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## Build America Bonds

**B**uild America Bonds (BAB)—a new and federally subsidized form of municipal financing—assist state and local governments to finance capital projects. Created as part of the 2009 American Recovery and Reinvestment Act, BABs were first used by the University of Virginia in April 2009. By the end of that year, some \$63.4 billion in BABs had been issued. Unlike traditional municipal bonds, which pay interest that is exempt from federal income taxation, the interest on BABs is taxable. What makes them attractive to municipal issuers is that the federal government subsidizes 35 percent of the interest. For example, if a state or city issues a bond that pays 5 percent interest, it pays only 3.25 percent—the balance, 1.75 percent, is paid by the federal government. The federal subsidy lasts for the life of the bond, although BABs can only be issued in 2009 and 2010.

Although individual investors traditionally have provided the bulk of municipal financing, the after tax yields on BABs are lower than the yields on munic-

ipal bonds for these investors. Therefore, BABs are attracting a new class of investors to municipal financing. In a recent NBER study, **Build America Bonds** (NBER Working Paper No. 16008),

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authors **Andrew Ang**, **Vineer Bhansali**, and **Yuhang Xing** conclude that: “the BAB program can be interpreted as a wealth transfer from the natural holders of municipal bonds, who are individual U.S. taxpayers, to corporations, pension funds, and foreign investors not subject to individual U.S. income taxes.”

The interest rates on BABs make them attractive to such non-taxable investors as pension funds: they get the full return and owe no taxes. In 2009, BABs offered an average yield of 3.69 percent. The federal subsidy thus brought down the cost of borrowing for states and local governments to 2.32 percent, on average.

The authors estimate that if these issuers had issued equivalent municipal bonds, they would have had to pay 2.86 percent on average, or an extra 54 basis points per year.

The yields on BABs not only exceed those on traditional municipal bonds from the standpoint of tax-exempt investors, they also exceed the yields on Treasury securities: on average, 3.69 percent versus 2.53 percent—a 116 basis point advantage. Some of that difference involves differing risk factors: municipal bonds are seen to have higher risk than Treasuries and thus, investors demand a higher premium. For individual investors in the top tax bracket, however, while the after tax yields on BABs also exceed Treasuries, they fall below the after tax yields on traditional municipal bonds.

—Laurent Belsie

## Default Rules for Retirement Plan Selection

**O**ver the past 30 years, corporate retirement plan offerings have been shifting from defined benefit (DB) plans to defined contribution (DC) plans. The DB plans provide retirement benefits through a set formula based on earnings and years of service to one company, but they also carry the risk of the employer defaulting on part of the pension obliga-

tion in the future or of the employee leaving the firm before reaching its designated retirement age. The DC plans provide benefits based on tax-advantaged contributions and subsequent investment performance, but they put the responsibility of enrollment, contribution, and investment decisions on the individual. Because DB and DC plans differ in their accrual

patterns and risk characteristics, deciding which plan is best for an individual can be difficult.

Many employers who have been making the transition to DC plans still have their pre-existing DB plans, so in some instances they continue to offer employees a choice between the two. However, some of those employees

fail to make a decision by enrollment deadlines. In **Incorporating Employee Heterogeneity into Default Rules for Retirement Plan Selection** (NBER Working Paper No. 16099), co-authors **Gopi Shah Goda** and **Colleen Flaherty Manchester** analyze the effect of incorporating differences among individuals into the default rules governing retirement plan selection.

Their data come from a large non-profit employer that in 2002 offered 925 of its union employees the option of switching from their existing DB plan to a DC plan. The employees, whose average age was 46, were given six months to decide. If they failed to make a choice, they were defaulted into a plan based on their age: those under age 45 were assigned to the DC plan while those 45

and older were kept in the DB plan. Of the employees eligible for the transition, just under half made an active choice and 70 percent of that group mimicked

plan enrollment,” the authors conclude.

These researchers also examine what age-based default rule employers should select for pension plans if their goal is

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“An employer can significantly influence its employees’ choice of a pension plan by setting its default plan.”

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the company’s default rule — that is consistent with employee choices seen in similar default option circumstances.

The results of this study suggest that an employer can significantly influence its employees’ choice of a pension plan by setting its default plan. In this instance, the employees who were subject to a DC plan default were 60 percentage points more likely to enroll in a DC plan than a DB plan. “The default was an overwhelming determinant of

to maximize the aggregate risk-adjusted pension wealth of their workers. The rule will depend on employees’ risk aversion as well as on the plans’ characteristics. For example, the asset allocation strategy in the DC plan is important. When risk aversion is high, perhaps in volatile economic periods, the DB plan generally will be valued highly by more employees, which will translate into a decline in the optimal age at which the employer will set a default of DC participation.

