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Southwest Economy

The Effect of High Oil Prices on Today's Texas Economy

Texas and oil. These two words have gone hand in hand since 1889, when the state started producing oil. Since then, the Texas economy has often been driven by volatile energy prices—suffering with low oil prices and benefiting with high oil prices.

The effects of energy prices on the Texas economy were particularly evident during the 1970s and 1980s (*Chart 1*). As energy prices rose, the Texas economy expanded at a rapid pace, with strong employment and income growth. Although the Texas economy continued to expand until 1986, the oil and gas sector began to slip as energy prices slid from their 1981 heights. The oil price collapse in July 1986 touched off a statewide recession and significant job losses.

Since the early 1980s, however, the Texas energy industry has shrunk and other sectors of the Texas economy have grown. Despite these changes, Texas remains the top oil and natural gas producer in the United States and exports most of its production of these two commodities to other states. Consequently, the energy industry remains

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Is the Pension System a Liability?

In recent months United Airlines has joined the list of companies whose survival has been pitted against its defined benefit pension plan. As firms struggle to bail themselves out of bankruptcy, worker retirement plans are often thrown overboard in a last-ditch effort to return the firm to profitability.

Businesses faced with such a drastic situation have insufficient assets to pay the expected costs of pension promises. In the case of United Airlines, the company has been able to secure bankruptcy financing by agreeing to suspend payments to its already severely underfunded pension plans. The defined benefit plans are one of many factors weighing down the airline's cost structure because United must compete against carriers offering less expensive plans.

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Is the Pension System a Liability?

(Continued from front page)

Aside from sometimes adversely affecting retirees and employees, termination of United's pension plans would increase the financial burden on the Pension Benefit Guaranty Corp. (PBGC)—the government-established insurance fund that will continue to pay at least a portion of pension benefits. Over the past couple of years, the PBGC has assumed responsibility for a number of severely underfunded plans. As a result, the agency's balance sheet has transformed from large surpluses to even larger deficits (*Chart 1*). If United is unable to meet its pension obligation, the PBGC would assume responsibility for more than $6 billion owed to current and future retirees.[1]

The press coverage afforded companies whose pension plans are at risk, such as United, combined with the mounting deficits at the PBGC, has caused many to doubt the viability of the private pension system. However, the system's prospects are looking up. The economic rebound and temporary legislative relief will help all but the most troubled pensions revive, and this bodes well for the PBGC's long-term survival.

Differences Between Pension Plans

Prior to the 1980s, most employer-sponsored pension plans were traditional defined benefit plans. With a defined benefit pension plan, a firm guarantees a monthly or lump sum payment to workers after retirement. The dollar amount of this payment depends on a predetermined formula, typically based on a worker's salary during the last few years of employment and the number of years on the job.

Companies completely fund defined benefit plans, and all aspects of the plan are solely under the firm's control. Unless the firm goes bankrupt, monthly payments to retirees are not tied to the quantity of funds set aside by the firm. Therefore, the company bears the entire risk of making pension payments.

During the past two decades, firms have moved away from traditional defined benefits, preferring to offer plans that reduce the employer's risk, such as cash balance or defined contribution plans. The number of employer-offered defined benefit plans has declined dramatically, falling from 148,096 in 1980 to 56,405 in 1998, the last year for which these numbers are available (*Chart 2*). Meanwhile, participation in defined contribution plans has nearly tripled (*Chart 3*). The newer plans have many features desired by both firms and workers.

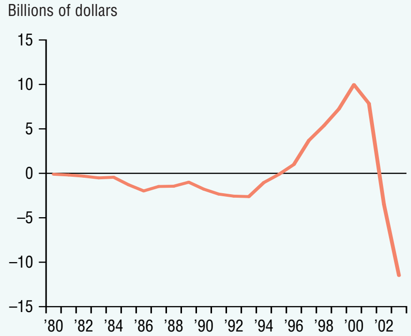
A cash balance plan is technically still a defined benefit plan because the employer completely funds the payments. However, in contrast to the lifelong guaranteed monthly payments of a traditional defined benefit plan, a cash balance plan provides each employee with a lump-sum dollar amount that the employee can take at retirement or use to purchase an annuity. The dollar value of the account is derived from contributions made by the employer (usually a fixed percentage of one's salary) and a guaranteed rate of return on those contributions (either a fixed interest rate or one tied to a given index rate).

