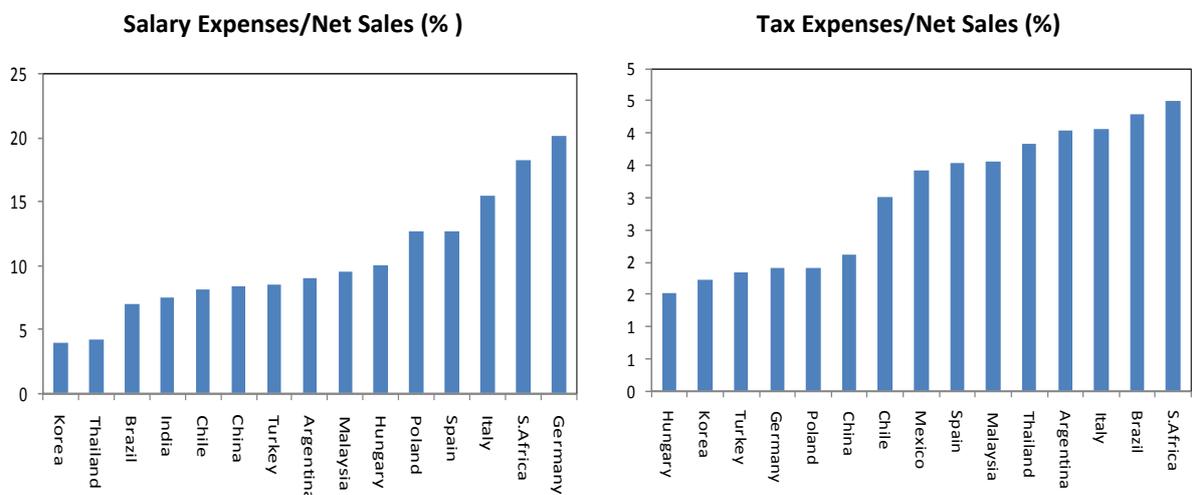
**Figure 7. Average Capital Expenditures and Cash Flow Ratios of Firms by Country (2003–09)**



Source: Worldscope dataset.

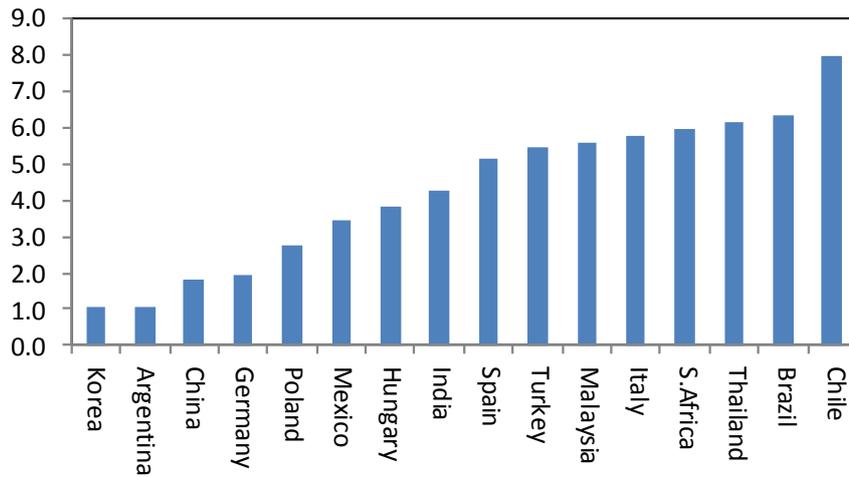
Firm-level evidence suggests that labor cost, tax burden, dividend payments, and finance cost are not primary factors in lowering firm savings in Turkey. Instead, low savings are associated primarily with low operating profits (Figure 5). Figure 8 shows the ratios of taxes and salaries to net sales by country. Average shares of tax and salary payments in net sales are not very high for Turkish firms compared to firms in most other countries. In Chile, China, India, Brazil, Thailand, South Korea, and Mexico firms have lower average wage bills than in Turkey; Turkish firms are among those that have the lowest effective tax expenses following Hungarian and Korean firms. On the other hand, Turkish firms do have a high dividend payout ratio (Figure 9).

**Figure 8. Weighted Averages for Key Indicators (Average for 2003–09)**



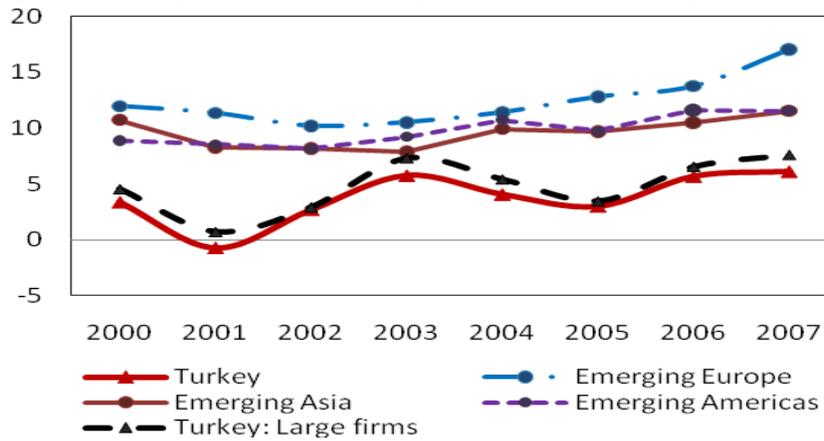
Source: Worldscope dataset.

**Figure 9. Dividend Payout Ratio (Average for 2003–09)**



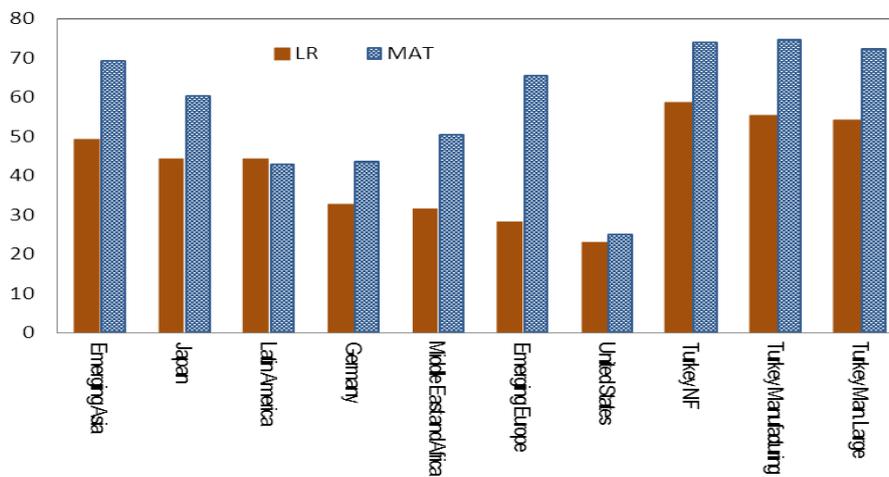
Source: Worldscope dataset.

**Figure 10. Corporate Profitability: International Comparison (%)**



Source: CBRT balance sheet data; IMF

**Figure 11. Corporate Leverage Ratio and Maturity: International Comparison (%)**



Source: CBRT sector balance sheets; IMF.

Aggregated data also confirm that corporate profit margins in Turkey are lower than the average for emerging economies (Figure 10). Turkish firms are highly leveraged and the maturity of their debt is very short by international standards (Figure 11).

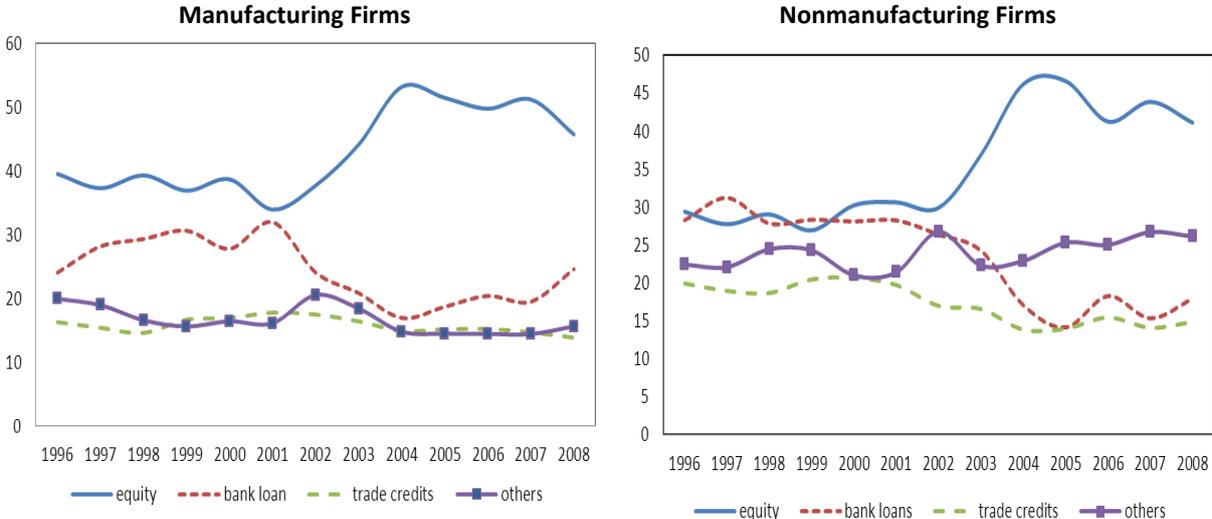
**3. Descriptive Analysis of Nonfinancial Firms in Turkey**

**External vs. Internal Finance as Constraints on Firm Growth**

Financial sector reform that increases access to credit and improves corporate governance might affect corporate savings either positively or negatively. It appears that reforms actually reduced corporate savings severely in countries with less developed financial markets, such as emerging Asian countries (IMF 2009). World Bank studies on investment climate and access to finance suggest that small and medium sized firms in Turkey grew more slowly than some of their peers elsewhere (World Bank 2010). There are two possible reasons for this. First, small and medium-sized firms in Turkey are financially constrained: they may not be able to access external financing, such as bank loans or other forms of market finance even if they are potentially profitable. Second, very small firms may be reluctant to use all their internal funds for investment.

The composition of financing for nonfinancial firms changed substantially after the 2001 crisis when structural reforms and heavy capital inflows boosted domestic demand. Improvements in the areas of investment climate and macroeconomic stability encouraged firms to use their growing profits to finance both efficiency and capacity-enhancing investments. As a result, the share of equity finance on the balance sheets of nonfinancial firms increased from about 35 percent in 2002 to over 50 percent in 2007, just before the global crisis. The share of bank financing fell initially, followed by a rise after 2004. The share of trade credits and other debt held steady during the period (Figure 12).

