

IN THIS ISSUE

- Retirement Saving Versus Mortgage Paydowns
- What Makes Foreign Firms Attractive to U.S. Investors?
- Tax Incentives Raised Business Investment
- Changing Business Volatility

April 2007

Retirement Saving Versus Mortgage Paydowns

In their push to reduce their debt, many homeowners are missing a low-risk opportunity to increase their wealth. The reason? They're making extra payments on their mortgage—or taking out mortgages shorter than 30 years—rather than funneling that extra cash into tax-deferred retirement accounts. In **The Tradeoff Between Mortgage Prepayments and Tax-Deferred Retirement Savings** (NBER Working Paper No. 12502), authors **Gene Amromin, Jennifer Huang, and Clemens Sialm** find that the costs of using this approach can be significant.

Of course, to benefit from such a strategy—what the authors call a “tax arbitrage”—homeowners have to have a mortgage, the option to put more money into a tax-deferred retirement account, and a “get-out-of-debt” mentality. Indeed, many financial advisers suggest that homeowners who are in that position speed up their debt payments, either by paying down their 30-year mortgage early or by taking out shorter-term mortgages. But by examining a large subset of these homeowners, the authors find that nearly 4 in 10 (38 percent) of them would save money by ignoring the advice. Instead, they should redirect those extra mortgage payments into a tax-deferred retirement account (TDA) invested in fixed income securities.

“Depending on the choice of the investment asset in the TDA, the mean gain from such a reallocation ranges between 11 and 17 cents per dollar of misallocated savings,” the authors write. “In the aggregate, correcting this inefficient behavior could save U.S. households as much as 1.5 billion dollars per year.”

Why more households don't take advantage of the tax arbitrage remains something of a mystery. True, Americans often make costly

financial mistakes. The paper cites other studies showing households putting money into taxable accounts when they'd be better off using tax-free instruments. But the breadth of the mismatch in this case can't be explained entirely by a set of rational decisions, the authors write.

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Instead, many homeowners may be so averse to debt that they prefer to pay down their mortgages early rather than to maximize their overall wealth.

This is the first time those options have been compared, the authors write. “To the best of our knowledge, this is the first paper to...[consider] retirement contributions and mortgage payments as two alternative forms of household savings decisions.”

To come up with their sample of homeowners, the authors analyze three years of household balance sheet data—1995, 1998, and 2001—from the nationally representative Survey of Consumer Finances. Of the average 102.7 million households in each survey, they find that slightly less than half were eligible for an employer-sponsored TDA. Of those, slightly less than half had a fixed-rate mortgage. (The authors don't evaluate variable-rate loans, which would have complicated the analysis.) Of this group of 22.8 million households, about 10.5 million prepay their mortgages and either contribute to a TDA or, at least, have the ability to. It's from this group that the tax-arbitrage winners emerge.

Perhaps it's not surprising that those who can realize a tax-arbitrage profit (TAP) tend

to have more wealth and to make more money than the average homeowner, since the strategy most benefits those in higher tax brackets. Here's how the TAP works.

Homeowners may pay a higher interest rate on their mortgage than they can get on a

low-risk investment, but the real cost of borrowing is often lower because mortgage interest is tax-deductible. The higher the tax deduction on mortgage interest, the greater the possibility that an alternative investment may earn a better return. The authors look at two alternatives: Treasury bonds (considered super-safe because they're backed by the federal government) and mortgage-backed securities (which earn a higher return but still are considered low-risk).

Using the more conservative investment, Treasury bonds, some 2.5 million households could gain some \$10 to \$11 for every \$100 they moved from mortgage prepayment to a TDA. Using more aggressive mortgage-backed securities, some 4 million households would realize a gain of some \$17 per \$100 switched into mortgage-backed securities. That amounts to an average TAP of \$394 a year for mortgageholders who hadn't contributed to a TDA before (and thus were eligible to make a substantial switch). Those who already contribute some money to a TDA would average a slightly smaller gain of \$375 a year.

These numbers probably underestimate the gains, the authors say, in part because they do not observe the matches households can

obtain from their employers when they contribute to a retirement account and because they assume conservative limits on how much people could contribute to a TDA. The authors also assume that households spend their windfall immediately rather than invest it in the TDA, which would boost returns.