One benefit of a cash balance plan to an increasingly mobile workforce is that workers can take a lump-sum distribution if they leave the firm prior to retiring. Unlike a traditional defined benefit plan in which the value of the pension rises quickly when an employee is five to 10 years from retirement, benefits with a cash balance plan rise gradually during an employee's tenure, so the worker is not penalized for leaving the company before retirement.

Since the mid-1980s, companies have increasingly switched to defined contribution plans that give employees even more control and responsibility for their pensions. With defined contribution

Chart 1

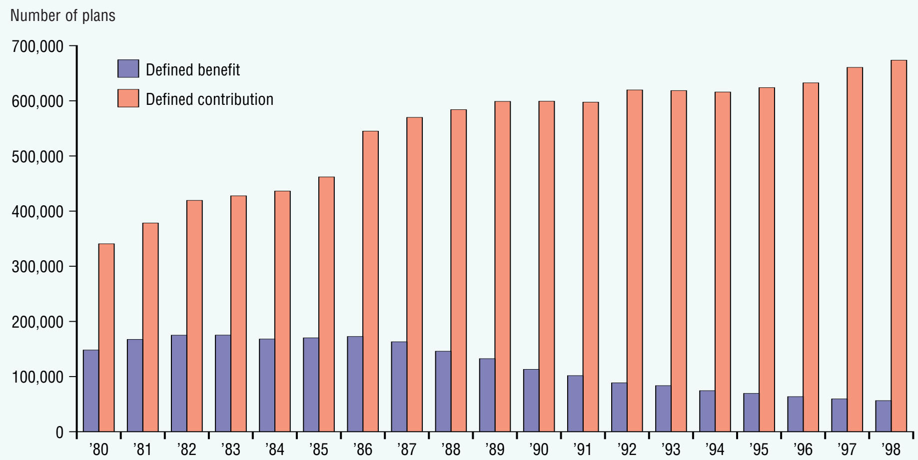
PBGC Deficit Increases Significantly



SOURCE: Pension Benefit Guaranty Corp.

Chart 2

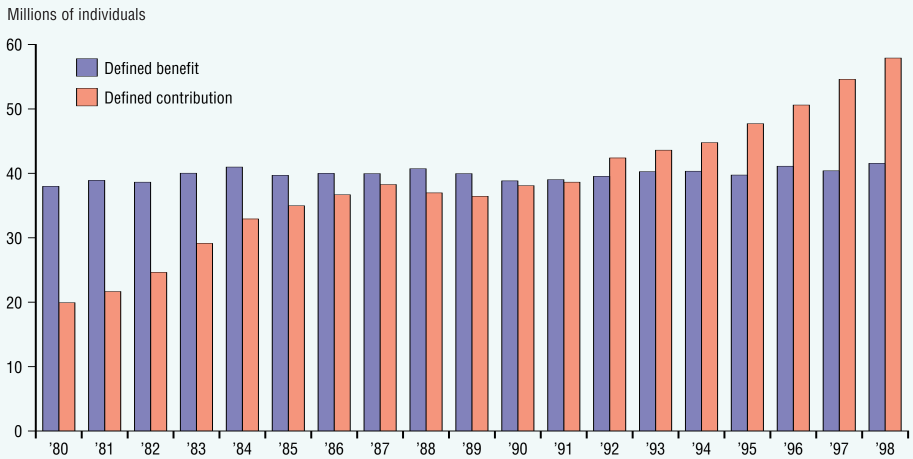
Number of Defined Benefit Plans Shrinks



SOURCE: Pension Benefit Guaranty Corp.

Chart 3

Participation in Defined Contribution Plans Rises



SOURCE: Pension Benefit Guaranty Corp.

plans, the most common form of which are 401(k) plans, employees accumulate money for retirement by making pretax contributions from their salary. While employers often make a limited contribution to the plan, monthly payments are not their responsibility. Individual employees choose from among the investment options offered by the employer and bear all risks associated with fluctuations in their retirement portfolio. See the box titled "Comparison of Defined Benefit and Defined Contribution Plans" for a side-by-side comparison of the two types of plans.

The key distinction between defined benefit (either the traditional or cash balance) and defined contribution plans is who bears the risk regarding the availability of funds when retirement occurs.