**Figure 12. Composition of the Liabilities of Nonfinancial Firms**



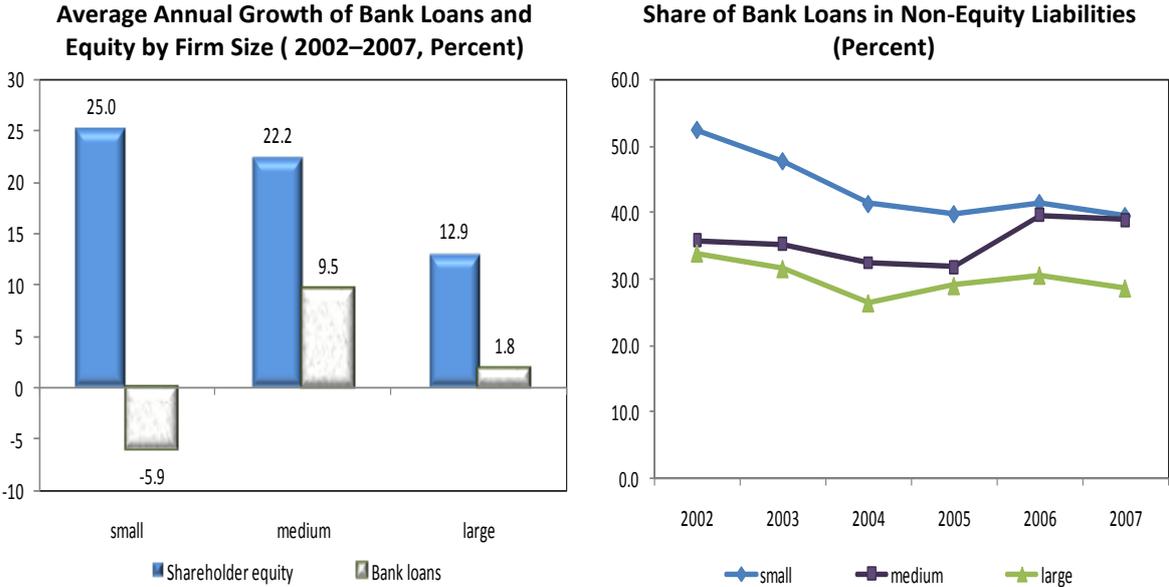
Source: CBRT balance sheet data.

Turkey is a bank-based country; nearly half of non-equity liabilities are bank loans, and market financing is negligible. On the other hand, the share of trade credits in corporate balance sheets is much larger in Turkey than in other countries (Özlü and Yalçın, 2010). In recent years the corporate sector in Turkey has had considerably more access to bank financing. Bank loans to corporations as a percent of GDP more than doubled in 2002–08. The increase in bank financing may offer some information about the extent of access to credit. Real bank loans to corporations grew by about 37 percent cumulatively between 2006 and 2009. However, for the same period the growth of real bank credits to SMEs was less than 10 percent, suggesting that SMEs are financially more constrained.

This seems to be verified by firm-level evidence. We analyze the balance sheets of nearly 6,500 firms that reported in 2002–07. The average growth of real bank loans to small firms in the sample was negative, but it was positive for large and medium firms. Small firms seem to finance their growth mostly through internal funds (retained earnings) while medium and large firms used both internal and bank financing. As a result, although the share of bank finance in non-equity liabilities for small firms was over 50 percent in 2002, by 2007 it had fallen by a third (Figure 13). Bank loans to SMEs as a percent of GDP also grew more slowly than loans to large corporations (Figure 14).

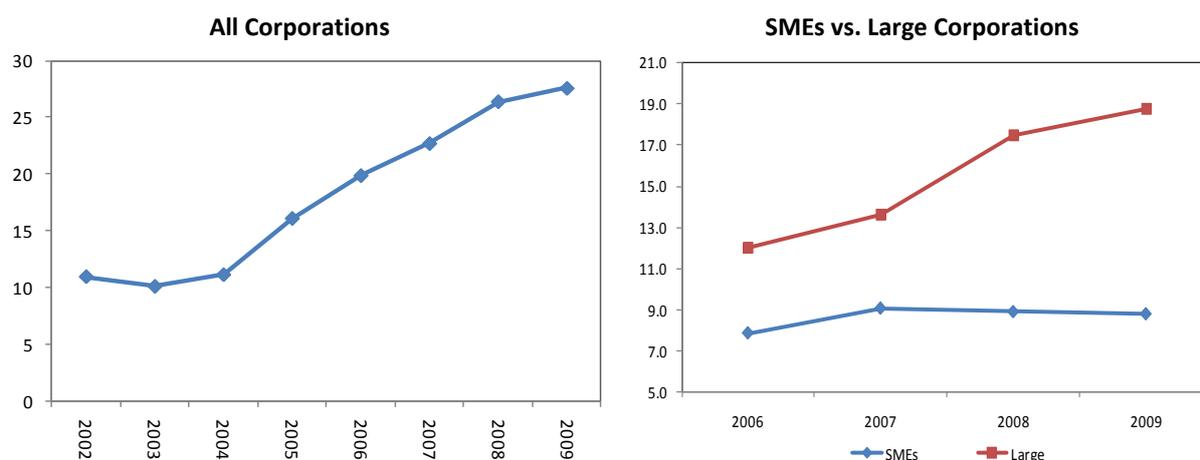
Using only internal funds can be a binding constraint on the growth of firms if they do not have access to external finance and the dividend payout ratio is high. Raising the corporate savings rate by both reducing dividend payout ratios and boosting profitability may only partly moderate the constraints. A financial system that supplies enough funds for high return projects is crucial for boosting growth. Access to finance may help increase the savings rate not only through profitable investments but also through retaining earnings.

**Figure 13. Financing Corporate Growth**



Source: CBRT balance sheet data.

**Figure 14. Bank Loans to Corporations (% of GDP)**



Source: Banking Regulation and Supervision Authority.

The question of why relatively small firms, even though generally profitable, have been growing slowly can be answered in terms of both access to finance and corporate governance. The former is crucial for rapid growth (World Bank 2010), but access to credit should be complemented by policies that enable firms to use internal funds to enhance their growth prospects. In Turkey, it appears, small firms are less likely to use their profits to generate growth by investing in fixed assets.

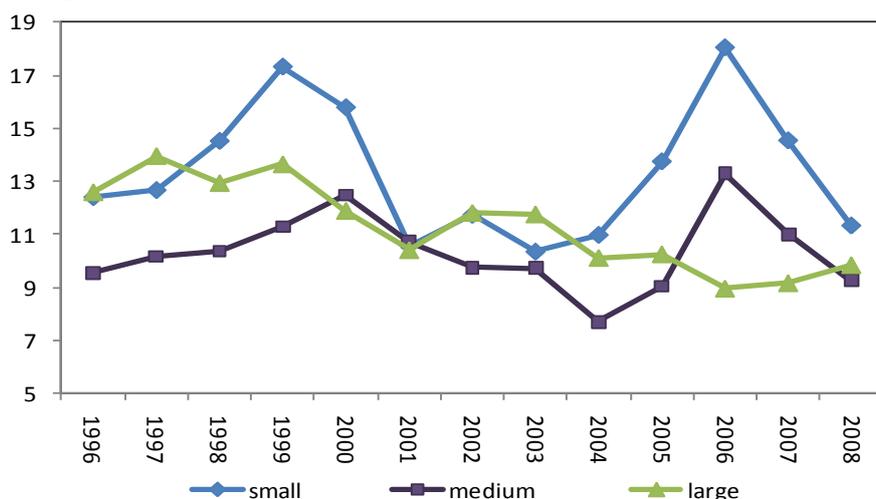
Intensified economic uncertainty in the second half of the 1990s as real interest rates rose led firms to change the composition of their assets in favor of those that earned interest. In essence, they tended to hold more liquid assets, such as government securities and cash. This tendency lessened after 2001, when reforms reduced uncertainty and raised confidence. Figure 15 shows the share of liquid assets (cash and securities) by firm size over 1996-2006. SMEs seem to be very sensitive to influences leading them to hold cash. This supports the argument that smaller firms are more cautious about undertaking fixed investments.

### **Corporate Profitability and Savings: Firm-Level Evidence**

Corporate savings are an important component of private savings in Turkey. Although private savings in Turkey have not been systematically decomposed by corporate and household, there is evidence that the share of corporate in total savings rose substantially in recent years as corporate profits and savings surged and private savings declined.

Corporate saving is a natural candidate for a policy tool to raise private savings unless households dissave unproportionally. In other words, households may not reduce their savings by as much as corporate savings rise because of capital market imperfections, capital gains, and the propensity to consume using dividend income.

**Figure 15. Liquid Assets by Firm Size (Percent of Total Assets)**



Source: CBRT balance sheet data.

The profits of nonfinancial firms in CBRT dataset increased substantially during the high-growth period of 2002–07 when household savings, according to household budget surveys, were declining steadily (Figure 16). The net profits (after tax and interest payments) of the 6,500 firms regularly reporting during 2002-2007 have increased by about 20 percent annually in real terms. As a result the shares of net profits abovementioned firms in private savings and in GDP have increased substantially. This suggests that sharp decline in private savings rate after 2001 crisis was largely driven by the decline in the household savings rate. On the contrary, sharp decline in net profits (or savings) of firms largely explains the drop in private savings rates in late 1990s when economic activity slowed down mainly due to macroeconomic instability (Figure 16).

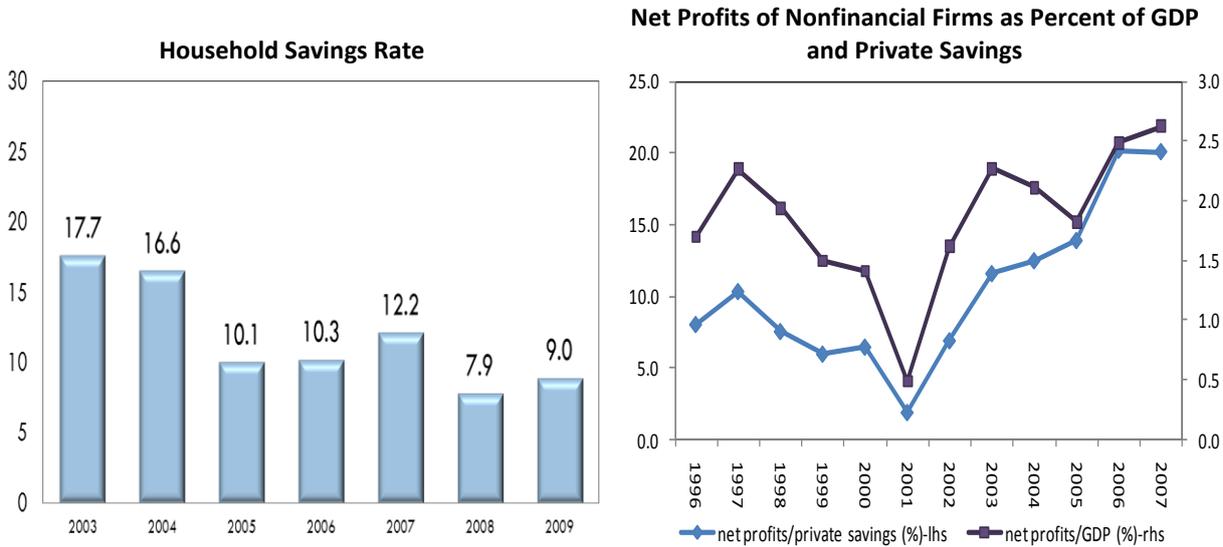
On the other hand, the real net profits of small firms grew faster than those of large firms in the post-crisis period, 2002-2007, but the growth rate of their real assets was only marginally above that of large firms.<sup>10</sup> The ratio of the annual growth rate of real net profits to the annual growth rate of real total assets for small firms was more than double that of large firms for 2002–07 (Figure 17). Small firms seem to be less likely than large and medium firms to invest their profits into fixed assets even when growth is relatively favorable.

