

The Rise of Corporate Savings*

BY ROC ARMENTER

Over the past few decades, several developed economies have experienced large changes in how much households and firms save. In fact, a sharp increase in firms' savings behavior has changed the net position of the (nonfinancial) corporate sector vis-à-vis the rest of the economy. Why have firms in the business of producing goods or services become lenders? This is quite at odds with traditional models of corporate finance, which suggest that firms issue debt and equity to fund their operations and finance their investment projects. But successful firms appear to accumulate financial assets even when they are issuing equity, and these financial holdings are mainly in a very liquid form that pays a low return. This poses a conundrum, since holding financial assets while maintaining outstanding equity positions is expensive for the firm. In this article, Roc Armenter looks carefully at the data to learn which firms have been responsible for the rise in corporate savings and then briefly discusses the costs and benefits of equity relative to debt.

Over the past few decades, several developed economies have experienced large changes in how much households and firms save. For the U.S., net savings by the private sector (as a ratio to



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gross national product) dropped from 10 percent in the 1970s to less than 4 percent at the beginning of the 2000s. The underlying changes in the saving behavior of households and firms separately are, perhaps, even more dramatic. Since the early 1980s, U.S. households have spent rather than saved an increasingly large fraction of their total income, driving down the personal

*The views expressed here are those of the author and do not necessarily represent the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

savings rate. In contrast, firms have become thriftier, retaining a larger fraction of corporate profits and channeling equity revenues into savings instruments traditionally associated with household finances, some as basic as checking or savings accounts.

Indeed, the sharp increase in firms' savings behavior has changed the net position of the (nonfinancial) corporate sector vis-à-vis the rest of the economy. The net position is defined as the difference between how much other sectors owe the corporate sector (financial assets) minus how much the corporate sector owes to other sectors (debt). In the 1970s and 1980s the corporate sector was a net debtor, borrowing between 15 and 20 percent of the value of its productive assets (for example, plants and equipment) from the rest of the economy. However, by the 2000s, the corporate sector had switched to being a net lender, and over the period 2003-2007, the sector was saving more than 5 percent of the value of its productive assets.

Why have firms in the business of producing goods or services become lenders? This is quite at odds with traditional models of corporate finance, which suggest that firms issue debt and equity to fund their operations and finance their investment projects. The firm's creditors or bondholders are promised a fixed return, although there is always the risk that the firm may go bankrupt and not be able to repay them. Shareholders receive dividends, which vary with the firm's performance, and they can exert control over a firm's management through the board of directors. An entrepreneur looking to start a business may rely on

his or her own resources, bank loans, and perhaps some partners to provide additional equity. If the business is successful, it may look to expand aggressively and resort to private equity investors, such as venture capital firms, and acquire larger bank loans. Finally, the firm may go public, and its shares may be traded on the stock market, perhaps its bonds too.

Surprisingly, though, there is one more stage: Successful firms appear to accumulate financial assets even when they are issuing equity, and these financial holdings are mainly in a very liquid form that pays a low return. This poses a conundrum because there are several reasons why holding financial assets while maintaining outstanding equity positions is expensive for the firm. Unlike equity, financial assets provide a readily available, no-strings-attached, cheap source of funding. In addition, even if a firm does not have financial assets with which to fund its operations, it should prefer to use debt over equity. The benefits of debt over equity financing include the fact that interest payments on debt are tax deductible, while equity is subject to both corporate and dividend taxes. In addition, equity has significant flotation costs, can worsen corporate governance by bringing external ownership into the company, and may be associated with a negative signal regarding the quality of the firm.¹ Thus, from a cost perspective, firms should adhere to a hierarchy of financing sources: First, they should rely on internal funds; if external finance is needed, debt should be preferred to equity, which becomes

¹ Flotation costs are the costs associated with a new issuance of securities, which includes underwriting fees and compliance with regulations, among other costs. Note, though, that debt does introduce some potential costs of its own. For example, highly leveraged firms may pass over good investment opportunities because the possibility of liquidation decreases the return for the firm (called debt overhang).

a finance source of last resort. Indeed, the advantages of debt over equity are such that even the low level of debt in the 1970s is quite puzzling!