With a traditional defined benefit plan, the company bears all the risk of having sufficient assets to meet pension obligations. When the stock market falls and asset values plunge, it is the firm's responsibility to add funds to fulfill pension payments. Usually this requires diverting income from current revenue into pension plans, an action that may have implications for the viability of a company that is already in dire financial straits.

With a defined contribution plan, the company is only responsible for establishing the saving plan and deciding whether to match a percentage of employee contributions. Since no explicit payment is promised at retirement, any risk regarding the performance of the plan's assets is borne by the employee. As a consequence, when assets perform poorly, as the stock market did a few years ago, the company has no obligation to compensate the plan if the asset value falls.

Firms are free to select the type of pension plan they offer to employees. Presumably, the initial plan is structured to maximize the firm's long-term profitability, taking into account the attractiveness of the benefit plan to current and prospective workers. Once the plan design has been chosen, however, there are numerous regulatory hurdles governing a change, for example from a defined benefit plan to a defined contribution plan. (See the box titled "Switching from Defined Benefit to Defined Contribution Plans.")

The Business Cycle's Impact on Pensions

The business cycle can have a dramatic impact on pension plans. Economic downturns that are accompanied by a drop in interest rates or investment losses can lead to large declines in a plan's asset value and severe underfunding. Companies with defined contribution plans are not impacted by underfunding because employees bear all the costs of any investment losses. But firms with a defined benefit pension absorb the full impact of this effect on the plans.

Employers with defined benefit pensions are legally obligated to have sufficient funds to meet future obligations of its plan.[2] Fund contributions can come from current company income or from investment returns on plan assets. When asset performance is strong, firms can reduce contributions from current in-

Comparison of Defined Benefit and Defined Contribution Plans

	Defined Benefit	Defined Contribution—401(k)
Determined in advance	Benefit after retirement	Contributions while working
Payment in retirement	Determined by employer	Dependent on investment returns
Vesting period	Usually 5 years	Usually 0–2 years
When accrued	Greatest wealth accrues at end of career	Evenly, throughout career
Funding	Employer	Employee and some employer matching
Portability	Difficult to transfer assets when changing employers	Easy to transfer assets when changing employers
Control of assets	Employer manages investments	Employees manage investments among choices designated by employer
Investment risk	Employer bears investment risk	Employees bear investment risk
Administrative costs	Large administrative costs when employee turnover is high	Less costly for firms to administer with an increasingly mobile workforce
Risk of default	PBGC protects funds to some degree if firm defaults	Assets belong to employees and are protected from employer default

NOTE: See Friedberg and Owyang (2002), Table 1, for a more detailed description of the differences.

Switching from Defined Benefit to Defined Contribution Plans

Over the past 20 years, the share of workers covered by defined benefit plans has fallen because an increasing number of employers are setting up defined contribution plans instead.[1] Newer firms tend to set up defined contribution plans, while older firms that previously offered only defined benefit plans have either switched to offering both types of plans or offer only defined contribution plans to new workers.

Both employers and employees seem to prefer defined contribution plans. Today's workers are far more mobile than their parents were, frequently switching between many employers during their lifetime. Defined contribution plans are more portable than defined benefit plans because the administrative costs associated with employee turnover are lower and accumulated funds can be easily transferred to a new employer. Defined benefit plans tend to penalize mobile workers because fund accumulation typically accelerates in the final years of employment.

There are other reasons why employers prefer defined contribution plans. Many firms prefer to let employees absorb the investment swings that occur with changes in the business cycle. With defined benefit plans, the firms must devote resources to managing periods of over- or underfunding of their plans. For example, General Motors recently issued $13 billion in debt primarily to deal with an almost $18 billion underfunding of its defined benefit plan. Thus, these resources are not available for internal investment in the firm.

Regulatory and tax burdens are also lower with defined contribution plans. Both types of plans must comply with numerous regulations, but defined benefit plans are subject to additional rules dealing with periods of over- and underfunding. Accounting costs are also higher with defined benefit plans because the accounting procedures for regulatory purposes are different from those for shareholder reporting, as required by generally accepted accounting principles.