Because dividend payments by ISE-listed firms are the only information available on dividend payments in Turkey, we use this dataset to derive information about corporate savings. Based on this data it can be concluded that dividend payments as a percent of net profits (dividend payout ratios) have been quite stable, averaging 40 to 50 percent in recent years, which suggests that the share of corporate savings in net profit does not change significantly

<sup>10</sup> Firms that employ fewer than 50 people are considered small; those that employ more than 250 are considered large and those that employ between 50-250 are considered medium.

(Figure 18).<sup>11</sup> This stable pattern of dividend payout ratios is mainly shaped by manufacturing firms; payout ratios of nonmanufacturing firms are quite volatile.<sup>12</sup> The gradual decline in the dividend payout ratio in 2002–07 was muted by a surge in 2008, when the global crisis hit corporate profits hard. Declines in the dividend payout ratio coincided with rises in cash flow and capital investment (Figure 19; see also Figure 22).

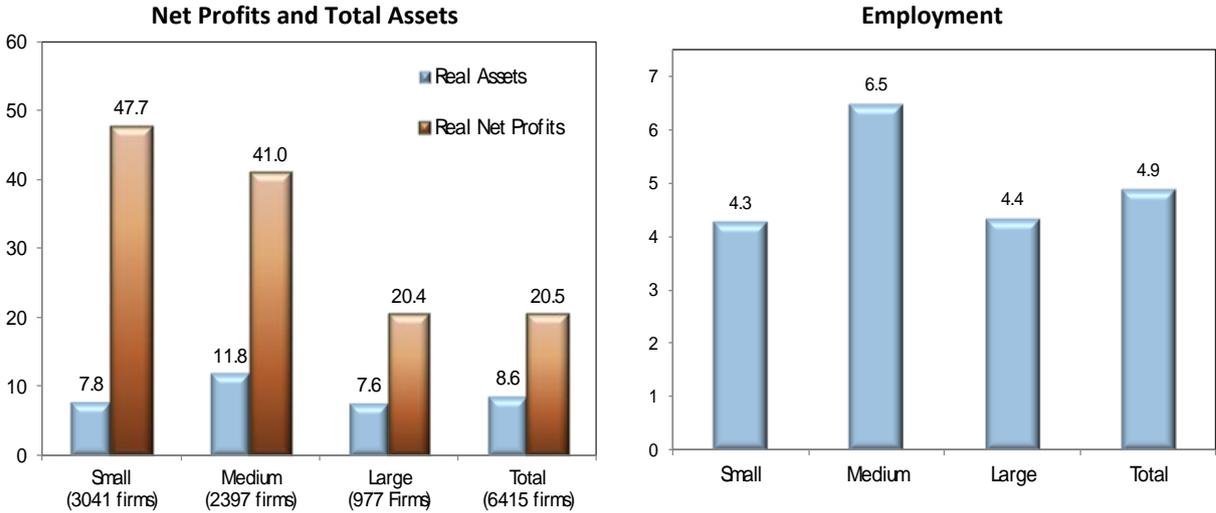
**Figure 16. Household Savings Rate and Firm Profits**



Source: Household Budget Survey, TurkStat

Source: CBRT and World Bank staff calculations.

**Figure 17. Average Annual Growth Rates of Net Profits, Total Assets, and Employment by Firm Size (2002–07)**

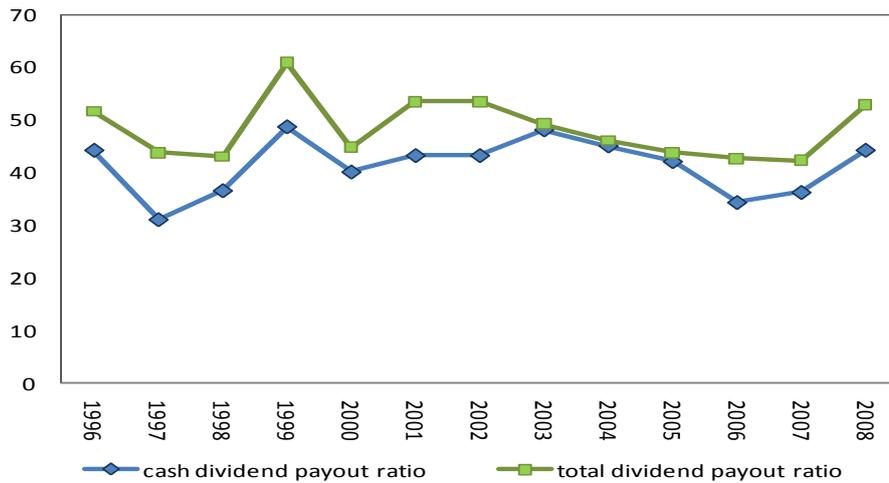


Source: CBRT and World Bank staff calculations

<sup>11</sup> Mean cash dividend ratios across the years are sales-weighted. Note that about 15 percent of total dividends for 2002–08 were paid in stock.

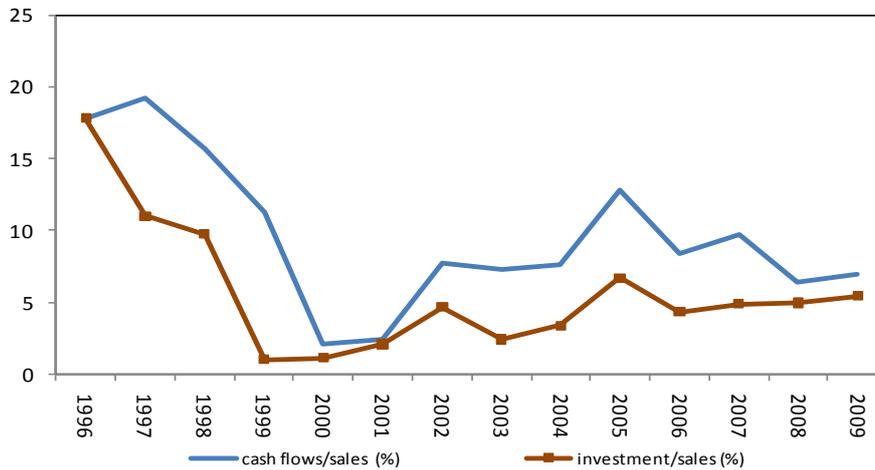
<sup>12</sup> This calculation method does not consider capital gains to be part of corporate savings.

**Figure 18. Mean Dividend Payout Ratio of ISE-Listed Firms (Percent)**



Source: ISE and World Bank staff calculations.

**Figure 19. Average Cash Flow and Capital Investment Ratios**

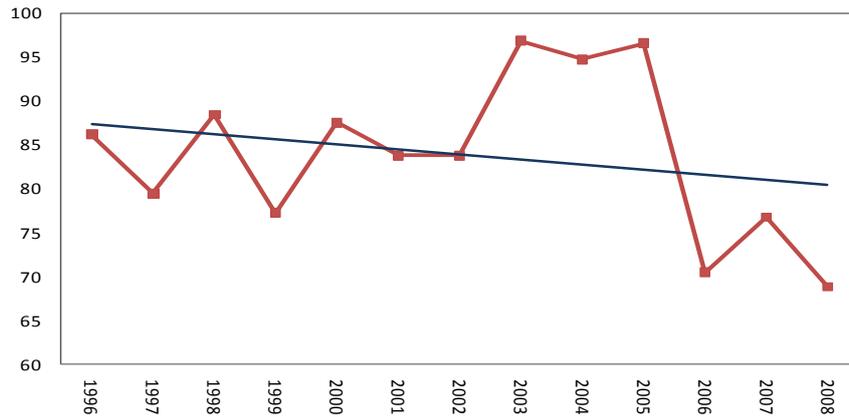


Source: ISE and World Bank staff calculations.

Total dividend payments consist of both cash and stock dividends. The share of cash dividends averaged about 85 percent from 1996 through 2003, surged to 96 percent in 2003–05 when domestic demand was strong, and then fell abruptly to 72 percent in 2006–08 as domestic demand slowed (Figure 20). This may mean that firms reduced dividend payments as the times soured in order to use retained earnings as working capital. However, listed firms have to distribute at least a minimum portion of their net profits, which also affected their cash payout policy.<sup>13</sup> Changes in the withholding tax on dividends also seem to have an impact on the type of dividend payments. The rise in the share of cash dividends in 2003 and the decline in 2006 seem to coincide with a decline in the withholding tax rate in 2003 and a rise in 2006 (Figure 21).

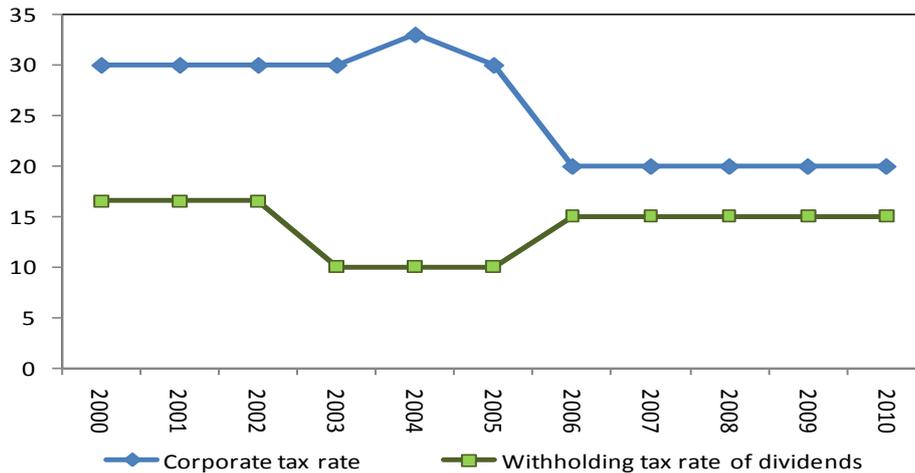
<sup>13</sup> The law currently requires firms to pay out at least 20 percent of distributable profits annually.

