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## A Stress Test for the Private Employer Defined Contribution System

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## A Stress Test for the Private Employer Defined Contribution System

### Abstract

This chapter explores how the US private employer-sponsored defined contribution system fared during the financial market implosion followed by a prolonged macro-economic downturn. While data are still preliminary, we conclude that many plans did well, resulting in little change in employer sponsorship and employee participation. Moreover, account balances and contributions have recovered, boding well for the future.

### Disciplines

Economics

### Comments

The published version of this Working Paper may be found in the 2012 publication: *Reshaping Retirement Security: Lessons from the Global Financial Crisis*.

# **Reshaping Retirement Security**

## **Lessons from the Global Financial Crisis**

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## Chapter 8

### **A Stress Test for the Private Employer Defined Contribution System**

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*David Wray*

Beginning in the late 1980s, defined contribution (DC) plans began to emerge as the preferred employer-sponsored retirement vehicle in the United States. The trend from defined benefit (DB) to DC plans was welcomed by some, while others worried that a sharp fall in asset values might produce the collapse of the DC system. Some hypothesized that a dramatic decline in the value of DC plan assets might induce plan participants to stop contributing and expose employers to litigation regarding plan menu construction.

The year 2006 was a good one for private employer-sponsored DC plans in the United States. Key indicators of growth for the system were positive, with rising numbers of plans offered, increases in active participants, escalating employer and employee contributions, and improvements in total assets. In addition, the Pension Protection Act of 2006 made permanent several regulatory changes removing impediments restraining the use of automatic enrollment. But shortly thereafter, global financial markets crashed and virtually every asset class lost value. Over the next year, many 401(k) participants were exposed to the largest market downturn they had ever experienced.

In what follows, we examine initial data on the impact of the financial crisis on the DC system, focusing on plan sponsor and participant choices. Though we have no crystal ball, we conclude that many plans did well, resulting in little change in employer sponsorship and employee participation. Moreover, account balances and contributions have recovered, boding well for the future of the DC system.

#### **Responses to the crisis: plan sponsors**

Despite the financial market downturn of 2008–9, private sector employers by and large retained their plans and continued to make company

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contributions. Some adjusted plan design, and others changed how plan assets were invested.

In terms of numbers of plans, the private DC system continued to grow. According to the US Department of Labor (DOL, 2010), there were 669,156 private employer plans in 2008, up from 658,805 in 2007 and 645,971 in 2006. While 2009–10 data are not yet available, it appears that in 2009 there were few plan terminations, except in the case of bankruptcies, mergers, and acquisitions. The same data reports contributions by plan sponsors to DC retirement plans rose from 2006 to 2008. Firms contributed \$120,267 million in 2008, up 19 percent from 2006. Moreover, according to Profit Sharing/401k Council of America (PSCA, 2010*a*) survey data, most plan sponsors in 2009 maintained their matching and other plan contributions; nevertheless, some 15 percent did suspend their 401(k) matches, 4 percent reduced matching contributions, and 27 percent suspended or reduced their profit-sharing/other nonmatching company contributions, declines somewhat offset by the 5 percent of plan sponsors that initiated a match or increased their match.

By 2010, according to PSCA (2010*b*) survey data, some firms began to restore their plan contributions: 39 percent of those who had suspended their matching contribution reestablished them, and 30 percent of those who had reduced their match returned to normal levels. Also, 4 percent of plan sponsors increased or initiated a matching contribution and 3 percent of companies increased or initiated a nonmatching contribution. Moreover, 19 percent of companies suspending or reducing their nonmatching company contributions restored them. Working in the other direction, 2 percent of companies reduced matching contributions (Figure 8.1).

All employees are not necessarily eligible to make contributions, nor are they immediately eligible for company contributions as soon as they begin working. According to PSCA survey data, prior to 1998, it was standard practice to limit employee participation in a plan after one year of service and attaining age 21. Since that year, service requirements for eligibility were reduced and the trend continued through 2010. Short-service requirements (fewer than three months of service) are now common for participant contributions. In 1998, only about one-quarter of DC plans allowed new hires to begin contributing immediately; by 2010, 60 percent of all plans permitted immediate participation, and in 78 percent of plans, employees could participate within three months of employment. Forty-four percent of plans have no minimum age requirement for elective deferrals; the usual minimum age requirement, if there is one, is still age 21.