— Frank Byrt

## The Determinants of Leverage and Pricing in Buyouts

Private equity firms have become increasingly important sources of capital and governance for companies, and their financing choices have implications for the study of private equity and for corporate finance. In **Borrow Cheap, Buy High? The Determinants of Leverage and Pricing in Buyouts** (NBER Working Paper No. 15952), co-authors **Ulf Axelson**, **Tim Jenkinson**, **Per Strömberg**, and **Michael Weisbach** examine how private equity funds structure the financing of their leveraged buyouts (LBOs), and they compare this result to the capital structure of similarly-sized public corporations. The researchers also ask whether the financing of a buyout affects its pricing and investment return.

Typically, in a private equity transaction, the private equity firm forms a new company to bid for a controlling stake in — and often majority ownership of — an existing company. The new company is established specifically for the purposes of the transaction, and is usually just a shell with nominal capital and temporary directors. In order to raise the capital for an LBO, the private equity sponsor takes funds from its limited partners and lines up debt financing — conditional on

the acquisition closing — using the target firm’s assets as collateral. The syndicated loan market usually provides the debt.

This study relies on a sample of

are also commonly used to provide additional financial flexibility. The cost of borrowing is the main driver of both the quantity and the composition of debt in

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“Credit conditions have a strong effect on prices paid in LBOs, even after controlling for prices of equivalent public market companies.”

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1,157 LBO deals undertaken from 1980 through 2008, and includes 694 North American firms and 463 international firms, most of those from Western Europe. Some of the transactions were completed after the recent financial crisis, providing a view of private equity financial choices in both boom and bust credit markets. Although there are some public-to-private deals, the vast majority of the transactions involved the purchase of private companies and divisions of public companies. Most of the major market players, 176 private equity firms in all, are included in the sample.

After compiling data on each deal’s financing structure, including debt securities’ pricing and payback schedules, the researchers find that much of the debt used in buyouts is non-amortizing — for some tranches, even interest payments are optional. Contingent credit facilities

leveraged buyouts. When credit is abundant and cheap, buyouts become more highly leveraged in order to maximize the returns on each deal. The authors observe no such effect in similarly-sized public firms.

Buyout capital structures appear to be “inverted” relative to comparable public companies: on average, debt comprises around 70 percent of enterprise value in buyouts, which is about the proportion of equity in public companies. But the size of an LBO’s debt can vary greatly since its financing is so sensitive to credit market conditions.

Credit conditions have a strong effect on prices paid in LBOs, even after controlling for prices of equivalent public market companies. The use of high leverage in transactions also is found to negatively affect fund performance in most instances.

— Frank Byrt

## How Real Estate Shocks Affect Corporate Investment

The ability to pledge collateral enhances a firm's debt capacity, and providing outside investors with the option to liquidate pledged assets acts as a strong disciplining device on borrowers. Therefore, asset liquidation values play a key role in determining a firm's debt capacity. When these asset values decline during business downturns, it can depress investment and potentially amplify the downturn. Indeed, this "collateral channel" often is invoked when discussing the severity of the Great Depression or the extraordinary expansion of the Japanese economy at the end of the 1980s.

In **The Collateral Channel: How Real Estate Shocks Affect Corporate Investment** (NBER Working Paper No. 16060), authors **Thomas Chaney**, **David Sraer**, and **David Thesmar** attempt to explain the microeconomic foundation

for this collateral channel mechanism. Using data from 1993–2007, they find that when the value of a firm's real estate

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"When the value of a firm's real estate appreciates by \$1, its investment increases by approximately 6 cents."

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appreciates by \$1, its investment increases by approximately 6 cents. This investment is financed through additional debt issues.

The researchers point out that real estate represents a significant fraction of the assets held on the balance sheet of corporations. In 1993, 58 percent of public firms in the United States reported at least some real estate ownership. Among these firms, real estate accounted for 19 percent of their total market value, which suggests that real estate shocks could have substantial effects on aggregate investment.

Chaney and co-authors find that the impact of real estate shocks on investment is even stronger when estimated

on a group of firms the authors view as more likely to be credit constrained. To determine whether balance sheet effects explain their findings, the authors compare the sensitivity of firm investment to real estate values for a set of firms that actually acquired real estate during the sample period. They find that the investment spending of these firms is more sensitive to real estate valuations after acquiring real estate than before the purchase of real estate assets.

—Lester Picker

## Wage Posting versus Wage Bargaining

Some workers bargain with prospective employers before accepting a job ("wage bargaining") while others consider a posted wage as a take-it-or-leave-it opportunity ("wage posting"). In **Evidence on the Determinants of the Choice between Wage Posting and Wage Bargaining** (NBER Working Paper No. 16033), co-authors **Robert Hall** and **Alan Krueger** survey a representative sample of 14,000 U.S. workers to inquire about the wage determination process at the time they were hired into their current or most recent jobs. One third of their survey respondents report bargaining over pay before accepting their current jobs, while one third have precise information about pay when they first meet with their employers, which is a sign of wage posting.