**Figure 20. Cash as a Share in Total Dividend Payments (Percent)**



Source: ISE and World Bank staff calculations.

**Figure 21. Withholding Rate on Dividends and Corporate Tax Rate (Percent)**



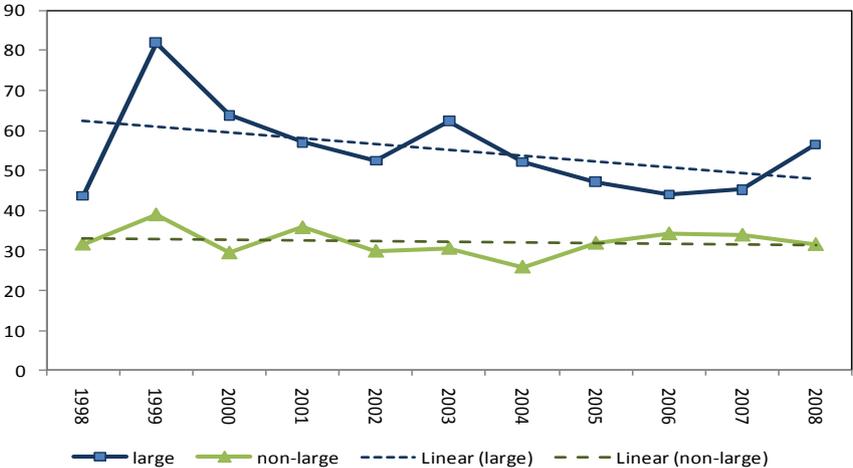
Source: Uygur (2010).

Dividend payout ratio increases with firm size; larger firms have higher ratios. Dividend payout ratio for large firms tends to decline over time, while those of smaller firms are quite stable (Figure 22).<sup>14</sup> The proportion of firms paying dividends has been declining globally, as has been the share of liquid assets in firm balance sheets (IMF 2009; OECD 2007). In a globalized world firms may stop paying dividends to build up their cash positions so as to benefit from better investment opportunities. Similar trend is also valid for Turkish firms. Figure 23 shows that the proportion of ISE-listed firms that paid dividends also declined up to 2003. Adaoğlu (2008) noted that in Turkey the total amount of dividend payments did not decline proportionately to the number of firms paying dividends because profitability was

<sup>14</sup> ISE-listed firms are almost all large. However, to look at firm groups with different characteristics, we split firms based on size, using total assets for classifying firms as non-large and large. Firms in the upper quartile of assets are treated as large and the rest as non-large. Similar picture was obtained when we split firms according to their number of employees.

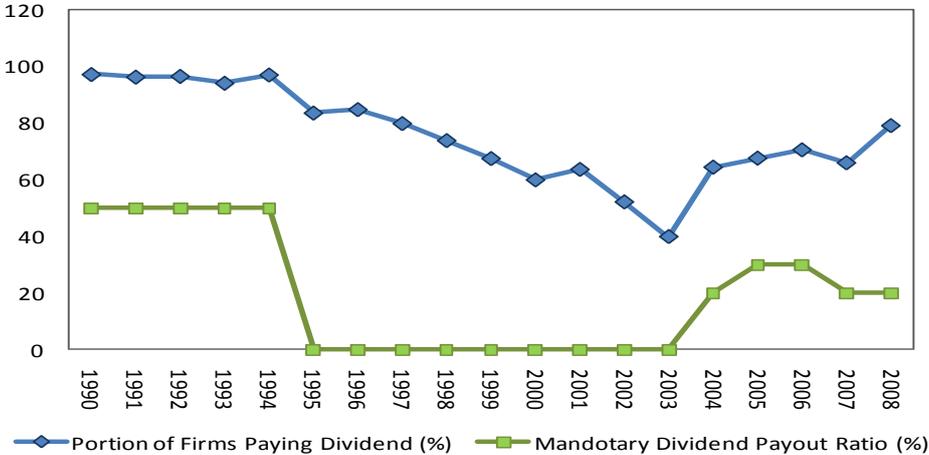
concentrated in a small number of firms. After the mandatory dividend payout policy was introduced in 2003,<sup>15</sup> the number of firms with paid dividends has increased, though the payout ratio showed a slight decline because investment activity was relatively strong for 2003–07.

**Figure 22. Dividend Payout Ratios by Firm Size (Percent)**



Source: ISE and World Bank staff calculations.

**Figure 23. Proportion of Profitable Firms that Pay Dividends and the Mandatory Dividend Payout Ratio (Percent)**



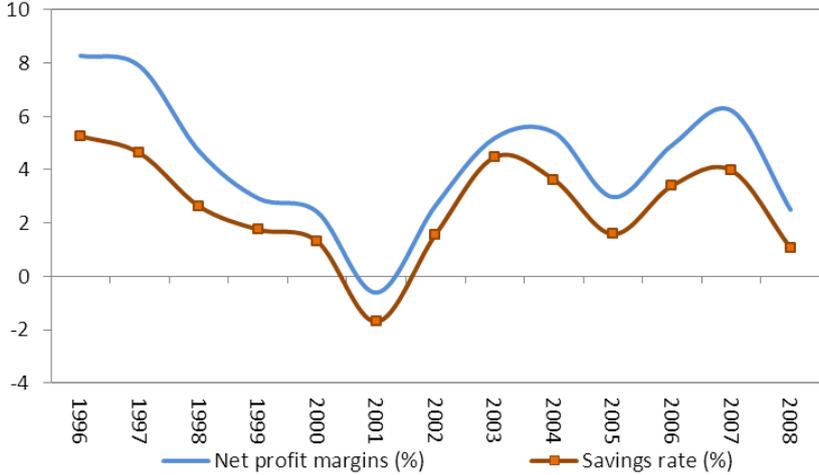
Source: ISE and the Capital Market Board.

Figure 24 shows that after 2001, when private savings were being squeezed, corporate savings rates and profit margins increased. This suggests that households largely shaped the

<sup>15</sup> The mandatory dividend payment policy was abolished in 1994 and reintroduced as of 2003. The minimum dividend payout was set at 50 percent of net profits until 1994. When the policy was reinstated in 2003, publicly traded corporations had to pay out at least 20 percent of net profits (distributable income) in cash or stock or a combination. In 2004 and 2005, the minimum payout was increased to 30 percent but reverted to 20 percent in 2006.

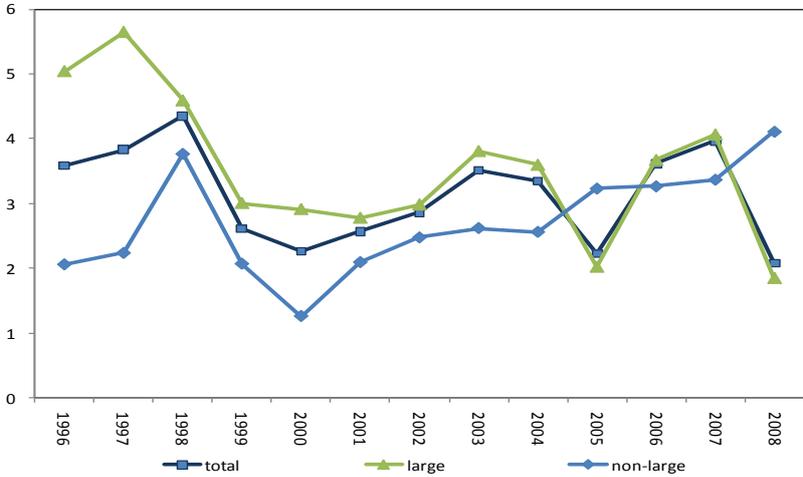
decline in private savings generally.<sup>16</sup> However, in 1998–2000 and 2005, the plunge in private savings was supported by a decline in corporate savings. On the other hand, firms in the upper quartile of size save more than relatively small firms.<sup>17</sup> In other words, corporate savings increase with firm size. Yet in recent years the savings rates of non-large ISE firms, though generally lower than those of large firms, have shown a steady rise while large-firm rates have been noticeably volatile (Figure 25).

**Figure 24. Net Profit Margins and Savings Rates (Percent)**



Source: ISE and World Bank staff calculations.

**Figure 25. Savings Rates by Firm Size (Percent)**



Source: ISE and World Bank staff calculations.

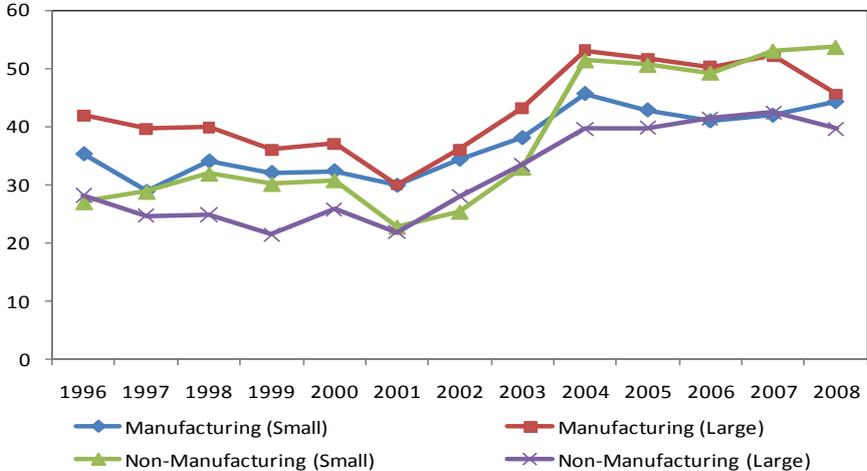
In 2001–2008, firms tended to finance investment predominantly through internal funds. In fact, the share of shareholder equity in total assets rose dramatically after the 2001 crisis and the share of external finance, including bank loans, declined (Figure 26). This coincides

<sup>16</sup> Detailed analysis of the profitability of the larger dataset supports the observation that nonfinancial firms in Turkey have become more profitable.

<sup>17</sup> In 2008 firms listed on the ISE employed on average over 2,000 employees.

with an acceleration of foreign capital inflows. In this period firms benefited from financing investment both internally and using relatively cheap external financing.

**Figure 26. Share of Shareholder Equity in Total Assets (Percent)**



Source: CBRT and World Bank staff calculations.