This difference in reporting for regulatory and shareholder purposes has created incentives for firms to distort short-run investment decisions. Firms can boost short-term revenues and profits for shareholder accounting purposes (by making unrealistic assumptions regarding investment returns, employee turnover and mortality) even though the pension plan may be suffering significant losses. In addition, firms may decide to increase or decrease plan funding (stopping short of violating regulatory rules) to inflate their current bottom line and appear more favorable to shareholders.

Finally, there have been growing legal challenges for employers with defined benefit plans. Given the numerous and complex administrative rules surrounding the plans, firms say they increasingly find it difficult to comply and avoid small mistakes that can generate huge liabilities for the company from class action lawsuits. The regulatory compliance and legal burdens are sufficiently high that many firms with defined benefit plans either have changed or anticipate changing to other plans once their plans are fully funded.

Note

[1] See Papke (1999) and the references contained therein for in-depth studies of the impact of defined contribution plans on defined benefit plan offerings. The author compares company offerings of the two plans in 1985 and 1992. Her statistics indicate that "over twenty percent of the employers still reporting in the 1992 sample dropped their 1985 defined benefit plan but retained or added a defined contribution or 401(k) plan."

The federal government has created a number of rules governing and protecting pension plans.

come. But companies must increase their current income contributions when investment returns sour, as they did over the past few years.

Defined benefit plans can boost profits during periods of prosperity and add to losses during economic downturns, amplifying cyclical swings in the company's balance sheet. This can exacerbate financial problems and impede a firm's ability to stay competitive. For example, large declines in the stock market in the early 2000s resulted in many companies' being required to increase pension contributions to reduce underfunding at the same time that lower demand for their products was impacting revenues and company profitability.

Interest rate movements also affect defined benefit plans. While the current value of assets is known, future liabilities are unknown but estimable based on assumptions about mortality, turnover and investment returns. A plan's solvency is estimated by comparing the present value of future liabilities with the current value of assets. (See the box titled "Calculating Future Liabilities.")

The choice of interest rate used to discount the value of future liabilities to today's dollar is critical to this estimation. The higher the interest rate used in this calculation, the lower the present value of future liabilities. In other words, higher interest rates would require fewer assets to be invested today to meet future liabilities.

Before a temporary legislative

change in 2002, the law required pension calculations to be made using the four-year average of the 30-year Treasury bond rate. This rate has fallen dramatically since 2000, increasing the present value of future liabilities and the estimated level of underfunding. The rate drop added to the underfunding problem caused by the 2000–02 stock market declines. To ameliorate the underfunding, firms issued equity, sold bonds or increased contributions from current income.

The impact of these actions has been twofold. First, firms with defined benefit plans are less competitive than those without because greater resources are devoted to shoring up pension plans as opposed to growing and expanding. Second, the PBGC has assumed control of more bankrupt plans, thereby stressing its limited resources.

Of course, all pension plans have been adversely impacted by the stock market declines and lower interest rates. Many 401(k) plans have lost significant value over the past few years. However, because individual employees and retirees bear all the risk with defined contribution plans, there was far less impact on firms with only defined contribution plans than on those with defined benefit plans.

Further, many companies with defined benefit plans have weathered the recent economic downturn without significant disruption to their business. It is primarily in industries already in significant decline—such as steel, or those suffering from extraordinary events, such as airlines after September 11—that the recent economic events have precipitated additional burdens on the long-term viability of numerous firms and their pension plans.

Calculating Future Liabilities

Comparing assets currently set aside with potential future liabilities requires firms to make assumptions about the future. It is also necessary to convert the assets and liabilities to either today's dollar or future dollars to assess whether assets are sufficient to cover liabilities. In practice, because assets are valued in today's dollar, firms value future liabilities in today's dollar. Under assumptions regarding future interest rates, the calculation is

$$\text{Today's value of future liabilities} = \text{payment today} + \text{payment next year}/(1 + \text{interest rate}) + \text{payment in two years}/(1 + \text{interest rate})^2 + \ldots$$

The interest rate used in this calculation is mandated by law to be the four-year average of the 30-year Treasury bond rate. It should be noted that the U.S. Treasury no longer sells a 30-year bond, and thus this rate is based on the yield of 30-year Treasury bonds maturing in February 2031. In addition, the above formula implies that as the interest rate increases, the value of future payments decreases.