Of course, there can be risks with this savings strategy. Interest rates on mortgage-

backed securities can fall, squeezing the margin of profit. People may be forced to move at a time when interest rates are higher than their current mortgage. But the authors conclude that these risks are low. If interest rates fall, homeowners can always refinance the mortgage and lower their cost of borrowing. If interest rates rise and they also face relocation, they often can delay the move, minimizing the financial

impact. Other risks—such as mortgage default or a liquidity crunch—are not likely to arise with a strategy that simply reallocates dollars that homeowners already have, they add.

So the money is there to be saved—some \$1.5 billion—if homeowners can screen out the financial advice they often receive, overcome their aversion to debt, and tap the TAP that awaits many of them.

—Laurent Belsie

What Makes Foreign Firms Attractive to U.S. Investors?

U.S. investors exhibit a strong “home bias” for stocks in their country but the keys reasons for this—and the countervailing factors that make foreign stocks attractive—are less clear. Among the four main explanations favoring home equities—familiarity, moderate transaction costs, strong legal protections, and transparency—the last factor appears to be the most important. Foreign firms significantly boost U.S. investor interest when they enhance their informational transparency, especially by cross-listing on a U.S. exchange, which requires more rigorous accounting and other mandated disclosures.

In **Look at Me Now: What Attracts U.S. Shareholders?** (NBER Working Paper No. 12500), co-authors **John Ammer, Sara Holland, David C. Smith, and Francis Warnock** suggest that foreign firms can double (or more) U.S. holdings of their stock when they cross-list on a U.S. exchange, either in a direct listing or through American Depositary Receipts (ADRs) on the New York Stock Exchange, American Stock Exchange, or the NASDAQ.

In a 1997 sample of 12,236 foreign-domiciled, publicly traded firms, just 498 were cross-listed. In these firms, U.S. investors held an (equal-weighted) average of 17.5 percent of market capitalization (26.3 percent of market float) as compared to an average stake of 2.9 percent (5.6 percent of market float) of the 11,738 foreign firms that were not cross-listed. The large difference between the two groups is the basis for what the authors call the “cross-listing effect,” which they calculate results in U.S. holdings increasing by 8 to 11 percent of foreign firms’ market capitalization. The researchers caution that not every firm could achieve this cross-listing-effect magnitude—indeed, a smaller increase should be anticipated for firms that already have relatively transparent account-

ing practices—but the evidence suggests that this surge in U.S. holdings could be expected in at least several hundred firms not already cross-listed.

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institutional investors as they conform to U.S. accounting principles, this study establishes that the premium on transparency applies to all U.S. portfolio investors and to a much larger universe of foreign equities than has been captured in earlier studies. It also suggests that, while transparency and legal protections are often correlated, the pattern of investor holdings highlights how much more weight is accorded informational transparency than formal legal protections. In practice, U.S. securities law enforcement does not extend to cross-listed companies but is seen as complementing, not substituting, for shareholder protection provided by other countries’ legal systems. Indeed, protection for small shareholders should be more effective in an environment of greater transparency.

The current study’s broader dataset yields evidence of U.S. holdings in over 70 percent of non-U.S. publicly traded foreign firms (up from about 5 percent in earlier studies) with significant variations on national and firm levels. U.S. investors own nearly a quarter of Argentina’s market capitalization, roughly 20 percent in the Netherlands, Finland, Ireland, Hungary, and Mexico, but less than 5 percent in China, Taiwan, Greece, and Colombia. In the aggregate, Americans held just 9 percent of market capitalization in 46 countries. At the firm level, the holdings are relatively dispersed in roughly

three-quarters of the sample 12,236 firms, ranging from very small to developing country transnationals. Of a total market capitalization (end of 1997) of US\$ 11,080 billion, U.S. investors’ US\$ 1,020 billion stake represented 88 percent of total U.S. foreign equity holdings.

The pattern of ownership suggests how much more weight informational transparency is given than formal legal protections. An increase of 20 points in a country’s national accounting quality index (CIFAR score)—equivalent to moving from an Austrian to a Swedish firm—increases U.S. investment by 25 percent of typical holdings for a non-cross-listed firm, holding everything else constant. A similar increase in U.S. investment occurs when there is an increase in firm-level accounting quality, rising from a value of 2 to 4.

