

**Adopting Hybrid Pension Plans:  
Effects of Economic Crisis and Regulatory Reform**

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### Abstract

This chapter examines the factors that affected plan sponsors' decisions to convert a traditional defined benefit (DB) plan to a hybrid design during years 2000-2010. We use combined plan level data from Form 5500 filings and financial information from 10-Ks of Fortune 1000 companies to ascertain how the financial status of the plan sponsor, pension plan funding, and costs affected a decision to convert from a traditional DB plan to a hybrid design. We also explore the timing of such conversions relative to major changes in federal regulations, specifically the passage of the Pension Protection Act of 2006 and the ensuing regulations as well as in response to the economic crisis. We examine whether firms that converted in the early part of the decade did so for reasons that were different than those who converted in later part of the decade. We assess the role of the financial status of the plan sponsor in the conversion decision and compare this to the influence of the plan funding ratio, the investment patterns, and the overall plan cost. We also describe the influence the economic crisis is likely to have on the choice of plan type.

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Beginning in the mid-1980s, many large US employers began converting traditional defined benefit (DB) pension plans to hybrid plans, primarily cash balance plans. While legally these are DB plans, hybrids have important characteristics that mimic defined contribution (DC) plans.<sup>1</sup> The first hybrid plan was created by BankAmerica in 1985, and over the next few years, only a few companies adopted hybrid plans. But the 1990s saw a surge in hybrid plan adoptions and by May 1999, there were at least 325 hybrid plans (*Pensions and Investments* 1999). Adoptions of hybrid pension plans continued through 2003, before coming to a relative standstill, primarily due to concerns about the legal status of some of the plan characteristics.

Prior research has sought to explain the attraction of hybrid plans and to identify the primary reasons that US employers converted traditional DB to hybrids prior to 2003. Clark and Schieber (2002) describe the conversion to hybrid plans as an effective method of moving away from the incentives for early retirement (i.e., prior to age 65) imbedded in most traditional DB plans. Clark and Schieber (2004) provide an early history of the adoption of hybrid plans and an assessment of the key factors driving firms away from traditional DB plans and toward the adoption of hybrid plans. They point to changing accounting rules, increasing preferences by workers for more mobile pensions, shifts in compensation packages that reduced resources allocated to retirement plans, and the overfunded status of some of the traditional plans. Clark, Haley, and Schieber (2001) also highlighted the importance of effective communication concerning the value of retirement benefits and note that the basic characteristics of hybrid plans are easier for workers to understand.<sup>2</sup>

IBM's conversion to a cash balance plan in 1999 caused considerable controversy and resulted in a series of lawsuits and Congressional hearings raising questions about whether hybrid plans might be in violation of Employee Retirement Income Security Act (ERISA) and age discrimination standards. McGill et al. (2010) summarize key aspects of the controversy over hybrid plans, their legal status, and their impact on employee benefits and firm costs. The legal uncertainty surrounding these plans resulted in a sharp decline in plan conversions between 2004-06. This chapter firsts discuss the legal controversy over conversions to hybrid plans and then explains how the Pension Protection Act of 2006 (PPA) resolved these issues. We then review how the economic crisis impacted pension funding and influenced the ways in which sponsors redesigned their retirement plans. Next, we examine the trend in plan conversions since 2000. Using pension data from Form 5500 datafiles and financial as well as other information on Fortune 1000 companies, we examine the determinants of plan conversions and consider the impact of legislation confirming the legal status of hybrid plans and the impact of the economic crisis.