**4. Empirical Analysis**

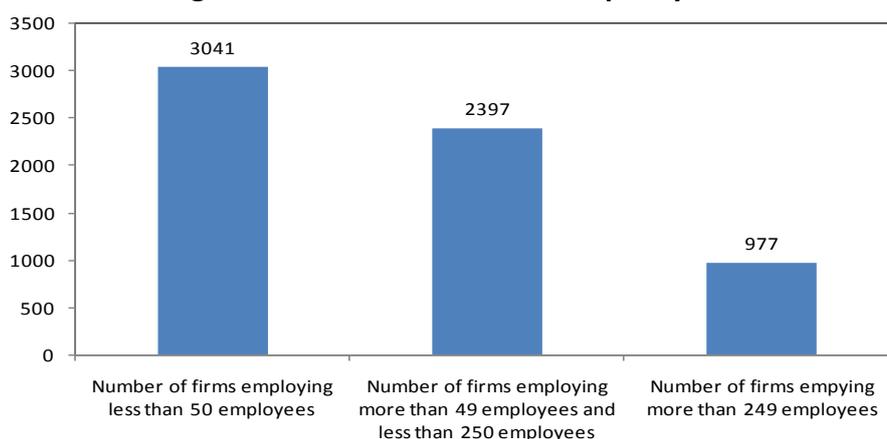
**Data**

This study uses three datasets to analyze corporate savings:

1. Samples of listed firms in selected countries are used to compare profit margins, savings rates, investments, and cash flows and to assess the average position of listed firms in Turkey (see Section 3 above). This exercise is useful for understanding how corporate savings affect private savings as a whole. Specifically, we learn whether Turkish firms save more or less than firms in countries where, unlike Turkey, private savings did not sink in recent years. This dataset also includes capital expenditure (fixed investment) of firms. Therefore, regressions that test whether firms are constrained in Turkey are carried out by using this dataset.
2. Data on ISE-listed firms include information on dividend payments and thus firm savings. We use this dataset to study the behavior of dividend payments and uncover the link between profits and savings. The sample is used in dynamic panel data estimations to test determinants of the savings and investments of nonfinancial firms. Since the sample covers nearly 200 nonfinancial firms listed on the ISE from 1996 through 2008, it is a unique source of needed information. However, because these are mostly large firms, the sample is not representative of the total population of nonfinancial firms in Turkey. In 2008 the listed firms had nearly 400,000 employees—close to 2 percent of total employment—and were responsible for about one-third of total exports.

- Firm-level data compiled by the CBRT, the largest source of information on firm balance sheets in Turkey, are used to analyze what determines investments and net profit margins. Over 6,000 firms reported continuously from 2002 to 2007. Figure 27 shows the number of nonfinancial firms by size. Firms in this sample on average employed about 200 employees over the period studied. The sample covers almost the entire population of large nonfinancial firms; these firms were responsible for over two-thirds of total exports and about 75 percent of all employees in firms that had over 10 employees during the study period.

**Figure 27. Firms in the CBRT Sample by Size**



Source: CBRT and World Bank staff calculations.

## Estimation Results

Corporate investment activity has extensively shaped the pattern of economic growth in Turkey. In other words, the country's highly volatile growth pattern was largely driven by fluctuations in corporate investment thus private sector fixed investment (Table 1). Stabilizing fixed investments would produce a less volatile growth pattern.

Fixed investments by nonfinancial Turkish firms have been very sensitive to financial conditions. The cost and availability of funds (the extent to which firms are financially constrained) have largely shaped the pattern of fixed investments. In the late 1990s, high public borrowing was one of the main challenges to fixed investments by nonfinancial firms (Özatay 2008; Kaplan, Özmen, and Yalçın 2006). In other words, during 1990s, the high public deficits were largely financed by domestic banks, which pushed up the cost of funds and lowered funds available to private investment.<sup>18</sup>

Given the paucity of external funding, the amount of internal funding (firm cash flow or savings) available for investment and how these funds are allocated (liquid or low-return assets vs. high-return assets) therefore matter greatly to the growth of nonfinancial firms.

<sup>18</sup> This is a typical example for the crowding out of private investment phenomenon.

Fixed investments by nonfinancial firms are very sensitive to internal funds available, which implies that Turkish firms suffer a severe financial constraint (Kaplan, Özmen, and Yalçın 2006; Yeşiltaş 2009; Günay and Kılınç 2011). On the other hand, apparently firms prefer to keep more financial assets rather than invest in fixed assets when economic uncertainty intensifies and interest rates and firm size increase (Kaplan, Özmen, and Yalçın 2006).

**Table 1. GDP, Fixed Investment Growth Rates, and Volatility**

	1988– 2001	1995– 2001	2002– 2007	2002– 2009
<b>GDP Growth (%)</b>				
Mean	3.1	3.4	6.8	4.6
Volatility	5.1	5.5	1.8	4.6
<b>Gross Capital Formation (%)</b>				
Mean	2.8	3.2	15.5	8.2
Volatility	15.5	16.8	7.5	15.2

Source: TURKSTAT and World Bank staff calculations.

We carried out regressions to test whether nonfinancial firms are financially constrained when they carry out fixed investments (capital expenditure) by using Worldslope dataset in the following subsection.<sup>19</sup> Then, we carried out regressions to test, first, the determinants of firm savings rates using the sample of ISE listed firms and then, complementarily, the determinants of net profit margins using CBRT data set where dividend payments were not available. The intent behind this approach was to better understand how internal fund generation affected the investment activity of nonfinancial firms. We also were able to document both firm-specific and macro determinants of internal fund generation, namely savings and net profits. The findings from regressions using listed firms data parallel those using the larger CBRT dataset, where net profit margins proxy internal funding, but the former includes Tobin's q as an independent variables, which the CBRT dataset does not. Moreover, dividend payment information, which allows us to calculate firm savings rates, is available only in the ISE dataset.

### ***Internal Funds Generation and Fixed Investments***

In perfect financial markets, the Modigliani and Miller (MM) theorem states, the market value of a firm is independent of its financial position.<sup>20</sup> However, a growing number of studies have shown that in imperfect financial markets financial position is indeed important to firm investment and employment decisions.<sup>21</sup> Both theoretical and empirical evidence shows that external shocks may affect a firm's investment and firm employment by changing

<sup>19</sup> Note that Worldslope dataset for Turkey consists of 172 ISE listed firms with additional variables such as capital expenditure which does not exist in actual ISE dataset.

<sup>20</sup> See Modigliani and Miller (1958).

<sup>21</sup> We use financial constraints and imperfect capital markets interchangeably.

its financial position. How much investment and employment change as a result of external shocks depends very much on how these activities are financed. In other words, the availability, cost, and type (internal or external, bank or market) of financial sources are crucial to formation of investment and employment decisions.

One approach analyzing this issue has been the financial accelerator framework (Kiyotaki and Moore 1997; Bernanke, Gertler, and Gilchrist 1996, 1998). Real or monetary shocks lead to changes in the balance sheets of firms, banks, and households in imperfect financial markets. For example, an adverse shock, say a contractionary monetary policy, may increase largely the external finance premiums of bank dependent firms thus erode their borrowing ability and their net worth. The impact of the shock on firms with poor collateral and net worth would be amplified. In this situation, financially constrained firms with low cash flows are expected to reduce their investment more than those firms with high cash flows and net worth.

In the neoclassical investment model, investment has often been assumed to be a function of a firm's investment opportunities (profitability) and not its financial position. However, models incorporating asymmetric information assert that investment is a function of a firm's net worth in addition to its investment opportunities, so a shock to its financial position or cash flow may affect its decision to invest. The empirical difficulty here is to distinguish variables that reflect investment opportunities from those associated with a firm's financial position generally. For instance, because cash flow may reflect both a firm's profitability and its financial constraints, other variables are necessary to control for profitability, as in the Q model of investment. We therefore use different datasets to capture these variables.

The seminal paper by Fazzari, Hubbard, and Peterson (1988) tests empirically the impact of financial constraints on the investment of firms by using cash flows as an explanatory variable. Research following their work uses some financial variables in the investment models in addition to traditional variables like sales, Tobin's q, user cost of capital, and lags of the dependent variable. Estimations based on this type of model confirm that investment decisions of financially constrained firms are highly sensitive to a change in cash flow. This suggests that a contractionary shock can affect investment by particular firms if it worsens their net worth positions.

External shocks are also supposed to affect the real activity of firms by changing the proportions of internal and external finance, which are not perfect substitutes. The external finance premium is expected to rise for firms with poor collateral when interest rates increase, so that they are likely to have less access to external funds than firms rich in collateral. Also, monetary contractions may push down the supply of bank loans.

We carry out three regressions for listed firms. In Table 2, the first column shows results for firms with less than 250 employees during the period, the second column for firms with

more than 250 employees and the third column show results for whole sample.<sup>22</sup> The findings confirm, consistent with the saving-investment gap, that in Turkey nonfinancial firms are financially constrained. First, the results show that for these firms internal fund generation or cash flow is an important determinant of capital expenditure, which suggests that firms may invest more if their cash flows are higher. This finding is more relevant for SMEs than large firms (see the first and second columns). The finding that the capital expenditures of large firms are less sensitive to cash flow is consistent with the fact that large firms can borrow externally at reasonably low cost—in fact, with about a 2 percent spread over LIBOR.

**Table 2. GMM Estimations for Capital Expenditure (Fixed Investments)**

	SMEs	Large	Whole Sample
$(CINV/TA_{t-1})_{i,t-1}$	-0.002 (0.02)	0.180 *** (2.73)	0.186 *** (3.02)
$(CF/TA_{t-1})_{i,t-1}$	0.163 *** (3.25)	0.060 (1.45)	0.100 ** (2.33)
TOBIN $q_{it}$	1.403 * (1.75)	1.121 ** (2.38)	1.001 ** (2.30)
GSALE $_{i,t-1}$	-0.772 ** (2.39)	1.208 ** (2.01)	0.467 (1.20)
LR $_{it}$	0.045 * (1.71)	0.143 * (1.70)	0.084 * (1.76)
RINTR $_{t-1}$	-0.211 (1.44)	-0.043 (1.11)	-0.063 (1.52)
GDP $_t$	-0.130 (0.82)	0.146 ** (2.20)	0.105 * (1.88)
$m_2$	-1.35 (0.18)	-0.60, (0.55)	-1.01, (0.31)
Hansen-test	29.11 (0.98)	79.04 (0.51)	84.99 (0.33)
No. of firms	35	133	168
No. of observations	191	1032	1223

Source: ISE firms compiled by Worldscope.

\*significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

The values in parentheses are the t-ratios based on the coefficient standard errors (d.f. adjusted) that are robust to cross-section residual correlation and heteroscedasticity.

**Difference GMM Results:** *Dependent variable:* capital expenditure normalized by tangible assets,  $(CINV/TA_{t-1})_{i,t}$ . *Explanatory variables:* one lag of the dependent variable,  $(CINV/TA_{t-1})_{i,t-1}$ ; lag of cash flow normalized by tangible assets,  $(CF/TA_{t-1})_{i,t-1}$ ; Tobin's q,  $TOBINq_{i,t}$ ; one lag of sales growth,  $GSALE_{i,t-1}$ ; leverage ratio,  $LR_{i,t}$ ; one lag of real interest rate,  $RINTR_{t-1}$  and GDP growth rate,  $GDP_t$ .

Estimation results are from the one-step GMM procedure. We use two and three lags of firm-specific variables as instrumental variables.