This article first looks carefully at the data to learn which firms have been responsible for the rise in corporate savings and then briefly discusses the costs and benefits of equity relative to debt. As discussed below, firms appear to rely on savings primarily to avoid having to tap into expensive financing sources for investment in times of distress. This behavior is similar to households that stash a “rainy

Even a highly levered firm will carry some financial assets in the form of cash on its balance sheet for operating purposes (e.g., timely payments and small, unexpected expenses).

day” fund for future contingencies like medical bills or job loss. In addition, changes in dividend taxation and regulation can help explain the evolution of the net position of the nonfinancial corporate sector over time.

THE FACTS

Let’s start with some definitions. The *net financial asset (NFA) position* of a firm is the difference between financial assets and debt. Even a highly levered firm will carry some financial assets in the form of cash on its balance sheet for operating purposes (e.g., timely payments and small, unexpected expenses). Conversely, a firm may have substantial cash holdings but still be indebted, since some of the loans outstanding may not be worth buying back or it may not be possible to do so. For our purposes here, *net financial position* accurately summarizes the financial standing of the firm.

When we compare firms of different sizes, as well as firms in different

decades, it is useful to scale the net financial asset position by the firms’ productive assets. These assets play a direct input role in the production of the firm, such as plant, equipment, property, and inventories, as well as the unamortized value of tangible assets.

Aggregate Data. We start by taking a look at the big picture. The Flow of Funds data, put together by the Federal Reserve Board, contain information about the flow and position of several asset classes for detailed sectors of the economy.² Using these data, we can look at the net position

for the nonfinancial corporate sector as a whole.³

Figure 1 shows the dynamics of the NFA to capital ratio during 1970-2007. The ratio for the economy as a whole was relatively stable at -0.15 during the 1970s and 1980s, experienced a dramatic run-up during the 1990s, and stabilized again at around 0.04 in the 2000s. These developments highlight the transition of the U.S. corporate sector from a net debtor into a net creditor at the turn of the century.

The increase in firms’ NFA posi-

² The Flow of Funds data are available at <http://www.federalreserve.gov/apps/fof/Default.aspx>.

³ We focus on the nonfinancial corporate sector, which excludes financial firms and farms. Note that we are calculating a net position for the sector as a whole. That is, to get the NFA position, we add up the asset positions all the firms in the sector have with the rest of the economy (households, government, the financial sector, or the rest of the world) and subtract the liability positions of all the firms in the sector. Positions among firms in the sector do not count toward the total NFA position.

tion was also accompanied by a rise in equity financing, such that the net worth (at market value) of the U.S. corporate sector as a share of its capital has increased from 0.85 in the 1970s and 1980s to 1.03 in the 2000s. Thus, the increase in the NFA position is not just a move away from external financing but an aggregate change in the composition of the corporate balance sheet.

Firm-Level Data. Unfortunately, the Flow of Funds does not make its underlying data available, and thus, we cannot learn more about which firms are behind the rise of corporate savings. For this, we turn to the Compustat data set.

This data set offers detailed information on the balance sheets of publicly traded firms.⁴ The latter are not a representative sample of all firms in the economy: Firms listed on stock markets tend to be larger, older, and more successful than firms that rely on private equity. However, for our purposes of examining NFA positions, this is not too large a drawback, since recent research suggests that private firms did not account for much of the increase in the NFA ratio over time.⁵

⁴ Compustat firms account for close to two-thirds of total U.S. private employment and 90 percent of total U.S. tangible assets. Compustat data are available for a fee from Capital IQ Compustat. In order to track the Flow of Funds data and avoid measurement error problems, we focus on U.S. firms only, and we exclude technology and financial firms, as well as regulated utilities. We also drop firms whose capital is below \$50,000 and those with negative equity and nonpositive sales.