### **Legal status of hybrid plans and the Pension Protection Act**

As noted above, a long period of regulatory uncertainty in the US suppressed the rate of adoption of hybrid plans, especially when the legal status of these plans was being challenged in the courts. Three primary issues posed questions about their legal status. First, opponents argued that hybrid plans were age discriminatory, because younger participants received more interest credits than those near retirement. Under the law at that time, a benefit payable from a DB plan was normally described as a benefit payable at retirement age. For example, if a 25-year old employee and a 60-year old employee both began accruing a hybrid plan benefit at the same

time, when they reached retirement age, say age 65, the 25-year old would have a larger benefit because he had 40 years to accrue, compared to the 60-year old who only had five years to accrue. Thus, stated as a retirement age benefit, the younger employee's benefit was much larger than the older employee's benefit – suggesting to some that hybrid plans appeared age discriminatory.

Second, the method of conversion from a traditional DB plan benefit to a hybrid plan also became controversial. Under a common conversion technique, a hybrid plan participant was credited with an initial hypothetical or 'notional' account. For some participants, this opening balance was less than the present value of the accrued benefit under the traditional DB plan at the point of conversion. As a result, that participant would not accrue any additional future benefits from the plan until the hybrid plan benefit caught up to the value of the traditional DB plan benefit at the time of conversion resulting in what became known as 'wear-away'. For some participants, the net effect of the wear-away was that benefit accruals were temporarily frozen and this freeze would sometimes last for years. Some argued that this violated the rules against backloading benefits.

Third, plan sponsors were worried about what was termed a 'whipsaw effect'. This occurred because plans were required by the Internal Revenue Service to calculate a participant's actual benefit payment by projecting the participant's hypothetical notional account balance to normal retirement age using the plan's interest crediting rate, converting that amount to an annuity payable at normal retirement age, and then discounting it back to a present value amount based on statutory defined interest rates. The greater of the resulting calculation or the notional account balance was then paid. This often resulted in a benefit payment greater than the

participant's hypothetical account balance, which plan sponsors did not like as it was contrary to what the plan communicated and intended to pay and was not expected by the plan participants.

Eventually, the US federal circuit courts determined that hybrid plans were not age discriminatory and Congress further clarified the legal status of hybrid plans in 2006 when it signed the Pension Protection Act.<sup>3</sup> The PPA addressed various issues regarding retirement plans, but a subset of PPA provisions dealing with certain selected design aspects of hybrid plans provided plan sponsors some guidance on how to administer the new regulations.<sup>4</sup> For the first time, the PPA provided an age discrimination safe harbor for hybrid plans encompassing essentially all existing designs (Hill et al. 2010.) The Act also stated that the participant's total accrued benefit cannot be less than the participant's accrued benefit for years of service before the effective date of the amendment plus the participant's accrued benefit for years of service after the effective date of the amendment. This essentially eliminated 'wear-away'. The PPA further provided a path to eliminate the notion of 'whipsaw' by providing rules under which plans could simply pay the account balance out to participants, if a lump sum payment is chosen, upon termination of employment.

In addition, the Act imposed a new requirement on hybrid plans – the notion of a market rate of interest. Interest credits under cash balance plans cannot exceed an (unspecified in the law) market rate of interest, generally from 2008. The law also required faster vesting for cash balance plans. While the elimination of these key uncertainties is a welcome development, as of this writing, critical final regulations implementing the principles of PPA have still not been issued in several key areas, notably the market rate of return requirement. So the true impact on plan conversions reflecting the regulatory clarity provided by PPA may not be seen for some time. Thus one can only speculate on the actual number of conversions that might have occurred

had this uncertainty been resolved more quickly. Many of the plan sponsors who chose to terminate their DB plan and adopt a DC plan instead of converting the existing DB plan to a hybrid plan during the long period of regulatory uncertainty probably will not consider reestablishing a DB plan in the near future.

### **The economic crisis changed how companies looked at retirement plan design**

When the PPA passed in 2006, many policymakers and economists were optimistic that the new guidance it provided on hybrid plans would lead more employers to consider hybrid plans as an option, and indeed, the number of conversions rose in the last part of that decade. Yet the motivations for converting to a hybrid plan were starkly different than the earlier part of the decade due to the economic crisis. As noted earlier, employers converted to hybrid plans in the early part of the decade, in part, as a way of eliminating early retirement subsidies, in response to changing demographics and related cost pressures, to shift to compensation packages that reduced dollars allocated to DB retirement plans, and to have access to assets that were in overfunded traditional DB plans. Other motivations included the popularity of lump sums and the desire for greater portability of benefits. When the economic crisis hit, however, employers began to look at their pension plans in a different way.