There has also been a continued trend toward immediate plan eligibility for employer contributions, and twice as many plans provide immediate eligibility for matching as for nonmatching contributions. Within three



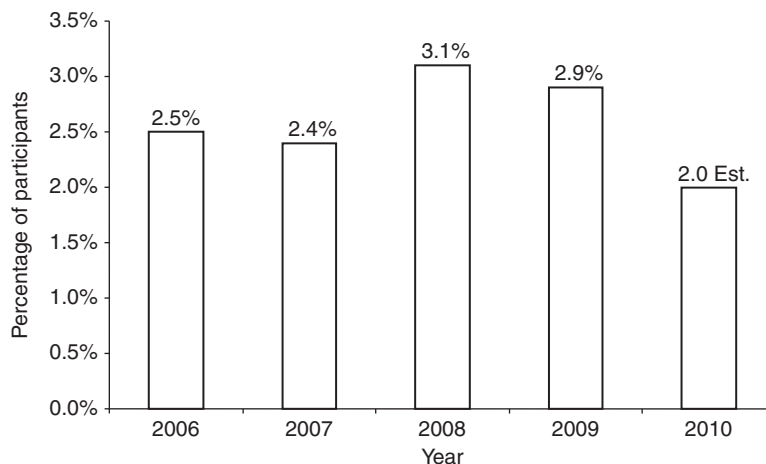


Figure 8.1 Percentage of participants contributing to plans that ceased making contributions by the year end: 2006–10

*Source:* Author's calculations.

months of employment, 60 percent of plans make employees eligible for matching contributions and 32 percent provide eligibility for nonmatching contributions. Thirty percent of companies require one year of service or longer for matching contribution eligibility, while over half of employers require one year or more of service to be eligible for nonmatching company contributions according to PSCA survey data.

In many DC plans, employers enroll new hires as soon as the employees are eligible; after that participant contributions are automatically deducted from employee pay unless an employee instructs the employer otherwise. According to Fidelity Investments (2011), automatic enrollment has spread in the DC environment, from 10 percent of plans in 2006 to 24 percent of plans by 2010.

In large firms with 5,000+ participants, automatic enrollment stood at 54 percent in 2009, up from 41 percent in 2006 (PSCA, 2009). Many employers will also select an investment portfolio to use as a 'default', absent investment guidance provided by the participant. Such investment patterns have changed substantially over time. In 2001, 48 percent of plans used either a stable value or money market fund as the default portfolio; by 2009, only 3 percent of plans used these funds (PSCA, 2010*a*). In their place, the defaults are now target retirement date funds, with over half (57 percent) using them in 2009.

When a DC plan permits participants to contribute after-tax dollars to a 401(k), under certain conditions, participants may take tax-free distributions

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of investment earnings. These are known as Roth 401(k) plans. Previously, only after-tax participant contributions were allowed, with investment earnings growing tax-deferred and taxable on distribution. The trend to Roth 401(k) plans has been impressive: in 2006, only 18 percent of firms allowed participants to make Roth after-tax contributions, while in 2009 the rate had more than doubled to 41 percent (PSCA, 2010*b*).

### Education, plan support, and investment offerings

From the onset of the financial crisis, volatility in the financial markets bred concern that employees might cease participating in their plans and/or reallocate their account balances to risk-free investments. Consequently, many employers with DC sought to enhance employee education and provide participant support when needed. In 2008–9, over half (54 percent) of plan sponsors increased plan education and communication efforts (PSCA, 2010*a*, 2010*b*). Moreover, providers added to their call centers to handle participant inquiries and ran numerous workshops.