Sales growth is the variable typically used to control for demand. We found out that sales growth has a positive but non-significant coefficient for the sample as a whole but is

<sup>22</sup> Similar findings are obtained when firms are split into size groups according to their assets.

significant for large firms, with the coefficient for SMEs estimated to be significantly negative. Using Tobin's  $q$  to control for firm investment opportunity, we also found that firm capital expenditure is highly associated with Tobin's  $q$  (the market value of firms/replacement cost of capital), especially for SMEs.

We use the leverage ratio to control for a firm's financial position. Positive and significant coefficients are estimated and the coefficient for the large firm group is larger than for SMEs. In addition to firm-specific variables, we also use macro variables: the real market interest rate, which reflects user cost of capital, and the GDP growth rate, which captures the business cycle generally. The coefficients of the interest rate are estimated to be negative and larger in absolute value for SMEs even though they are significant only at 15 percent. This finding may imply that the availability of funds rather than user cost is more important to investment. The coefficients of the GDP growth rate are estimated to be positive and larger for large firms; the coefficient for SMEs is not significant.

## **Determinants of Savings Rates and Profit Margins**

### ***Savings Rate Determinants for Listed Firms***

Estimations based on both fixed effects and GMM suggest that the gross firm savings rate is closely associated with net profit margins (the ratio of profits after interest and tax to net sales, *NPROFIT*). This suggests that efforts to make corporations more profitable would help boost their savings. Using a simple fixed effect panel model with time dummies, a close association between net profits and savings is estimated in Table 3.

We also use firm-specific features other than profit margins and macro variables to test the determinants of firm savings rates by adopting the dynamic panel data technique (GMM). Following a brief introduction to the variables used, GMM we report estimation results.

#### **Firm-specific Variables:**

***Savings rate (SAVR):*** The ratio of undistributed profits to net sales (percent).

***Net profit margin (NPROFIT):*** The ratio of net profits to net sales (percent). This variable is directly linked with the savings rate if the dividend payout ratio is relatively stable. A profitable firm would retain a portion of its income for future investments. The savings rate increases with net profit margin as shown in Table 3.

***Logarithm of real assets (SIZE):*** This variable controls for firm size. As a firm's assets grow, it tends to save more.

***Tobin's q (the ratio of the market value of firms to book value, TOBINq):*** As the market value of a firm increases, its desire to invest burgeons, so firms tend to retain profits to

finance investments. The regressions produced mixed signs and generally insignificant coefficients for this variable.

**Table 3. Savings and Profitability of Listed Firms based on Fixed Effect Regressions**  
**Dependent Variable: Saving rate**

	<b>Manufacturing (non-large)</b>	<b>Manufacturing (large)</b>	<b>Manufacturing (total)</b>	<b>Nonfinancial Firms</b>
NPROFIT <sub>it</sub>	0.776 *** (51.43)	0.773 *** (27.53)	0.774 *** (52.13)	0.818 *** (80.75)
Y1997	0.030 (0.04)	-5.110 ** (-2.17)	-1.802 ** (-1.92)	-0.960 (-0.74)
Y1998	1.145 * (1.67)	-2.037 (-0.87)	0.001 (0.00)	0.597 (0.47)
Y2003	1.785 ** (2.36)	-0.803 (-0.28)	0.949 (0.92)	2.511 * (1.84)
Y2004	1.218 * (1.65)	-1.435 (-0.50)	0.375 (0.37)	3.492 *** (2.57)
CONS	-2.238 *** (-4.12)	-0.341 (-0.19)	-1.540 ** (-2.16)	-3.001 *** (-3.15)
R <sup>2</sup> -overall	0.72	0.78	0.76	0.77
No of Firms	76	44	120	186
No of Obs	804	416	1220	1690

The values in parentheses are the t-ratios.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Only the coefficients of significant-year dummies are reported here.

**Leverage ratio (ratio of debt to total assets, LR):** Solvent firms save more; indebted firms save less. Thus, Turkish indebted firms with a high interest burden would tend to save less. Not only is credit availability a binding constraint on growth but so is high borrowing cost. Results show that a firm's savings rate is very sensitive to the LR.

**Export share (ratio of exports to sales, EXPHS):** Two forces may determine the EXPHS coefficient: (1) Exporting firms are more likely to have external competition, which may reduce profit margins and savings rate. (2) They have more chance to access external finance, which reduces the need for internal funds. Coefficient for this variable is negative but insignificant for regressions in which saving rate is used as dependent variable while it is positive and significant in regressions where net profit margin is used as dependent variable in next sub-section.

**Tangibility rate (ratio of tangible assets to total assets, COL):** Firms with a high COL are less likely to save because they may not have room for fixed investment. Firm savings rate declines with this ratio.

## **Macro Variables:**

**Corporate tax rate:** A high rate reduces net profits and thus savings. It may also encourage firms to underreport their activities or reduce investment and retain earnings. There is also a tax burden on dividend payments to households. Dividends as household income may be used either for investing in financial assets that increase household savings or for further consumption. The propensity to consume out of dividend income and the withholding tax on dividends are key parameters in identifying the impact of raising corporate taxes on private savings. In discussing tax reform in Chile in the mid-1980s, Hsieh and Parker (2007) argue that policies encouraging firms to increase internal funds (such as a reduction in the corporate tax rate) can have a major positive impact on growth by enhancing productive investments. We do not report regressions that include this variable because it leads to multi-collinearity.<sup>23</sup>

**Public debt as a percent of GDP (PDEBT):** Given Turkey's rather shallow financial markets, the government fiscal position had serious implications for financially constrained firms. Large public deficits often crowded out private activities because bank-dependent firms had difficulty raising funds and large firms mainly invested in government bonds. A high deficit or a large stock of debt can be expected to reduce internal funding for fixed investments.

**Real effective exchange rate Index of CBRT (REER):** Exchange rate depreciation is expected to reduce the relative cost of domestic inputs, encouraging use of domestic resources, such as employment, and enhancing exports and profitability. This encourages firms to save and invest more. Rodrik (2010) suggests that sustaining external balance and growth requires a shift in exchange rate and public sector policies to boost domestic demand. A relatively competitive exchange rate would enhance the performance of tradable sectors. However, Montiel and Servén (2009) argued that internally "there is no clear-cut association between more depreciated real exchange rates and higher savings rates." In fact, there are various channels through which the exchange rate affects corporate profitability and savings. The impact of exchange rate on firm profitability may be evaluated based on market orientation and the cost structure of production in a country. An appreciation of the currency is likely to reduce the competitiveness of export oriented activities that uses domestic inputs intensively because of rising relative cost of domestic inputs and decline in the relative price of exported products. On the contrary, an appreciation of the currency may encourage domestically oriented economic activities that use imported inputs and foreign exchange loans more intensively. The net impact of the currency appreciation on profitability and savings depends on market orientation and the cost structure of an economy. Time series analysis for Turkey suggests that currency appreciation knocks private savings (Apaydın, Türeli and Yalçın; 2011). Further discussion on this issue is provided in the following section on profit margins.

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<sup>23</sup> As the descriptive analysis stated, this variable is nearly flat and it is highly correlated with constant term.

**Financial depth (banking system liquid liabilities as a percent of GDP, *FIN\_DEV*):** This variable reflects the development level of the financial system. It may encourage households to save using financial tools, from which firms may benefit and use investment opportunities more effectively, which might help increase internal funds.

**Findings from Fixed Effects and GMM Estimations:**

Findings from fixed effects and GMM regressions that use firm-specific and macro variables to explain firm savings rate are reported in Tables 4 and 5.

**Table 4. Savings Rate: Fixed Effects Estimations**

	Manufacturing (non-large)		Manufacturing (large)		Manufacturing (total)		Nonfinancial firms	
NPROFIT <sub>i,t-1</sub>	0.091	***	0.232	***	0.191	***	0.016	
	(3.08)		(4.91)		(7.33)		(0.65)	
SIZE <sub>it</sub>	5.902	***	2.230		4.046	***	5.217	***
	(7.68)		(1.12)		(4.61)		(3.76)	
TOBINq <sub>it</sub>	0.007	**	-0.001		0.003		0.020	***
	(2.23)		(0.16)		(0.77)		(3.35)	
LR <sub>it</sub>	-0.212	***	-0.232	***	-0.208	***	-0.215	***
	(10.19)		(3.37)		(7.94)		(4.86)	
COL <sub>it</sub>	-0.164	***	-0.135	*	-0.157	***	-0.175	***
	(6.35)		(1.69)		(4.90)		(3.18)	
REER*EXPSH <sub>it</sub>	0.000		0.000		0.000		0.000	
	(0.03)		(0.75)		(0.40)		(1.19)	
REER <sub>t</sub>	-0.091	***	-0.169	**	-0.116	***	-0.081	***
	(4.08)		(2.50)		(4.19)		(1.74)	
PDEBT <sub>t</sub>	-0.031		-0.073		-0.043		-0.029	
	(1.33)		(1.01)		(1.49)		(0.59)	
FIN_DEV <sub>t</sub>	0.023		0.581	**	0.206	*	0.078	
	(0.26)		(2.16)		(1.88)		(0.42)	
GDP <sub>t</sub>	0.129	**	0.446	***	0.262	***	0.192	***
	(2.27)		(2.62)		(3.73)		(1.68)	
CONST	-76.833	***	-17.736		-48.242	***	-69.118	*
	(5.86)		(0.49)		(3.13)		(2.82)	
R2-overall	0.19		0.34		0.23		0.08	
No. of firms	71		40		111		169	
No. of Obs.	912		497		1401		1856	

Source: ISE listed firms dataset.

The values in parentheses are the t-ratios.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Note: Large firms employ more than 250 employees; the rest are classified as non-large.

Because the results of both regressions are generally consistent, we discuss only the findings from the GMM estimations, which are more robust. We do not use the lag of net profit margin as an explanatory variable in GMM regressions to avoid potential collinearity with the lag of the savings rate. The GMM findings:

**Table 5. Savings Rate: GMM Estimations**

	Manufacturing (non-large)		Manufacturing (large)		Manufacturing (total)		Nonfinancial Firms	
SRATE <sub>i,t-1</sub>	0.127	**	0.162	*	0.019		-0.205	*
	(2.16)		(4.32)		(0.43)		(1.69)	
SIZE <sub>it</sub>	7.749	**	10.604	***	9.922	***	16.454	**
	(2.10)		(1.74)		(2.68)		(2.48)	
TOBINq <sub>it</sub>	0.003		-0.011		0.000		-0.009	
	(0.56)		(1.40)		(0.06)		(0.96)	
LR <sub>it</sub>	-0.335	***	-0.226	*	-0.240	***	-0.474	**
	(4.13)		(3.32)		(4.04)		(2.17)	
COL <sub>it</sub>	-0.363	**	0.054		-0.369	***	-0.397	
	(2.35)		(0.37)		(-3.37)		(-1.14)	
REER <sub>t</sub> *EXPSH <sub>it</sub>	-0.002		-0.001		0.002		-0.002	*
	(-0.53)		(1.51)		(1.29)		(1.82)	
REER <sub>t</sub>	-0.096	**	-0.218		-0.193	**	-0.112	*
	(-1.98)		(1.52)		(2.05)		(1.88)	
PDEBT <sub>t</sub>	-0.014		-0.096	**	-0.099	**	-0.066	
	(-0.50)		(2.10)		(2.48)		(1.04)	
FIN_DEV <sub>t</sub>	-0.042		0.599	*	0.084		0.287	
	(-0.45)		(1.94)		(0.69)		(1.43)	
GDP <sub>t</sub>	0.120	*	0.375		0.333	**	0.070	
	(1.73)		(1.42)		(2.02)		(0.42)	
m <sub>2</sub>	-1.39 (0.16)		-103.03 (0.30)		-1.24 (0.23)		-1.20 (0.23)	
Hansen-test	61.16 (0.99)		30.56 (0.99)		93.51 (0.47)		92.82 (0.49)	
No of Firms	70		39		109		169	
No of Obs	742		420		1228		1617	

Source: Listed firm dataset.