The economic crisis led to a huge drop in the value of equities, causing many pensions to experience a decline in funding. This was exacerbated by a drop in long-term interest rates used to discount plan liabilities. From end 2007 to end 2008, total assets in US DB pensions dropped 23 percent (from \$2.6 trillion to \$2.0 trillion; USDOL 2010). When corporate pension plans are underfunded, companies are required by IRS regulations to invest fresh capital into the funds to correct the imbalance in the forthcoming years. Thus many firms were required to increase their

contribution rates. Moreover, the timing of this crisis was coupled with new PPA funding rules shortening the amount of time during which funding shortfalls need to be made up. As a result, many plan sponsors found it difficult to come up with the increased contributions needed to improve their DB funding levels.

Some firms had to take several drastic changes regarding their pensions and overall cost structure. First, many employers began laying off workers and, in some cases, offering early retirement windows to help reduce their overall compensation costs. Second, some employers sought ways to reduce their benefit obligations, redesigning programs to reduce benefits including temporary measures such as suspending matching contributions to 401(k) plans. In the later part of the decade, plan sponsors continued to move away from traditional DB plans and more towards offering hybrid plans and offering DC-only designs. Fortunately, the advent of the PPA gave plan sponsors an enhanced option to use hybrid plans when redesigning their retirement programs, and there was some increase in hybrid plan conversions. The timeline for making major change to a pension program is significant (typically more than a year), and as noted above, there remain regulatory uncertainties which still inhibit some cash balance conversions. So it remains to be seen what long term impact the financial crisis will have on pension design generally and cash balance conversions specifically.

### **Hybrid plans: 2000-09**

Since their creation, hybrid pension plans were mainly adopted by large employers in the US. For the most part, hybrid plans result from plan sponsors having had traditional DB plans and then converting them to hybrid plans. In this sense, relatively few firms have selected hybrid plans as their initial pension structure. To examine the growth of hybrid plan in the last decade,

we rely on three datasets. First, we use Form 5500 datafiles (annual government filings required from all private employer retirement plan sponsors) for all plan sponsors with non-frozen plans having over 1,000 total participants; these cover the period 2000-07 in accessible form and contain information about pensions at the plan level. Second, we employ the Towers Watson pension finance data source with information about Fortune 1000 companies offering at least one traditional DB plan for the period 2000-09. This source allows us to focus on large employers who initially offered a traditional DB retirement plan, and it allows us to determine which converted to hybrid plans; this file contains company-level financial information. Third, we integrate the Towers Watson pension finance data with all non-frozen plans sponsored in the Form 5500 database, linking financial information for the Fortune 1000 companies and information about the pension plans they sponsor.

In constructing the first data source of all plans with 1,000+ participants from the Form 5500 data files, we include all plans having at 1,000+ and some positive number of active participants in each year. The Form 5500 data file has indicators identifying whether the pension plan is a DB plan, and if so, whether it is a hybrid. Responses to these indicators are used to separate traditional DB from hybrid plans.<sup>5</sup> The Towers Watson pension finance database is a collection of pension finance and company finance information for Fortune 1000 companies that sponsor a DB pension plan. The information comes from publicly available annual 10-K reports with detailed information about the company's business, finance and management (filed with the Securities Exchange Commission (SEC)).