⁵ The recent work by Huasheng Gao, Jarrad Harford, and Kai Li suggests that these firms may not have contributed much to the rise in the NFA to capital ratio in the U.S. corporate sector. Using a sample of U.S. public and private firms during 2000-2008, Gao, Harford, and Li show that, on average, private firms hold less than half as much cash as public firms do. While their work primarily concerns firms' cash holdings, rather than NFA positions, it is still informative, since, as we show later, an increase in cash holdings and other short-term investments contributed most to the increase in

We are also confident that sample selection issues are not important because we find that Compustat firms mimic the trends we uncovered in the

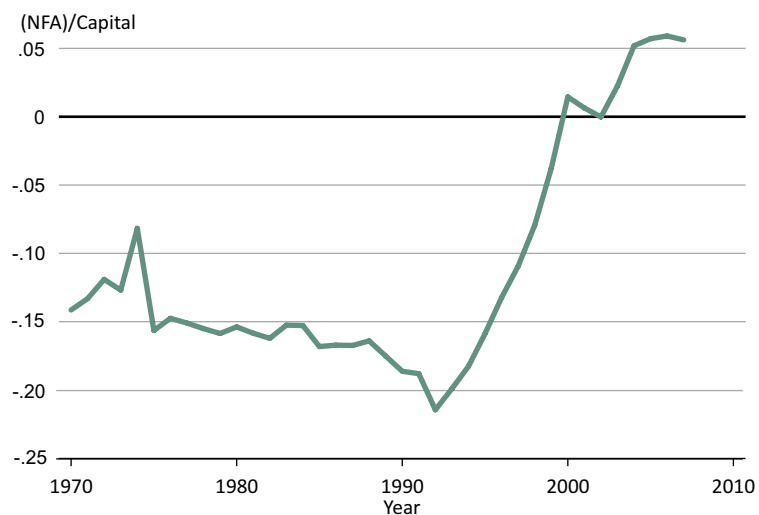
the NFA position. There is also some evidence that non-U.S. private firms carry only moderate amounts of liquid assets, as documented in the study by Mervi Niskanen and Tensie Steijvers.

aggregate data. Both the mean and the median NFA to capital ratios have been rising steadily over time. The mean turned positive in the mid-1990s, reaching about 12 percent in 2006-2007.

Figure 2 takes a closer look at the distributions of the NFA to capital ratio in the 1970s and 2000s. Several

FIGURE 1

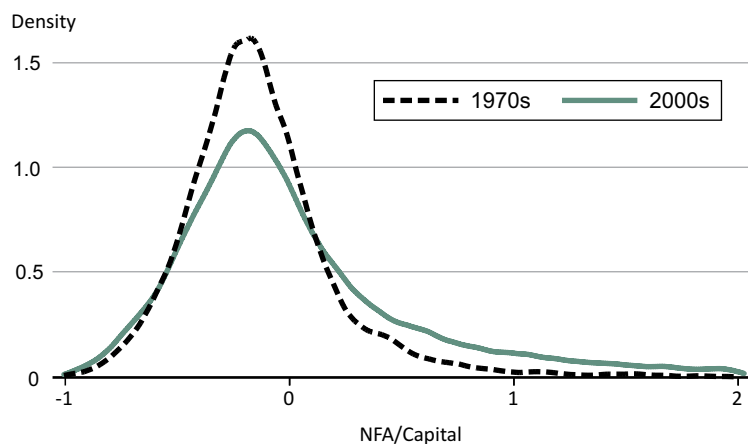
Corporate Net Financial Assets



Source: U.S. Flow of Funds

FIGURE 2

Corporate NFA/Capital



Source: Compustat

features stand out. First, there is a rightward shift in the distribution of the NFA to capital ratio in the 2000s relative to the 1970s, as we would expect from the mean and median data reported previously. Second, the share of firms with a positive NFA position has increased, from approximately 25 percent of firms in the 1970s to more than 40 percent in the 2000s. In particular, there is no evidence that the aggregate data are driven by a small fraction of firms: It is rather a widespread phenomenon. Finally, we do not see much of a change on the left tail of the distribution: Heavily indebted firms co-exist with firms with a positive NFA both in the 1970s and in the 2000s. Thus, it appears that the maximum amount of debt a firm can carry has not significantly changed over time.

Next, we investigate which assets are behind the rise in corporate savings. Figure 3 breaks down the financial assets of the firm into their components: cash (which also includes some very short-term investment, such as savings accounts), receivables (money due from customers), and other financial investments. The left-most bar shows the change in total assets as a percent of productive assets.