Impact on the Pension Insurance Fund

The federal government has created a number of rules governing and protecting pension plans. Many of these rules are contained in the Employee Retirement Income Security Act (ERISA), passed in 1974. Modified by virtually every major tax bill since it was first passed, ERISA provides a complex set of regulations, particularly for defined benefit plans.

Although the government does not directly insure private pensions, ERISA created the self-funded PBGC to take over the payment of benefits in the event a plan ends without sufficient money to pay beneficiaries. The PBGC is financed from premiums paid by the companies it protects, from the assets of pension plans it has taken over, and from investments of any surpluses or assets. The PBGC may terminate a pension plan if it determines that doing so is needed to protect the interests of plan participants or the PBGC insurance program.

The PBGC protects most private defined benefit plans, insuring the pensions of nearly 44.3 million workers in more than 31,000 plans. There are, however, limits on the insurance provided by the PBGC. In 2004 the maximum guaranteed monthly payment is approximately $3,700 for workers who retire at age 65. The PBGC does not insure retirement plans that do not promise specific benefit amounts, such as defined contribution plans.

The recent economic downturn has sharply increased the number of plans for which the PBGC has assumed responsibility. Bankruptcies by older, larger companies, particularly in the steel and airline industries, are placing stress on the insurance fund and creating large deficits, as previously discussed.

As of Sept. 30, 2003, America's private pension plans were underfunded by more than $350 billion, the largest amount on record.[3] Underfunding in multiemployer plans—in which more than one entity funds a defined benefit pension, such as when both a company and a union contribute to a plan—added an additional $100 billion to that deficit.[4]

In 2003 the General Accounting Office reported that structural problems in the private-sector defined benefit system pose serious risks to the PBGC. Although the PBGC does not receive federal funding, financial markets assume that Congress will bail out the quasi-governmental agency if necessary. Current trends, if sustained, could lead to a taxpayer bailout greater than that of the $132 billion savings and loan industry.

Prospects for the Future

While recent years have been challenging for defined benefit plans and the PBGC insurance fund, businesses and government have responded with both market and temporary legislative solutions. In general, firms with large defined benefit plans are attempting to minimize future risks from stock market and interest rate swings by changing the nature and types of plans they offer. Legislation is also being enacted to alleviate problems resulting from low interest rates.

Transitioning to Cash Balance Defined Benefit Plans. As mentioned previously, over the past 20 years companies have shifted from traditional defined benefit to either cash balance or defined contribution pension plans. The first conversion from a traditional defined benefit to a cash balance plan occurred in the mid-1980s. More recently, this shift has accelerated as the economy softened and employers faced increasingly burdensome administrative and regulatory costs. By the late 1990s, approximately 11 percent of all traditional defined benefit plans had converted to cash balance plans, and they now account for an esti-

IBM's Transition to a Cash Balance Plan

Growing pension problems have led firms to switch to cash balance plans to limit financial exposure and offer workers more flexibility. Sometimes these transitions have met substantial resistance from workers, such as when IBM Corp. attempted to change the benefit formulas and convert from a traditional to a cash balance plan.

Although converting pension plans is legal under ERISA, U.S. pension law also protects pension benefits already earned. Older employees feared that IBM's move would mean a loss in the value of their pensions and accused the company of making a change that would benefit young workers at the expense of older ones. A judge ruled in July 2003 that IBM's conversion plan amounted to age discrimination because it unfairly penalized older employees. IBM was ordered to make back payments—possibly worth billions of dollars—to 140,000 older employees.

To facilitate the transition to a cash balance plan, IBM eventually grandfathered employees age 40 and older with at least 10 years of service, allowing those workers the choice of either plan. By doing so, the company moved beyond guarantees of past pension accruals required under ERISA to more secure contracts for future pension accruals.[1]

While many firms would like to make the transition from the traditional defined benefit plans to cash balance or defined contribution plans, the problems IBM faced raise the stakes for employers wishing to make changes. In particular, firms have devoted greater resources to devising plans that do not discriminate against older workers. In addition, communication of the details underlying a transition has received much greater importance.

These "win-win" arrangements will be easier to achieve when the stock market and interest rates increase and plans become fully funded. At that time, more companies will likely eliminate their traditional defined benefit plans.

Note

[1] See "Behind the Pension Tension at IBM," an interview with Olivia Mitchell, in the Insurance and Pension section of Knowledge@Wharton, Wharton School, University of Pennsylvania, October 27, 1999, http://knowledge.wharton.upenn.edu/index.cfm?fa=viewArticle&id=93.

mated 40 percent of all defined benefit assets.