Note: Large firms employ more than 250 employees; the rest are classified as non-large.

- (i) *SIZE*, *TOBINq* *FIN\_DEV* are estimated to have positive and significant coefficients in general. Tangibility ratio, leverage ratio, public debt as percent of GDP, and appreciated domestic currency and, its interaction with export share have negative and significant coefficients.
- (ii) Both asset growth rate and the *SIZE* have a positive impact on savings; only results for the latter are reported here. As noted earlier, large firms tend to have high savings rates, as do firms that grow rapidly. This finding is consistent with the argument that Turkey's corporate sector saves less because SMEs are often operating at less than optimal scale. In fact, the savings of non-large firms are more sensitive to the asset growth rate.
- (iii) Large manufacturing firms seem to be more sensitive to the *REER*—the coefficient of *REER* in the regression of relatively large firms is larger than the coefficient for relatively small firms, but it is not significant. Also, the sign for the interaction term for export share and the real exchange rate is generally negative but significant only

for the whole sample. This finding suggests that real appreciation has a more negative effect on savings rates the larger a firm's export share. In other words, the savings rates of firms that have high export share or are more involved in tradable activities is more sensitive to exchange rate movements. Morande (1998) argues that currency depreciation induced some tradable sectors in Chile to save and invest. Hsieh and Parker (2007) argue that, alongside reforms, in the mid-1980s large currency depreciation affected savings and investment of firms in Chile.

- (iv) As expected, indebtedness (*LR*) seems to reduce corporate savings. A high premium due to financial constraints may increase the cost of external finance and thus reduce profits. Improving access to external finance should consider not only the supply of funds but also their cost.
- (v) Tobin's *q* does not explain the savings rate in the GMM regressions but has a positive and significant coefficient in the fixed effects regressions for the whole sample and for non-large firms. The savings rate increase as firm market value rises is consistent with the argument that a high Tobin's *q* is associated with more investment opportunity and thus high retained earnings; this is confirmed by the results of the investment equation.
- (vi) Firms tend to retain fewer funds if they have a high tangible to total assets ratio (*COL*), for at least two reasons: (1) firms with a high tangibility ratio may substitute external funds because they are rich in collateral; and (2) given the high tangibility ratio, further return on investments in fixed assets may be low. Such firms may raise savings by investing in intangible assets, such as R&D, rather than buildings or land. The coefficients of this variable are negative and significant in all regressions except for the large firm group.
- (vii) *PDEBT* is estimated to have a negative and significant impact on the savings rate of large manufacturing firms, which is consistent with arguments that more expansionary public policies depress firm savings and investments.
- (viii) Financial depth is estimated to have a positive and significant impact on savings rate of manufacturing firms but no significant impact on relatively small firms. We will evaluate the impact of financial depth on net profit margins from findings based on the large data set.
- (ix) The GDP growth rate is estimated to have a positive impact on savings rates, which suggests that demand conditions may affect those rates.

## Estimation Results for Profit Margins Using the CBRT Dataset

To investigate determinants of corporate profitability in Turkey for 1996–2008 using firm-level data compiled annually by the CBRT, we used the following generic equation:

$$NPROFIT_{it} = NPROFIT_{it-j} + \beta F_{it} + \gamma M_t + u_{it} \quad (1)$$

where  $NPROFIT$  is profit margin,  $F$  and  $M$  contain firm-specific and macroeconomic variables,  $\beta$  and  $\gamma$  are the vectors of the corresponding regression coefficients, and  $u_{it}$  is the disturbance term. The set of firm-specific variables ( $F$ ) postulated to explain  $NPROFIT_{it}$  consists of the leverage ratio ( $LR_{it}$ ); asset tangibility as a proxy for collateral ( $COL_{it}$ ); firm size ( $SIZE_{it}$ ); and the share of exports to total sales ( $EXPSH_{it}$ ). For the macroeconomic variables, we use real GDP growth ( $GDP_{it}$ ) as proxy for the change in aggregate demand; the liquid liabilities to GDP ratio as an indicator of financial development ( $FIN\_DEV_t$ ); the public debt to GDP ratio ( $PDEBT_t$ ); and the real effective exchange rate ( $REER_t$ — an increase denotes real appreciation). The equation also contains the interaction of  $EXPSH_{it}$  with  $REER_t$  ( $EXPSH_{it} * REER_t$ ) because the impact of  $REER_t$  on firm profitability may vary with a firm's export intensity.<sup>24</sup>

There is scholarly controversy about how real exchange rates affect real economic activity and growth. According to Rodrik (2008), especially in developing countries an undervalued domestic currency stimulates economic growth. Similarly, Hausmann, Pritchett, and Rodrik (2005) find that depreciated real exchange rates are important for growth accelerations. According to Akyüz (2009) a dynamic interaction between profits and investments has been the main stimulus behind the late industrialization in East Asia, with real exchange rates affecting the relative profitability of investment in competitive sectors. Montiel and Servén (2008) argue that the conventional savings transmission channel of real exchange rate depreciations that has savings stimulating growth by increasing the rate of capital accumulation is yet to be supported either empirically or analytically. Levy-Yeyati and Sturzenegger (2009) think that where there is no dollarization “noemercantilist” views on the positive impact of depreciated real exchange rates on growth tend to be supported by data. They suggest that financial dollarization may weaken or even reverse the impact because it may turn the exchange rate from a countercyclical shock absorber into a procyclical source of economic contractions. This is consistent with the view, contrasting with the Mundell-Fleming convention, that devaluations are contractionary in financially dollarized economies because of their balance sheet effects (Frankel 2005).

Corporate investments are among the main drivers of real economic activity. However, despite the potential importance of exchange rate movements for corporate savings, profitability, and investments, there is little empirical support for this link. The impact of real

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<sup>24</sup>The impact of exchange rates on firm profitability and investment depends also on imported inputs (Campa and Goldberg, 1998). However, with no firm-level data for imports we could not investigate this important link.

exchange rates on corporate profits and investments is not straightforward; it depends crucially on export and import intensities (Campa and Goldberg 1998) and a firm's net liability dollarization (Galindo, Panizza, and Schiantarelli 2003; Kesriyeli, Özmen, and Yiğit 2011). Real exchange rates may also affect profitability and investments through domestic revenues as import competition or potential wealth effects shift demand for domestically produced goods. A real depreciation may be expansionary by increasing profits for firms that operate mainly in export sectors by boosting competitiveness, but the opposite may be true for importers or firms that are heavy users of imported inputs (Campa and Goldberg 1998). Real exchange rate depreciations may undermine a firm's net financial position by significant liability dollarization through the balance sheet effect.<sup>25</sup> Unfortunately, lack of firm-level data for import intensities and net liability dollarization (the difference between foreign-exchange-denominated liabilities and assets) allows us to consider only the competitiveness and domestic demand effects of real exchange rate changes. Consequently, our results may be biased upward for firms with higher import intensity, domestically oriented and severe net liability dollarization.

In Turkey high budget deficits through most of the period studied have been financed solely by domestic banks. The result may be higher interest rates, the expense of which then reduces net profits. It is plausible that financing deficits through the banking system would also limit the funds available to corporations. Consequently, we can expect higher public debt to reduce firm profitability. Financial development relaxes financing constraints on firms by increasing the quantity and quality of resources available to them and by reducing capital market imperfections. Consequently, we can expect a positive relationship between profitability and financial development.

Findings from fixed effects estimations may not be reliable because in the models these estimations contain the lagged dependent variable, which Bond (2002) found was often misleading. Furthermore, it may be reasonable to argue that firm-specific variables are potentially endogenous for the evolution of firm profits. We therefore address the simultaneity issue along with inclusion of  $NPROFIT_{it-1}$  by estimating the equation using the GMM procedures that Arellano and Bond (1991) and Arellano and Bover (1995) developed for dynamic panel data models. We maintain that the macroeconomic variables (GDP, FIN\_DEV, REER, PDEBT) are strictly exogenous for the evolution of firm profitability over time. All the firm-specific variables, on the other hand, are treated as potentially endogenous.

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<sup>25</sup> Using CBRT sector-level data Kesriyeli, Özmen, and Yiğit (2011) report that in Turkey real exchange rate depreciations are contractionary, in terms of investments and profits, for sectors that have higher liability dollarization. Yılmaz and Gönenç (2008), on the other hand, find that average profit margins of manufacturing firms, especially those that use low-skilled labour, decrease with real exchange rate appreciations.

Tables 6 and 7 report the results of the two-step robust GMM estimations<sup>26</sup> with orthogonal transformation (Arellano and Bover, 1995) using all the available t-2 and t-3 dynamic lags of F, the firm-specific variables. The instrument set also contains the current values of M, the strictly exogenous variables. The consistency of the GMM estimators crucially depends on the absence of serial correlation. If the disturbance in the original dynamic levels equation is not serially correlated, there should be evidence of significant negative AR(1) and no significant AR(2) in the difference equation (Arellano and Bond, 1991). The results for m1 and m2 therefore suggest a lack of serial correlation in all the estimated equations. The equations, however, fail to pass the Hansen-J test for instrument validity, perhaps because of the relatively high instrument count (Roodman 2009b).<sup>27</sup>

The results in Tables 6 and 7 strongly suggest that both firm-specific and macroeconomic variables are significant in explaining corporate profitability in Turkey. The results by panel OLS and GMM are essentially the same, supporting the theory that OLS coefficients are not significantly attenuated by a simultaneity bias. According to the GMM estimations, firm profitability increases with firm size and financial development and decreases with the leverage ratio and collateral. On the other hand, profitability appears to be inversely related to public debt. Real exchange rate appreciations are found to have contractionary effects on firm profits, which are amplified by a firm's export intensity. The impact of firm size seems to be the same for all types of nonfinancial firms. The cost to profitability of maintaining higher asset tangibility (COL) is higher for manufacturing than for other nonfinancial firms. Note that these findings are consistent with the previous findings for the savings rate.