From Figure 3, it is easy to see that most of the rise in assets is due to larger cash and equivalent holdings of U.S. firms. Other asset categories have been going up as well, but at a much slower pace. Finally, accounts receivable have declined from about 28 percent of the median capital level in the 1970s to less than 20 percent in the 2000s. On the liability side, long-term debt and accounts payable have both fallen over time, while short-term debt showed a slight increase. Overall, these breakdowns suggest a shift in firms' balance sheets away from long-term assets and liabilities and toward their short-term counterparts.

Next, we turn our attention to

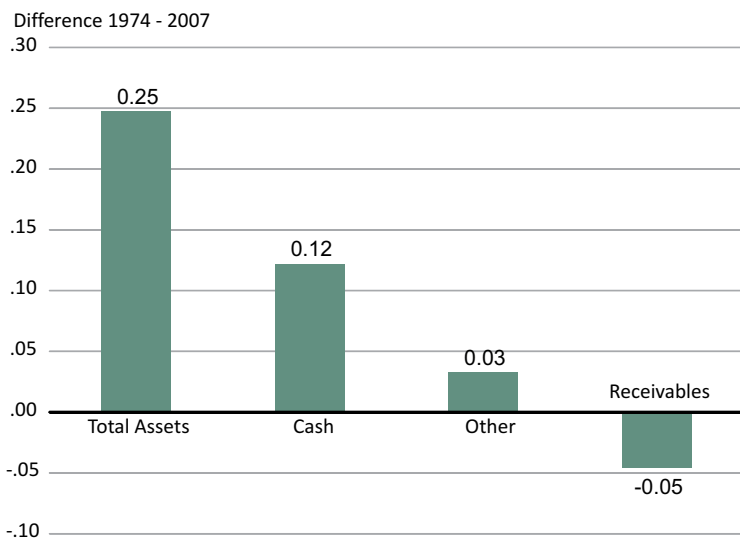
the question of which firms are driving the rise in corporate savings. Are the savings of larger or smaller firms changing the most? Are firms in different sectors displaying much different savings behavior? With regard to the first question, Figure 4 plots the level of the NFA to capital ratio for firms

with different numbers of employees, both for the 1970s and 2000s.⁶ Clearly,

⁶ We organize the number of employees by deciles. That is, the first observation corresponds to the average of the 10 percent of firms with the least number of employees, the second observation to the next 10 percent of firms as ranked by total employees.

FIGURE 3

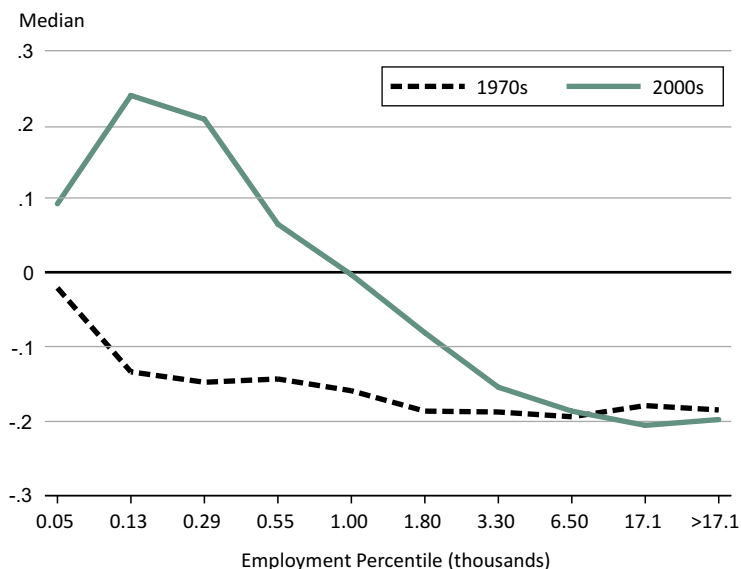
Financial Assets 1974 - 2007



Source: Flow of Funds

FIGURE 4

Corporate NFA/Capital



Source: Compustat

small and medium-size firms (that is, firms with a size up to the median employment level) have experienced the largest increase in the NFA to capital ratio.⁷ While NFA and employment don't show much association in the 1970s, the relationship is clearly decreasing in the 2000s.