In order to integrate the Form 5500 and the Towers Watson pension finance data sets, information from the Towers Watson file was added to the Form 5500 data files using Employer Identification Numbers (EINs). This data base includes company level information plus

information about all the non-frozen pension plans they sponsor (not just plans with 1,000+ participants). When developing the data file using this method, we are unable to determine all traditional DB and hybrid plans sponsored by Fortune 1000 companies because some plans are sponsored by subsidiaries and the EINs for some of these subsidiaries are unknown. But we can able match pension plans in the Form 5500 data with the company financial information for over 80 percent of the Fortune 1000 companies that have a pension in each year of the sample period.

Table 1 presents information from the Form 5500 on all non-frozen pension plans with 1,000+ participants between 2000 and 2007. Four key measures of the importance of hybrid plans are shown: the number of hybrid plans with 1,000+ participants, the proportion of DB plans that are hybrid plans, the percentage of active participants in DB plans enrolled in hybrid plans, and the share of total DB assets held in hybrid plans. The number of hybrid plans grew rapidly from 446 in 2000 to 640 in 2005, but it fell slightly to 2007. The share of hybrid plans among all large DB plans grew from 11 percent in 2000 to 18 percent in 2007.

*Table 1 here*

While the number of hybrid plans grew, the number of all non-frozen DB plans dropped during this 2000s. The proportion of all active DB participants in hybrid plans increased from 18 to 29 percent from 2000 to 2007. As one might expect given the increase in plans and participants, the share of total assets in hybrid plans also increased, rising from 21 to 33 percent. Comparing data on plans, participants, and assets, it appears that the largest DB plans were more likely to have switched to hybrid plans over the last decade.

We repeat the analysis focusing only on DB plans with Form 5500 data, sponsored by Fortune 1000 companies for years 2000-07 in Table 2. The plans sponsored by the Fortune 1000 companies are even more likely to have been converted to hybrid plans, which is evident from all

measures reported. The number of hybrid plans sponsored by Fortune 1000 companies rose from 134 in 2000 to 207 in 2005. In 2006, the number of hybrid plans sponsored dropped to 185 and rose to 195 in 2007. The proportion of DB pensions that are hybrid plans among Fortune 1000 companies increased from 13 percent in 2000 to 25 percent in 2007. Thus, the Fortune 1000 companies in 2007 are one-third more likely to have a hybrid plan compared to all plans with 1,000+ (25 versus 18 percent). As the share of hybrid plans increased, so did the percentage of active participants that are in hybrid plans. The percentage of active participants in hybrid plans increased from 27 to 46 percent, indicating that almost half of all DB participants were enrolled in hybrid plans. The share of total assets in hybrid plans also increased from 31 to 44 percent during the sample period.

*Table 2 here*

The movement to hybrid plans varies considerably across US industry, as indicated in Table 3 for 2007. We report the prevalence of hybrid plans in the Form 5500 dataset (1,000+ participants) for all non-frozen pension plans and also for non-frozen plans sponsored by the Fortune 1000 companies. Among Fortune 1000 companies, hybrid plans range from less than 10 percent of DB plans in the wholesale sector to approximately half of plans in the professional and business services sector. While there are only two health care firms in the Fortune 1000, both of them sponsor a hybrid plan. In the property and construction sector, there are only five employers, and three of them sponsor a hybrid. There are also substantial differences by industry, depending on the two samples. In particular, hybrid plans are much more prevalent for Fortune 1000 companies compared to all plans with 1,000+ in retail, financial services, property and construction, and professional and business services industries. Industry differences in the

adoption of hybrid plans likely reflect differences in labor market conditions, unionization, demographics and turnover rates that vary among the different industry sectors.

*Table 3 here*

To trace the adoption of hybrid plans over time, we constructed a sample of Fortune 1000 companies in the datafile 2000-09 and which sponsored a traditional DB plan in 2000. Some 153 companies offered at least one traditional DB plan in 2000 and remained on the Fortune 1000 list for all ten years. By 2009, 38 out of these 153 companies converted at least one of their DB plans to a hybrid over the period (Figure 1). Most of these hybrid plan conversions were done early in the decade (29 occurred between 2000-03); in 2004-06, only one of these companies converted. Eight additional conversions took place in the next three years, after the passage of PPA in 2006 and during the onset of the economic crisis.