The positive and significant impact of real output growth on firm profitability is consistent with the accelerator model of investment (Fazzari, Hubbard, and Petersen 1988). An increase in real output accelerates profits (and thus investments) for all firms, but especially small manufacturing firms. This result supports the argument that policies to improve output and macroeconomic conditions may have a conventional Keynesian multiplier/accelerator effect via firm profits and investments. The negative impact of indebtedness (LR) on profits is essentially the same for manufacturing and other firms. For manufacturing firms, consistent with their higher debt, the negative impact of LR tends to be proportional to firm size.

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<sup>26</sup> All GMM estimates were performed using Stata 11 command `xtabond2` by Roodman (2009a).

<sup>27</sup> The results for the Hansen and Sargan tests should be interpreted with caution because their size and power properties for dynamic GMM models are yet to be adequately established. Arellano and Bond (1991) mention that the Sargan test often over-rejects the validity of overidentification restrictions. Similarly, Hoxby and Paserman (1998) show that even a small intra-group correlation may lead to the rejection of the null too often for standard overidentification tests. According to Bowsher (2002) the Hansen and Sargan tests tend to under-reject the null as the number of moment conditions increases for a given N. Roodman (2009b) reviews the effects of instrument proliferation in panel GMM models.

**Table 6. Determinants of Corporate Profitability by Industry (GMM Results)**

	All Nonfinancial Firms	Manufacturing Firms	Other Nonfinancial Firms
NPROFIT <sub>it-1</sub>	0.006 (0.72)	0.051*** (2.14)	-0.062 (-0.98)
SIZE <sub>it</sub>	3.035*** (8.86)	3.266*** (19.92)	3.393*** (4.81)
LR <sub>it</sub>	-0.221*** (-12.53)	-0.247*** (-16.81)	-0.255*** (-8.86)
EXPSH <sub>it</sub>	0.104*** (4.76)	0.155*** (5.73)	0.036 (0.95)
COL <sub>it</sub>	-0.134*** (-5.17)	-0.285*** (-12.35)	-0.064* (-1.72)
GDP_GR <sub>t</sub>	0.103*** (8.86)	0.137*** (9.72)	0.088*** (4.81)
FIN_DEV <sub>t</sub>	0.083*** (5.05)	0.129*** (6.26)	0.013 (0.47)
REER <sub>t</sub>	-0.090*** (-11.10)	-0.060*** (-6.22)	-0.101*** (-8.37)
REER <sub>t</sub> * EXPSH <sub>it</sub>	-0.0011*** (-4.24)	-0.0026*** (-8.59)	-0.0001 (-0.30)
PDEBT <sub>t</sub>	-0.043*** (-7.50)	-0.051*** (-8.03)	-0.023** (-2.17)
Number of observations	89117	45214	43893
Number of firms	12312	5793	6519
Statistics	$\chi^2_w(10) = 1205 [0.0]$ Z = 162 P[HANSEN] = 0.00 m1 = -2.60 [0.00] m2 = -1.45 [0.15]	$\chi^2_w(10) = 1477 [0.0]$ Z = 162 P[HANSEN] = 0.00 m1 = -3.89 [0.00] m2 = 1.13 [0.26]	$\chi^2_w(10) = 405 [0.0]$ Z = 162 P[HANSEN] = 0.00 m1 = -2.13 [0.00] m2 = -1.57 [0.12]

Source: CBRT data.

Notes: N is the effective number of firm-year observations. The values in parentheses are t-ratios based on coefficient standard errors (d.f. adjusted) that are robust to within cross-section residual correlation and heteroscedasticity (Arellano, 1987); \*, \*\* and \*\*\* are significant at the 10%, 5%, and 1% levels, respectively;  $\chi^2_w$  is the Wald test for the joint insignificance of the explanatory variables; m1 and m2 are the Arellano and Bond (1991) tests for first-order and second-order serial correlation, asymptotically N(0,1); Z is the number of instruments; and P[HANSEN] reports the p-value of the Hansen J test for instrument validity and overidentification restrictions.

**Table 7. Determinants of Manufacturing Firm Profitability by Size (GMM Results)**

	All Firms	Small	Medium	Large
NPROFIT <sub>it-1</sub>	0.051*** (2.14)	0.067 (1.59)	0.058** (1.96)	0.053 (0.58)
SIZE <sub>it</sub>	3.266*** (19.92)	2.918*** (11.96)	3.651*** (10.88)	4.023*** (9.83)
LR <sub>it</sub>	-0.247*** (-16.81)	-0.199*** (-9.22)	-0.373*** (-9.15)	-0.454*** (-10.03)
EXPSH <sub>it</sub>	0.155*** (5.73)	0.182*** (4.76)	0.141*** (3.43)	0.091 (1.38)
COL <sub>it</sub>	-0.285*** (-12.35)	-0.220*** (-7.59)	-0.248*** (-6.69)	-0.342*** (-5.06)
GDP_GR <sub>t</sub>	0.137*** (9.72)	0.125*** (6.36)	0.097*** (3.87)	0.052*** (2.59)
FIN_DEV <sub>t</sub>	0.129*** (6.26)	0.157*** (5.52)	0.144*** (3.90)	0.114*** (2.05)
REER <sub>t</sub>	-0.060*** (-6.22)	-0.070*** (-6.04)	-0.043*** (-2.56)	-0.081*** (-3.29)
REER <sub>t</sub> * EXPSH <sub>it</sub>	-0.0026*** (-8.59)	-0.0022*** (-5.56)	-0.0032*** (-6.97)	-0.0010*** (-2.89)
PDEBT <sub>t</sub>	-0.051*** (-8.03)	-0.052*** (-6.13)	-0.045*** (-3.85)	-0.020*** (-3.62)
No. of observations	45214	25035	15263	4916
No. of firms	5793	3522	1785	486
Statistics	$\chi^2_w(10) = 1477[0.0]$ Z = 162 P[HANSEN] = 0.00 m1 = -3.89 [0.00] m2 = 1.13 [0.26]	$\chi^2_w(10) = 581[0.0]$ Z = 162 P[HANSEN] = 0.00 m1 = -2.79 [0.00] m2 = 0.93 [0.35]	$\chi^2_w(10) = 539[0.0]$ Z = 162 P[HANSEN] = 0.0 m1 = -3.36[0.00] m2 = 0.82 [0.41]	$\chi^2_w(10) = 483[0.0]$ Z = 162 P[HANSEN] = 0.00 m1 = -4.07 [0.00] m2 = -2.05 [0.05]

Source: CBRT dataset

Notes: N is the effective number of firm-year observations. The values in parentheses are t-ratios based on coefficient standard errors (d.f. adjusted) that are robust to within cross-section residual correlation and heteroscedasticity (Arellano, 1987); \*, \*\* and \*\*\* the significance at the 10%, 5% and 1% levels;  $\chi^2_w$  is the Wald test for the joint insignificance of the explanatory variables; m1 and m2 are the Arellano and Bond (1991) tests for first-order and second-order serial correlation, asymptotically N(0,1); Z is the number of instruments; and P[HANSEN] reports the p-value of the Hansen J test for instrument validity and overidentification restrictions.

The results shown in Tables 6 and 7 validate our expectation that higher public debt narrows firm profitability.<sup>28</sup> Its negative impact on the profitability of all firm types underlines the crucial importance of fiscal stability and thus solid macroeconomic fundamentals to

<sup>28</sup> Estimation of the equations with real interest rates instead of PDEBT yielded essentially the same results. Results not reported for space considerations are available on request.

economic growth. Financial development, represented by (FIN\_DEV), appears to increase the profitability of manufacturing firms. Consistent with a view that financial constraint decreases with firm size, the positive impact of financial development on manufacturing firm profitability is stronger for SMEs. As firms compete globally a greater export orientation might be expected to lead to higher profitability in an open economy than in a small closed domestic demand-oriented market. Large firms may plausibly be assumed to act more globally and thus to be export-oriented in competitive industries, so the impact of export orientation on profitability might be expected to be higher for SMEs. The results from Table 7 strongly support this postulate. Thus, the positive impact of export orientation on profitability is significant for SMEs but not for large firms.

## **5. Conclusion**

What nonfinancial firms save is an important component of private savings. The savings and net profit margins of listed nonfinancial firms have been found to be lower in Turkey than in peer countries. This provides room and opportunity for Turkey to increase such savings.

Difficulty in accessing finance is one of the most binding constraints on firm growth and wealth accumulation. Our findings clearly show that smaller firms are constrained mainly by lack of access to external financing at reasonable cost and by poor internal fund generation. In essence, their capital expenditure is very sensitive to internal fund generation (cash flow). Even profitable small firms do not invest optimally because of various reasons including structural governance and tax issues, and the lack of external funding. Lack of low-cost financing that lets smaller profitable firms share the risk is one factor preventing them from investing in growth-generating activity. In fact, their leverage ratio tends to reduce their ability to generate internal funds because the premium for external financing in Turkey is high. An effective policy mix should therefore include options to raise the supply of external funds at reasonable cost and encourage profitable firms to use internal funds for growth-generating activity.

Firm size plays a critical role in enhancing corporate savings and profitability. Turkey has a large number of small-scale firms that operate at below optimal scale. Policies that encourage mergers and capacity enlargement to optimize firm size would contribute to savings and wealth accumulation. However, anecdotal evidence suggests that firms may prefer to remain small and underreport activity to avoid inspection and administrative burdens. Efforts to improve competition and the investment climate, reduce the informal economy, and reduce the administrative burden would encourage firm enlargement.

Macro fiscal and monetary policies are also potential candidates for helping raise corporate profitability. First, public savings that lower public debt seem to be an important determinant of private savings. There is also evidence that a sound public balance sheet encourages firms to retain internal funds and invest more. Similarly, a developed financial

sector that would extend funds for high-return investments at lower cost would encourage growth and savings. Because Turkey's financial sector is not yet at the point that it can provide enough resources for high-return investments, it offers an opportunity for policy intervention.

The real exchange rate seems to be a significant determinant of firm profitability and savings in general. Unfortunately, lack of firm-level data for import intensities and net liability dollarization allows us to consider only the competitiveness and domestic demand effects of real exchange rate changes. Consequently, our results may be biased upward for firms with higher import intensity, domestically oriented and severe net liability dollarization. Further research that considers surge in the import content of domestic production and already very high foreign exchange liabilities would help identify better the impact of real exchange rate on firm profitability and savings.

After the 2001 crisis, low domestic savings increased the need for Turkey to use foreign savings, and favorable domestic and internal conditions have supported capital inflows, which in turn has led to overvaluation of the domestic currency. The vicious circle of low domestic savings, high capital inflows, an appreciated domestic currency, low corporate savings threatens the sustainability of growth in Turkey.

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