Savings Across Industries. Finally, we turn to savings behavior across industries. Figure 5 plots the ratio of the median NFA to median capital ratio in six industries: agriculture and mining; manufacturing; trade, transportation, and warehousing; services; construction; and information technology and telecommunication services. Several notable features of the data

⁷ Is it size or age that matters? We also took a look at the NFA to capital ratio for entrant firms by decade. Our results indicate that entrants tend to have higher NFA to capital ratios relative to incumbents and that this tendency has become more pronounced over time. Most of the differential in NFA to capital ratios between incumbents and entrants is due to the latter's larger cash holdings and short-term investments. Over time, both cohorts have increased their holdings of cash and short-term investments, but entrants have done so at a significantly faster pace.

stand out. First, the increase in the NFA to capital ratio is characteristic of all industries, with the exception of construction, which shows a clear break in the series in the late 1980s. The technology sector, on the other hand, shows the most pronounced increase in NFA over our sample period. In fact, this sector turned into a net lender in the early 1990s and has continued to accumulate net financial assets ever since. Therefore, developments in the technology sector could have contributed to the run-up in aggregate NFA observed in the Flow of Funds series, especially in the 1990s. Second, there are some persistent differences in the level of the NFA to capital ratio across industries. For instance, firms in the trade, transportation, and warehousing industries have consistently had the lowest level of NFA to capital ratio during 1970-2007. The technology sector was characterized by the lowest level of NFA to capital ratio in the early 1970s, but as discussed above, this has clearly changed over the past 30 years. Finally, agriculture and mining, manufacturing, and services, all have very similar

levels and dynamics of NFA to capital ratios over our sample period: a slow but steady rise starting around 1980 and a leveling off in the 2000s.

THE THEORY

Can we explain why firms are interested in net lending and what has changed since the 1970s? To do so, it is useful to take not one but two steps back in time and revisit corporate finance theory since its inception.

The first chapter of modern corporate finance was written by Franco Modigliani and Merton Miller in the early 1960s. They provided conditions such that the split between debt and equity was "irrelevant"; that is, the share of debt and equity with which a firm financed its operations did not change the market value of the firm. Merton Miller himself explained his theory by comparing the firm to a "gigantic tub of whole milk."⁸ The farmer can sell the whole milk as it is, or he can separate out the cream (debt), which sells at a higher price than the left-over skim milk (equity). If the prices of both cream and skim milk are competitive, that is, the price of cream exactly reflects the amount of whole milk needed, the cream plus the skim milk will always bring the same price as the whole milk, no matter how the farmer decides to split them.⁹

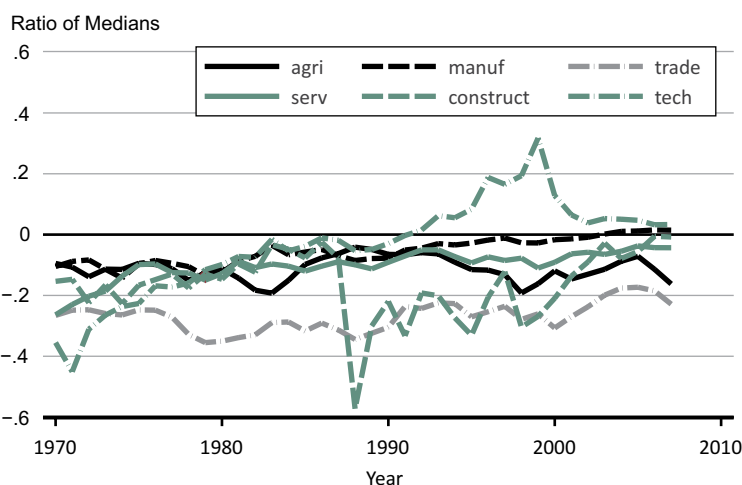
The Modigliani-Miller result is better understood as a benchmark, as there is plenty of evidence that the capital structure of a firm can affect its value. Economists carefully evaluate the costs and benefits of debt and equity relative to the competitive price, knowing that only deviations from the latter will determine the corporate finance strategy and the overall value of the firm. These deviations may arise

⁸ There is no reason the tub of whole milk needs to be "gigantic," but apparently Merton Miller had a taste for colorful descriptions.