Other factors highlighting the importance of information quality include: the preference for larger firms (thought to provide more reliable information because of their capacity to generate quality information, and more regulatory, press, and after-listing securities analysts’ attention); those producing information in English; those with diffusely held shares (diluting the influence of insiders); and dividend-paying firms (suggesting less danger of expropriation). There is also a tendency to avoid financial firms that are considered less transparent than non-financial firms. At the same time, U.S. holdings do not appear to be affected by either familiarity or costs. U.S. investors hold about the same proportion of foreign stocks traded over-the-counter (OTC) in the United States as they hold in peers not traded in the United States. Indeed, U.S. investors acquire

a majority of their shares in cross-listed firms directly in the firm's home market, rather than through purchases of ADRs. Thus, the availability of foreign shares trading in the United States is, by itself, neither a necessary nor a sufficient explanation for the cross-listing effect.

The implications seem evident: firms can attract more foreign investment by voluntarily

increasing disclosure, and governments can stimulate capital in-flows by promoting and enforcing those disclosures. Still, the evidence suggests that, to date, the key motive for cross listing has not been to expand the shareholder base; rather, the decision to cross-list is more likely when there is already a large base of U.S. shareholders. In this light, cross listing is a means of servicing

existing shareholder clientele. Indeed, there is evidence that foreign firms cross-listing in the United States are the types of firms that U.S. investors are likely to hold anyway, whether they are cross-listed or not.

—Ken Stier

Tax Incentives Raised Business Investment

In **Temporary Investment Tax Incentives: Theory with Evidence from Bonus Depreciation** (NBER Working Paper No. 12514), authors **Christopher House** and **Matthew Shapiro** analyze how temporary changes in taxes affect the incentive to invest. Although their work is motivated by recent changes in tax law, their analysis has general implications for the equilibrium effects of temporary tax incentives.

Small changes in the timing of a firm's purchases of long-lived pieces of equipment have little effect on their value to the firm. For example, how much a machine produces over the next twenty years will be essentially the same whether the machine is installed in late December or early January. On the other hand, if a tax subsidy is available in December but expires in January, then the firm has a strong incentive to install it in December. As a result, powerful incentives to alter the timing of investment in response to temporary tax subsidies exist. These incentives are so strong that, for a sufficiently temporary tax change or a sufficiently long-lived capital good, firms will bid up the purchase price of investment goods by exactly the amount of the subsidy. House and Shapiro use this insight into the effect of temporary investment subsidies to estimate how responsive the quantity of investment is to investment tax subsidies.

The authors estimate the responsiveness of investment and test the theory by examining disaggregated data on investment after the 2002 and 2003 tax bills. These bills provided for temporarily accelerated depreciation—called *bonus depreciation*—that allowed firms to immediately deduct an increased fraction of their investment spending. Under the 2002 bill, firms could immediately deduct 30 percent of investment and then depreciate the remaining 70 percent under the standard depreciation schedule. Under the 2003 bill, the bonus

deduction increased to 50 percent. This investment subsidy was explicitly temporary. Only investments made through the end of 2004 qualified for this tax treatment.

Using data on investment expendi-

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tures for different types of capital goods, the authors estimate the elasticity of supply for investment—the main parameter determining the size of the response of investment to a temporary tax incentive. The data clearly show that the policy had a stimulative impact on investment in capital that benefited most from bonus depreciation. The authors' estimates indicate that investment reacts strongly to changes in tax policy. Their analysis also suggests that the policy may have increased output by roughly 0.1 percent to 0.2 percent and increased employment by roughly 100,000 to 200,000 jobs. Market prices, on the other hand, showed little if any tendency to increase in the short run.

The authors' general results hold for only the specific circumstance of a temporary change in the cost of purchasing capital goods. Their calculations show that for long-lived durable capital goods, even changes in tax policy that last for multiple years can safely be modeled as temporary. Given the frequency of changes in tax policy, the authors' analysis can be applied to many episodes.

The bonus depreciation allowance, passed in 2002 and then increased in 2003, provides an ideal opportunity to estimate the responsiveness of investment to changes in tax policy. Only investment goods with a tax recovery period less than or equal to 20 years qualify for the bonus depreciation. The theory sug-

gests that there should be a sharp difference in the response of investment spending between the 20-year investment goods and those with more than a 20-year recovery period. In addition, among the qualified investment goods,

researchers should observe higher investment spending for goods with higher tax recovery periods. The authors' data support both predictions. Bonus depreciation appears to have had a powerful effect on the composition of investment. Capital that benefited substantially from the policy—namely equipment with long tax lives—saw sharp increases in investment. In contrast, there is no evidence that market prices increased because of the policy.