*Figure 1 here*

Another way to trace the trend in plan conversions is to examine year-to-year changes from 2000 to 2009. Table 4 reports these year by year conversions and reveals the same time pattern of adoption of hybrid plans as shown in Figure 1. Panel A indicates that, between 2000-03, there were 41 plan conversions to hybrid plans among Fortune 1000 firms, but in the next three years there was only one conversion per year. Beginning in 2006, plan conversions resumed although at a somewhat lower rate than in the earlier period. It is important to note that although there was a significant number in hybrid plan conversions among the Fortune 1000 during the early part of the decade, the number of Fortune 1000 companies offering *either* a traditional or a hybrid pension plan dropped 23 percent between 2001-04 (451 to 348 companies). During 2004-06, the fraction of Fortune 1000 companies offering a traditional or hybrid pension plan dropped 11 percent (348 to 309 companies). When PPA was passed in 2006,

many assumed that more employers would consider converting to hybrid plans as an option when considering redesigning their retirement plan (even though some significant regulatory uncertainties remained). While the economic crisis did see an increase in the number of hybrid plan conversions, it also accelerated the number of companies dropping their traditional and hybrid pensions. Thus Fortune 1000 companies converting to hybrid plans did rise after 2006, but the overall number offering either a traditional or hybrid plan dropped sharply by 28 percent 2006-09 (309 to 221 companies). Hence, the number of non-frozen DB plans has decreased among Fortune 1000 companies; of those continuing to offer DB plans, more are converting to hybrid formulas.

*Table 4 here*

Turning to all DB plans appearing in consecutive years of the Form 5500 having 1,000+ participants, we can again ask about conversion rates by year. Panel B of Table 4 shows that 25 out of 2,850 plans converted from a traditional DB plan to a hybrid plan in 2001; 37 of 2,661 plans did so in 2002; and 48 of 2,659 plans did so in 2002. Once again there is a marked decline in conversion around 2003; however, the decline is not as stark nor is the rebound as large as in the other data that we have examined nor is the trend away from traditional DB plans quite as defined.

We note five important observations from the data presented in this section. First, the recent history suggests a continued trend toward greater prevalence of hybrid plans that started in the 1990s. Second, the trend in greater use of hybrid plans was briefly interrupted between 2003 and 2006 as questions arose concerning the legal status of hybrid plans. Third, although there were a considerable number of conversions early in the decade and again in the latter part of the decade, the motivations for converting to hybrid plans were different. In the early part of the

decade, converting to hybrid plans was motivated, in part, by assets in overfunded pensions and to meet the demand for workers who wanted mobile pensions. However, when the economic crisis began, the motivation for converting was primarily to cut costs. The passing of PPA in 2006 encouraged some sponsors to consider converting to hybrid plans as an option rather than not offering DB pensions altogether. Fourth, the adoption of these plans is greater among larger plans sponsored by the Fortune 1000 companies. Fifth, the adoption of hybrid plans is not uniform across industries. Next, we examine these patterns in more detail.

### **Explaining why firms adopt hybrid plans**

Policymakers and analysts would benefit from a better understanding of why employers are converting traditional DB plans into hybrid plans. In this section we explore a number of possible explanations.

The decision by plan sponsors to convert DB to hybrid plans is likely influenced by the plan's financial status as well as that of the plan sponsor, changes in the labor force and worker preferences, whether the plan is collectively bargained, plan size, and of course, the regulatory environment. Nevertheless it is difficult to obtain information on all of the determinants of plan conversions so our empirical analysis is limited by data availability. Moreover, the time period for assessing plan conversions is relatively short, though it we can capture the time series break coinciding with the legal uncertainty associated with hybrid plans. We are able to obtain several variables which can serve as proxies for plan and employer size, as well as the plan's and employer's financial status. The multivariate statistical analyses uses both data files described above.