⁹ The metaphor is taken from Miller's book.

FIGURE 5

Corporate NFA/Capital



Source: Compustat

from market distortions, adjustment costs, or other considerations internal to the firm.

The Pecking Order Theory.

While each finance source has its advantages and disadvantages, most researchers in corporate finance agree that internal funds are cheaper than external funds and, if the latter are needed, debt offers several advantages over equity — the so-called pecking order theory.¹⁰ First, the theory prescribes that a firm should rely on its own funds if possible. Internal funds are not free. Even though there are no external financiers to be compensated, internal funds have an opportunity cost because the firm will not receive the interest that the funds would accrue in the bank. However, these returns are low and are fully taxed, so internal funds are cheap. If no internal funds are available, the firm should resort to debt, according to the pecking order theory. The main advantage of debt is that interest payments can be expensed from corporate tax liabilities, what amounts to a subsidy in excess of 30 percent for most corporations. In addition, debtors have no direct control over the firm, and thus, debt avoids the conflicts of interest between managers and shareholders that plague equity.¹¹ The main disadvantage of debt is the threat of liquidation. If the firm cannot pay its debts, its creditors would force it to sell its assets, presumably at a discount, to cover its obliga-

¹⁰ See the article by Murray Frank and Vidhan Goyal for a review of the empirical evidence. See the book by Jean Tirole for a compendium of theories on corporate finance.

¹¹ Shareholders and managers may not agree on the relevant horizon and risk considerations for investment. For example, a manager may favor short-term returns or safer investments. However, debt is not free of corporate governance problems. In particular, debtors and shareholders may not agree either. As a result, debt may lead to underinvestment by the firm. For further reading, see the *Business Review* article by Mitchell Berlin.

tions. This may result in losses and thus lower the value of the firm.

Finally, equity appears to be the least attractive source of finance. Equity does not enjoy the tax advantages of debt, and it is subject to dividend and capital gains taxes, whose effective rates have traditionally been quite high. In addition, equity has significant flotation costs, can worsen ownership problems by bringing external ownership into the company, and may signal that the firm was unable to obtain credit from banks.

Thus, according to the pecking order theory, firms should adhere to a hierarchy of financing sources. They should rely on internal funds; if external finance is needed, debt should be preferred to equity, which becomes a finance source of last resort.

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From the theory's perspective, a firm that simultaneously relies on equity and carries a large NFA position is a puzzle. Such a firm should use its internal funds to buy back equity from shareholders and effectively decrease the cost of its financing and hence increase its market value. Thus, the theory cannot explain the facts for the 2000s.

One reason may be because the pecking order theory misses a key advantage of equity: Equity allows the firm to suspend dividends if it is in financial distress. This is not true of debt, where suspension of interest payments can invoke bankruptcy and liquidation. Crucially, the firm must carry some cash in order to take advantage of the "insurance" aspect of equity, so that cheap internal funds are available

in the event of financial distress, when the firm is unlikely to be able to obtain new credit.

The key insight is that the value of finance is not always the same for a firm. In particular, if a firm suffers operational losses or faces a large investment project, an additional dollar of financial assets may be very valuable, since the firm may not be able to borrow anew. For a firm without financing needs, either due to the lack of investment opportunities or thanks to a large cash flow, an additional dollar is not so valuable. Note that the firm is comparing the value of each asset at future dates and across possible contingencies.

In this sense, the firm is hedging by carrying cash and simultaneously issuing equity. If the firm receives a

negative shock, e.g., an investment goes awry, it can suspend dividend payments and tap the internal funds it had saved — right when one additional dollar is very valuable. The reason is that the firm is unlikely to take out new loans in the event of a negative shock.¹² Note the contrast between equity and debt obligations, which cannot be suspended. So the firm with a large amount of debt would find itself in the difficult spot of having to finance its losses and service its debt payments.

¹² Firms actively rely on credit lines provided by banks. These credit lines, though, come with covenants that make it hard to use them when the firm is in distress. That is, credit lines are an umbrella that does not open when it rains. See the study by Amir Sufi for evidence.