Converting from a traditional defined benefit to a cash balance plan has tax advantages over switching to a defined contribution plan or terminating the plan altogether. If a traditional defined benefit plan is overfunded (most plans do not convert unless they are fully funded), nontrivial taxes must be paid if the plan is converted to a defined contribution plan. In contrast, if a firm has an overfunded pension and converts to a cash balance plan, excess cash can be used toward a retiree health insurance program without triggering excise taxes.

Moving from a traditional to a cash balance plan is not without hurdles. The problems involved with IBM's conversion in the 1990s received significant press, and the conversion was successfully challenged in court. (See the box titled "IBM's Transition to a Cash Balance Plan.") Despite IBM's experience, most firms converting to cash balance plans have done so successfully and with the support of workers and retirees.

Legislative Reforms Provide Temporary Relief. Recent underfunding problems were partly the result of stock market declines, but the rising stock values over the past two years have significantly increased the asset values of most pension plans, although not to pre-2000 levels. The increase in liabilities resulting from low interest rates, however, remains a problem for distressed defined benefit plans.

In April 2004, Congress passed legislation to temporarily change the way these liabilities are estimated, reducing the impact of low interest rates on the level of plan underfunding. The Pension Funding Equity Act allows companies to use an interest rate based on investment-grade corporate bonds—rather than the 30-year Treasury bond rate—through 2005.[5] The act also temporarily reduces the additional plan contributions required by firms with underfunded plans (but only in particular industries, such as steel and airlines, that have many large companies in or near bankruptcy).

Before the passage of this temporary relief bill, Congress was (and still is) considering a more comprehensive measure, the Pension Preservation and Savings Expansion Act. This legislation, introduced in July 2003, would make numerous changes to ERISA and the Internal Revenue Code. Among the proposed changes are accelerating savings limits and vesting of individuals, enhancing the portability of pension assets, temporarily allowing corporate bond rates to be used in liability calculations, expanding small business pension coverage, updating rules regarding pension distributions, clarifying the rules regarding public-sector workers and simplifying pension administration.

Although not explicit in this legislation, it is assumed that when provisions for using corporate bond rates expire at the end of 2005, a more permanent, alternate solution will be found to using the 30-year Treasury bond. There has been considerable discussion about using a yield curve approach for valuing liabilities. This approach would better match funding requirements to liability payments. For example, if half a company's employees retire in five years and the other half retire in 10 years, the five-year corporate bond rate would be applied to half the liabilities and the 10-year rate would be applied to the other half. Generally, although not always, short-term rates are lower than long-term rates. So a company with a younger workforce would significantly reduce its level of underfunding—especially compared with using the 30-year Treasury bond rate—by using rates that more closely match the retirement plans of its employees.

The PBGC's Viability. As a result of the changes occurring to defined benefit plans and the economic recovery, the PBGC's prospects for solvency are better than they might appear. The pickup in economic activity over the past two years has benefited companies on two fronts. First, the rising stock market has helped reduce the level of underfunding of defined benefit plans. Second, increases in profits have generally put firms in a better position to make additional contributions to underfunded plans. Anything that reduces the incidence of underfunding or eases firms' abilities to correct problems lessens the likelihood that the PBGC will be required to take over a defined benefit plan.

The temporary interest rate relief granted by recent legislation also reduces companies' pension shortfalls and the payments required to address this problem. Equally important, the recent legislation directly targets relief for those industries (steel and airlines) most likely to dump their large, underfunded plans on the PBGC. The economic desirability of such targeted relief is debatable, but the practical result will be less stress on the PBGC's ability to stay solvent in the short run.[6]

As firms switch to cash balance plans and reduce their exposure to market risks, they are less likely to further burden the insurance fund. It would not be surprising to see more firms move away from defined benefit plans as the plans become fully funded.

Summary

Many firms with defined benefit plans have weathered the recent economic turmoil without being forced into bankruptcy or jettisoning their plans. Only those firms bearing the entire risk of their pension plans, combined with other, industry-specific problems, are currently in distress.