The authors go on to document a sharply negative relationship between education and precise information about pay: non-high-school graduates are almost twice as likely as those with a professional education to know their prospective pay exactly. In fact, the researchers find that

college graduates and those with professional training are rather unlikely to hold posted-wage jobs. Thus, wage posting appears to be much more important

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"Workers who had the option to remain at their earlier jobs when they took their current jobs...earn \$2.07 more per hour [on average] than those who did not have existing jobs to fall back on when they took their current jobs."

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in the jobs that are available to those with less education.

This higher incidence of wage posting for the least educated is consistent with the view that a minimum-wage job is inherently posted. But jobs held by women also are more likely to have been posted-wage positions, Hall and Krueger find. Posted-wage jobs are also common in the government and union sector.

Moreover, there is a great deal of variation among job-seekers when it comes to wage bargaining. Twenty-eight percent of those who did not graduate from high school report bargaining over wages, versus 56 percent of those with professional degrees. Bargaining is also more common among minority workers (over 40 per-

cent) and less common for women (24 percent).

The skill level of the work is also important: among knowledge work-

ers (those with a post-college education whose work involves problem solving) almost all (86 percent) report bargaining. Among blue-collar workers, only 5 percent report that they bargain over the wage.

The authors next study the impact of having the ability to wage bargain along with the option of keeping an existing job. They find that in considering a new job opportunity, having the option to keep the current job, which about half of job-seekers do, will substantially influence one's tendency to establish a wage through bargaining. This is especially true for more educated, problem-solving workers. However, the incidence of actual wage bargaining among those

who could have kept their previous jobs varies tremendously, and it remains especially high for knowledge workers and for senior workers.

These results on wages support the job-ladder model: that is, workers who had the option to remain at their earlier jobs when they took their current jobs can earn higher wages than those without that option. Indeed, those holding the option earn \$2.07 more per hour than

those who did not have existing jobs to fall back on when they took their current jobs.

Finally, the authors investigate two aspects of the relationship between bargaining and the distribution of wages, controlling for observed characteristics including education. First, if the distinction between wage posting and bargaining is meaningful, then the dispersion of wages among workers who accept posted

wages should be less than the dispersion among those who bargain. Hall and Krueger find this to be the case no matter what factors lead to employers' choices about the mode of wage determination. Second, labor market theory suggests that wages resulting from bargaining may be higher than posted wages, on average. For observationally similar workers in this survey, that is the case.

—Claire Brunel

## The Costs and Benefits of Corporate Borrowing

In **The Cost of Debt** (NBER Working Paper No. 16023), co-authors **Jules van Binsbergen, John Graham, and Jie Yang** use a financial model to estimate the marginal cost curve for corporate debt, including in their model such financial characteristics as asset collateral, firm size, book-to-market ratio, asset tangibility, cash flow, and dividend payouts. They also estimate the marginal net tax benefit of corporate debt—debt typically produces tax savings because interest on it is deductible. By considering both the costs and benefits, the authors' can approximate the optimal capital structure for a given firm.

The researchers estimate that the optimal capitalized net benefits of debt are typically about 3.5 percent of asset value averaged across all firms, resulting from an estimated gross benefit of debt of 10.4 percent of book value and an

estimated cost of debt of 6.9 percent. For firms that choose capital structures near the optimum, an optimal capital

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“For the typical near-equilibrium firm, an optimal capital structure increases the firm's value by 4.5 percent of book value.”

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structure increases the firm's value by 4.5 percent of book value, and by 5.9 percent of book assets for high net benefit firms. The authors also conclude that “the cost of being over levered appears to be more severe than (that of) being under levered.” They note that the default cost of debt amounts to approximately half the total cost of debt—agency costs and other non-default costs contribute the other half.

The sample of firms that the authors study is taken from financial statements representing nearly 80,000 “firm years” of companies that meet their criteria,

and is drawn from Standard & Poor's Compustat database for the period 1980 to 2007. In the main part of their analy-

sis, they simulate tax benefit functions using a firm's actual debt choice in a given year, based on the assumption that it represents the equilibrium intersection of the marginal cost and benefit of debt functions, including expected costs that managers trade off against tax benefits in order to choose an optimal capital structure. As the benefit functions shift and the cost function remains steady, the location of the cost-of-debt function is inferred as what the marginal cost of debt must be in order to rationalize the typical firm's capital structure choices.

—Frank Byrt

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