Although the policy expired in 2005, it is not clear whether investment spending returned to normal, as one would predict. This is probably because of the extension of bonus depreciation for certain properties and the increased Section 179 exemption, a tax incentive that shares many of the features of bonus depreciation but, unlike bonus depreciation, was extended beyond the end of 2004.

Because the data indicate that qualified investment goods responded strongly to the tax policy, the estimated elasticity of the supply of investment is quite high. The authors use their estimates to assess the likely aggregate impact of the policy. Because the policy was narrowly focused on a small subset of investment spending, the authors find that it had only modest effects on aggregate employment and output, despite the stark effects on the composition of investment.

—Les Picker

Changing Business Volatility

In the past quarter century, the ups and downs of the American economy—that is, its business cycle volatility—have decreased. That’s a good thing: it means less severe recessions, milder swings in the unemployment rate, and possibly fewer business failures. Over the same time period, though, the volatility of employment growth rates and sales growth rates at some 10,000 companies whose securities are traded on various stock markets have risen, on average.

In **Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms** (NBER Working Paper No. 12354), co-authors **Steven J. Davis, John Haltiwanger, Ron Jarmin, and Javier Miranda** seek to explain these apparently contradictory trends. For their study, they use the recently developed Longitudinal Business Database (LBD), which contains annual observations on employment and payroll for some 6 million U.S. businesses. This is a dramatically larger and more comprehensive database than the COMPUSTAT data on publicly traded companies used in previous studies. Publicly traded companies constitute less than 1 percent of all U.S. firms and about one-third of U.S. employment in the non-farm business sector.

The authors’ main finding is that the employment-weighted mean volatility of firm growth rates for *all* U.S. businesses has declined by more than 40 percent since 1982. LBD data confirm that volatility rose among publicly traded firms. However, this trend is overwhelmed by declining volatility among privately held firms, some large, but many as small as mom-and-pop shops. Although the *level* of business volatility is relatively high at privately held firms, it has trended downward. In contrast, the level of business volatility is relatively

low at publicly traded firms, but it has trended upward. This pattern of “volatility convergence” holds in every major industry.

Several developments underlie the volatility convergence phenomenon. First, activity has shifted to older employers among privately held businesses, and older businesses tend to be much more stable than new businesses. The employment-weighted rate of business entry

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and exit has also declined. The authors estimate that the shift of employment toward older businesses accounts for 27 percent of the volatility decline among privately held firms.

Second, large publicly traded companies have gradually displaced smaller businesses in some industries. In retailing and restaurants, for example, Wal-Mart, Target, McDonald’s, Applebee’s, Starbucks, and other chains have grown relative to smaller stores and restaurants. Larger businesses firms and establishments are less volatile than their smaller counterparts. So the increased market share of large publicly traded companies in certain industries also contributed to a decline in overall business volatility.

As for the extra volatility of publicly traded firms, especially visible in the 1990s, this trend reflects the rise in new business models and high-tech firms, including dotcoms and biotech, which—with increased venture capital—were able to go public with stock offerings earlier in the life cycle than in previous decades. As a result, newly and recently listed firms became riskier compared to newly and recently

listed firms in earlier decades. The number and market share of recently listed firms also rose rapidly starting in the early 1980s. The influx of large numbers of increasingly risky firms accounts for most of the rise in volatility among publicly traded firms.

The decline in firm-level volatility in the United States has contributed to a decline in what economists call “frictional unemploy-

ment.” Fewer workers become unemployed because of layoffs when employer volatility drops. The authors conjecture that long-term declines in business volatility and unemployment flows may stem in part from greater wage-and-earnings flexibility. Reasons for greater flexibility of wages and earnings include declines in the real minimum wage, a diminished role for private sector unions, intensified competitive pressures that undermine rigid compensation structures, and the growth of employee leasing and temporary workers.

Interestingly, the decline in business volatility coincides with a period of impressive productivity growth in the nation. This does not fully square with the creative-destruction view of economist Joseph Schumpeter—the notion that productivity growth relies mostly on the displacement of less productive firms by more productive rivals. Perhaps, the authors speculate, there has been a large increase in the pace of restructuring, experimentation, and adjustment activities within publicly traded firms that boosted productivity throughout the economy.

—David R. Francis

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