Thus, the firm needs to account for its financial condition in the future in order to decide on the appropriate mix of equity and debt. Indeed, firms find it useful to accumulate cash and other liquid assets on hand to minimize the chances that they will face financial distress, yet they will still actively maintain outstanding equity because it serves as insurance. In my study with Viktoria Hnatkovska, we show that this simple idea can explain the observed distribution of NFA positions across firms in the 2000s. The study by Christopher Hennessy and Toni Whited and the one by Joao Gomes also show how the firm's concerns about future financial conditions are consistent with several observations in the corporate finance literature.

The theory can also explain why the corporate sector was a borrower in the 1970s but not in the 2000s. In particular, we find that the differences in

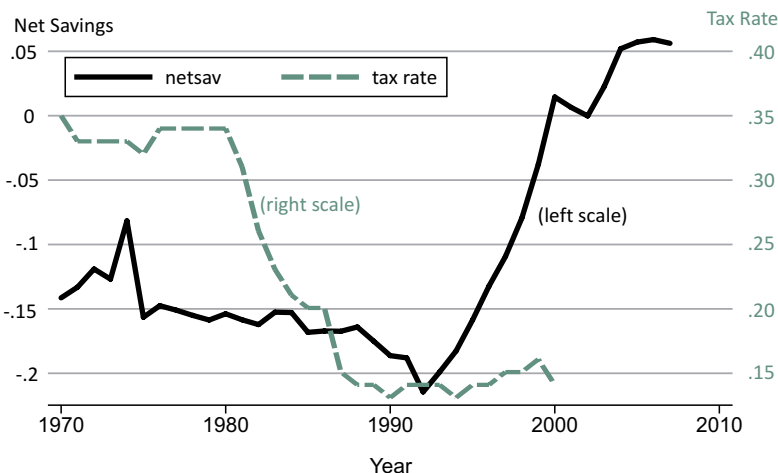
the tax treatment of equity versus debt can explain the data in both decades. Starting in the late 1970s, changes in the U.S. tax and regulatory system decreased the cost of equity. First and foremost, there were large changes in the relevant tax rates. James Poterba provides estimates of the effective tax rate on dividends and shows that they decreased by half from 1979 to the end of the 1980s, from 28 percent to about 15 percent. In addition, a series of regulatory changes made it possible for fiduciary institutions, like pension funds, to hold a larger share of their funds in equity. These institutions do not pay dividends, income, or capital gains taxes and thus have a large appetite for equity, bringing down its cost for firms.¹³

¹³ See Ellen McGrattan and Edward Prescott's study for a detailed discussion of regulatory changes for the U.S. and the U.K. and how they decreased the cost of equity.

Figure 6 plots the NFA position from the Flow of Funds data (as in Figure 1), together with the effective dividend tax rate computed by economists Ellen McGrattan and Edward Prescott. The figure shows how the dividend tax rate collapsed over the decade of the 1980s. The NFA position initially stayed stable but then started a steep climb and crossed into positive territory. The lag between the changes in tax rates and the NFA position is not surprising: Firms cannot reshuffle their balance sheets on the spot without incurring large adjustment costs. It is, thus, clear that the relative cost of equity in the 1970s was significantly higher due to more stringent taxation and regulations. The higher cost of equity is akin to a higher "insurance premium" from the firms' point of view. Firms value equity for its ability to provide financial relief whenever they find themselves in distress. However, since it was more costly, it was used more sparingly. Thus, firms relied more on debt, and the corporate sector as a whole had a negative NFA position.


FIGURE 6

Corporate NFA/Capital and Taxes



Source: U.S. Flow of Funds and McGrattan and Prescott

CONCLUSION

We have documented how firms have become, on the whole, net lenders to the rest of the economy. The change in saving behavior is quite uniform across sectors and seems particularly strong for newer, medium-size firms. We then discussed how to square this fact with the relative cost of equity versus debt. Equity, despite its tax disadvantages, offers insurance to firms in case of losses or distress, since it allows them to suspend dividend payments. The shift of the sector into net lending reflects the decrease in dividend and capital gains tax rates, which, in turn, reduced the fiscal advantages of debt. 

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