Also during this period, plan sponsors recognized that some participants needed far more than education, and many now help participants with their investment allocation decisions with target-date funds, investment advice, and professionally managed investment options. For example, almost two-thirds (62 percent) of sponsors in 2010 offered target-date funds, up from about one-third (35 percent) four years earlier (PSCA, 2010*a*, 2010*b*). Investment advice was offered in 60 percent of plans in 2009, up from 45 percent in 2006. Almost a third (31 percent) of plans offered participants a managed account option in 2009, allowing participants to delegate plan allocations to professional managers selected by the plan sponsor. In 2009, 19 percent of plans made all three of these options available and only 9 percent of plans did not provide at least one (see Table 8.1).

Many companies also increased the frequency with which they monitor plan investment offerings, and a majority changed plan menus. For

TABLE 8.1 Percentage of DC plans offering target-date funds, professionally managed accounts, and/or investment advice to participants

Offers	% of plans
Offers all three options	18.6
Offers two of the three	35.8
Offers one of the three	36.5
Does not offer any	9.1

Source: PSCA (2010*a*, 2010*b*).

instance, almost two-thirds (64 percent) of sponsors reviewed plan investment menus quarterly, up from about half (53 percent) in 2006. The fraction undertaking a review annually fell from 27 to 18 over the same period. Fifty-six percent of plan sponsors changed plan investments lineups in 2010 (PSCA, 2010*a*, 2010*b*).

### **Responses to the crisis: participant behavior**

As shown elsewhere in this volume (Tang et al., 2012), the vast majority of 401(k) participants showed substantial resilience in the face of stock market volatility, falling housing prices, and overall economic uncertainty. Most continued saving in their plans, maintained their saving rates, and continued to hold diversified portfolios with the majority of the assets in equities. They have been rewarded with increases in both median and average account balances by the end of 2010 according to Vanguard (2011).

### **Participant contributions**

Federal law limits the amount highly compensated employees (HCEs) can contribute to their plans, compared to the nonhighly compensated. Evidence suggests that the nonhighly compensated participants more or less maintained their DC contributions despite the crisis. Thus, as a percentage of pay, average contributions for nonHCEs eligible to participate (including noncontributors), stood at 5.4 percent of pay in 2006, 5.6 percent in 2007, 5.5 percent in 2008, and 5.2 percent in 2009 (PSCA, 2010*a*). One reason for the bump down is probably that some plans suspended employer matching contributions, making employee participation less attractive.

### **Distributions**

Some 87 percent of private employer-sponsored DC plans permit their participants to borrow from their accounts: federal rules limit the loans to 50 percent of their account balances or \$50,000, whichever is less. It is generally thought that sponsors include this plan provision to encourage participation and higher contribution rates, and to avoid hardship withdrawals. Available evidence suggests that plan loan rates were virtually unchanged over the period. As of 2006, 24 percent of participants had a loan outstanding, given that they could borrow; as of 2009, the fraction was 23 percent. (Average loan amounts did rise from \$7,766 to \$8,760 according to PSCA survey data.)

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A majority of plans, 86 percent, allow hardship withdrawals; common reasons for permitting these include purchase of a primary residence, to prevent eviction or foreclosure, for medical expenses, and to cover post-secondary education expenses. The fraction of plan participants taking hardship distributions has increased, but remains small: it was 1.5 percent of eligible participants in 2006 and 2.2 percent in 2010 according to Vanguard (2011).

Another way in which funds can leave DC plans is via lump-sum distributions. When a participant leaves an employer with an account balance, this balance can be preserved by leaving the amount accumulated in the former employer's plan, rolling it over into a new employer's plan, or rolling it into an individual retirement account (IRA). Alternatively, the former employee may also elect to take a lump-sum distribution, which will be subject to income tax, as well as a 10 percent early withdrawal penalty (if under the age of 59.5). Over the period under observation, there was little change in participant behavior regarding distributions: for instance, in 2006, 72 percent of terminated vested participants did not cash out plan assets, so that 93 percent of the available assets were retained in the system (Vanguard, 2011). By 2010, the percentage declined only slightly: 70 percent of terminating employees preserved their saving in a tax-qualified program, amounting to 92 percent of available assets.