The net result is that the PBGC is likely to assume additional pension plans and its deficit will worsen in the short run. However, outside the steel and airline industries, a massive failure of defined benefit plans that would precipitate an S&L-style bailout of the PBGC is unlikely.

The current economic recovery—in addition to temporary legislative relief and a transition to defined contribution plans in which employees bear more of the risks surrounding pension incomes—will help all except the most troubled companies get back on solid footing.

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Notes

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1 United Airlines' four defined benefit pension plans are currently underfunded by approximately $8.3 billion. However, due to limits on the insurance provided by the PBGC, only $6.4 billion of the underfunding problem would be covered. The remainder of the underfunding represents pension losses that would be absorbed by retirees and current workers invested in the pension plans.

2 Under special conditions, a firm must contribute additional funds over and above normal contributions. If a plan is less than 90 percent funded for several years or less than 80 percent funded in a given year, the company must make additional contributions to reduce the underfunding.

3 Pension Benefit Guaranty Corp., *2003 Annual Report*, p. 1.

4 PBGC, *2003 Annual Report*, p. 5.

5 However, it is important to note that using corporate bonds instead of the 30-year Treasury bond will not significantly reduce the nation's underfunded pensions, although it will grant temporary relief to companies whose pensions are currently underfunded. According to the Congressional Budget Office, the corporate bond rate would likely be about 150 basis points (1.5 percent) higher than the 30-year Treasury rate, reducing liabilities in underfunded plans by approximately $30 billion by 2006. This reliance on corporate bond rates is not without precedent. From March 2002 until the end of 2003, Congress allowed firms to use corporate bonds when calculating liabilities to provide temporary relief from recent declines in 30-year rates.

6 To the extent that the interest rate relief is only temporary, it will result in only a temporary respite from the recent large increases in the PBGC's deficit. Should problems with defined benefit plans persist, they are likely to add to the stresses on the PBGC's ability to remain solvent.

Sources and Suggested Reading

Congressional Budget Office (2003), "Cost Estimate of the Pension Stability Act," December 4, www.cbo.gov/showdoc.cfm?index=4878&sequence=0.

Coronado, Julia Lynn, and Phillip C. Copeland (2003), "Cash Balance Pension Plan Conversions and the New Economy," Federal Reserve Board of Governors Financial and Economics Discussion Series, no. 2003-63 (Washington, D.C., November).

Employee Benefit Research Institute (2002), "History of 401(k) Plans: An Update," EBRI Fact Sheet, November, www.ebri.org/facts/1102fact.htm.

Friedberg, Leora, and Michael T. Owyang (2002), "Not Your Father's Pension Plan: The Rise of 401(k) and Other Defined Contribution Plans," Federal Reserve Bank of St. Louis *Review*, January/February, 23–34.

——— (2004), "Explaining the Evolution of Pension Structure and Job Tenure," Federal Reserve Bank of St. Louis Working Paper no. 2002-022B (St. Louis, revised January 2004).

Kwan, Simon (2003), "Pension Accounting and Reported Earnings," Federal Reserve Bank of San Francisco *FRBSF Economic Letter*, no. 2003-19, July 4.

——— (2003), "The Present and Future of Pension Insurance," Federal Reserve Bank of San Francisco *FRBSF Economic Letter*, no. 2003-25, August 29.

——— (2003), "Underfunding of Private Pension Plans," Federal Reserve Bank of San Francisco *FRBSF Economic Letter*, no. 2003-16, June 13.

Papke, Leslie E. (1999), "Are 401(k) Plans Replacing Other Employer-Provided Pensions? Evidence from Panel Data," *Journal of Human Resources* 34 (Spring): 346–68.

Pension Benefit Guaranty Corporation (2003), "Pension Insurance Data Book 2002," no. 7, Winter 2003, www.pbgc.gov/publications/databook/2002txt/default.htm.

——— (2003), "2003 Annual Report," www.pbgc.gov/publications/annrpt/03annrpt.pdf.

Shilling, A. Gary (2003), "Pension Profits Become Corporate Costs," *Business Economics* 38 (October): 55–59.

U.S. Department of Labor, Pension and Welfare Benefits Administration, "Abstract of 1998 Form 5500 Annual Reports," *Private Pension Plan Bulletin*, no. 11 (Washington, D.C.: Winter 2001–2002), www.dol.gov/ebsa/PDF/1998pensionplanbulletin.PDF.