### **Balances and trading activity**

Total assets in private sector DC plans increased from \$3.55 trillion at the end of 2006 to a historic high of \$3.86 trillion by the end of 2010 (FRB, 2011). The median participant account across all eligible participants grew from \$25,953 in 2006 to \$26,926 in 2010; the median account balance for participants with an account in 2007 increased by 31 percent by the end of 2010. Average participant account balances grew from \$75,791 in 2006 to \$79,077 in 2010 (Vanguard, 2011).

Most participants do not actively trade their DC plan portfolios. In 2006, only fourteen of the participants made at least one trade or exchange; this number rose slightly to 16 percent in 2008 and then fell back to 12 percent in 2009 and 2010 (Vanguard, 2011). Moreover, the fraction of new contributions going to equities in these plans remained relatively steady over the period: in 2006, 72 percent of new contributions to DC plans went to equities; in 2007, it was 74 percent; in 2009, it was 68 percent; and it rebounded to 70 percent by 2010 (Vanguard, 2011). The commitment to equities stood at 73 percent of the DC balances 2006–7, reaching a low of 61 percent in 2008 with the market shock. As the market rallied in 2009 and 2010, the percentage of plan assets in equities rebounded to finish at 68

percent in 2010 (Vanguard, 2011). These trends resulted from several factors, including the fact that employees continued to contribute new money to equities, as well as the rebounding stock market.

Another look at the long-term trend is taken from private retirement plan asset data reported by the Federal Reserve (2011). Here DC plans' asset allocation has remained virtually unchanged from 2006 to 2010. Additionally, private DC plan assets rose by 8.8 percent over the relevant time frame.

## Conclusion

Without a doubt, the past few years have been an unusually difficult period for plan sponsors and participants in the DC arena. Nevertheless, most private sector employers who had DC plans continued their sponsorship, and the majority of employees and firms continued to contribute. It now seems clear that the employer-sponsored DC system performed well in difficult times, with little permanent decline in employer sponsorship or employee participation. This permitted account balances and contribution levels to recover as the economy improved.

## References

- Board of Governors of the Federal Reserve System (FRB) (2011). *Flow of Funds Accounts of the United States*. Statistical Release Z.1. Washington, DC: FRB.
- Fidelity Investments (2011). *Debunking Five Key Myths about Defined Contribution Plans*. Boston, MA: Fidelity Investments.
- Profit Sharing/401k Council of America (PSCA) (2001–2010). *45th–53rd Annual Surveys of Profit Sharing and 401(k) Plans*. Chicago, IL: PSCA.
- (2009). *Impact of Economic Conditions on 401(k) and Profit Sharing Plans*. Chicago, IL: PSCA.
- (2010a). *401(k) and Profit Sharing Plan Response to Current Conditions*. Chicago, IL: PSCA.
- (2010b). *401(k) and Profit Sharing Plan Eligibility Survey 2010*. Chicago, IL: PSCA.
- Tang, N., O. S. Mitchell, and S. P. Utkus (2012). “Trading in 401(k) Plans during the Financial Crisis”, in R. Maurer, O. S. Mitchell, and M. J. Warshawsky, eds., *Reshaping Retirement Security: Lessons from the Global Financial Crisis*. Oxford, UK: Oxford University Press.
- US Department of Labor (DoL) (2008). *Private Pension Plan Bulletin Historical Tables and Graphs Abstract of 2006 Form 5500 Annual Reports*. Washington, DC: Employee Benefits Security Administration.

## **158 Reshaping Retirement Security**

— (2009). *Private Pension Plan Bulletin Historical Tables and Graphs Abstract of 2007 Form 5500 Annual Reports*. Washington, DC: Employee Benefits Security Administration.

— (2010). *Private Pension Plan Bulletin Historical Tables and Graphs Abstract of 2008 Form 5500 Annual Reports*. Washington, DC: Employee Benefits Security Administration.

Vanguard (2011). *The Great Recession and 401(k) Plan Participant Behavior*. Center for Retirement Research. Valley Forge, PA: Vanguard.