**Fortune 1000: DB in 2000, hybrid by 2009.** To examine a plan sponsor's decision to convert from a traditional DB to a hybrid plan, we estimate a Logit equation indicating whether each of the Fortune 1000 firms having a traditional plan in 2000 had converted to a hybrid plan by 2009. Potential determinants of plan choice include the measured pension benefit obligation and the plan's. Accordingly we evaluate the 10-year average of the company's End-of-Year (EOY) pension benefit obligation (PBO) divided by the company's market value (the latter is the market capitalization plus the market value of debt). We also subtract the EOY PBO from EOY plan assets divided by the market value of the company and include the 10-year average of this variable in the regression. We also control on the firm's average earnings per share (EPS) and the logarithm of average market value (in \$2010). Variable means and medians distinguished by whether the plan was converted to a hybrid plan or not appear in Table 5, Panel A.

*Table 5 here*

The PBO relative to market value is similar for companies that converted and companies that did not convert. The financial status of the pension plans relative to the market value shows that plans that were converted to a hybrid plan were similar to the financial status relative to the market value for those plans that were not converted; actually both groups had negative net assets. This may be some indication that large PBOs and overall poor financial health of pension plans may not be determinants of hybrid plan conversions. However, earnings per share and market share may be influential as the mean for both of these variables are higher for companies that converted compared with companies that did not convert.

Estimated Logit coefficients from our model of plan conversions are derived from the following model:

$$y_i = \alpha + \beta \text{Average}(PBO/MktVal)_i + \beta \text{Average}((Assets-PBO)/MktVal)_i + \beta \text{Average}(EPS)_i + \quad (1)$$

$$\beta \log(\text{Average}(\text{Mktval}))_i + \beta \text{IndustryDummies}_i + \varepsilon_i$$

where  $i$  represents the Fortune 1000 company. As Table 6 shows, neither financial measure of the pension plan or earnings per share have a significant impact on the conversion to a hybrid plan. Average market value during the sample period, by contrast, is significantly negatively associated with the probability of converting a traditional DB to a hybrid plan. Of the industry codes, only transportation is statistically significant.

*Table 6 here*

Using the same year-by-year conversion data for Fortune 1000 companies as discussed previously, we estimated additional plan conversion equations with the addition of individual year dichotomous variables; here the dependent variable indicates whether the sponsor switched from a DB to a hybrid plan each year 2000-09. We first present results without year and industry controls, while the second model includes both. Results appear in Table 7. As above, the coefficients on earnings per share are not significant in all three models. Yet the financial status terms and benefit obligations are both significant and are positively associated; these estimates suggest that better funded plans with larger total liabilities are more likely to be converted to hybrid plans. The logarithm of the firm's market value is negative and significant.

*Table 7 here*

**Form 5500 plans with 1,000+ participants.** Using Form 5500 data for the period 2000-07 allows us to use more demographic and financial information specific to pension plans. Table 5, Panel B, reports means and medians in this sample, for key variables sorted again by whether the plans converted to hybrids. Variables include the number of active participants divided by the number of plan retirees, the number of active participants, the total number of participants, whether the plan was collective bargained, total plan assets, and the plan's funding level. The

latter variable, funding level, is obtained by dividing the plan's actuarial value of assets by its current liability. The table shows that plans which converted to a hybrid plan were larger in terms of plan assets, as well as in active and total participants. Plans that converted to hybrid plans also had a higher median value for actives compared to retirees, and higher mean and median funding levels. Finally, plans which converted were also more likely to not be collectively bargained.

The Logit model for this multivariate analyses uses as a dependent variable whether the plan was converted in a specific year. Again we offer one set of estimates without year or industry controls; and a second includes both, as follows:

$$y_{ij} = \alpha + \beta \text{Funding}_{ij} + \beta \text{Actives/Retirees}_{ij} + \beta \text{TotalPart}_{ij} + \beta \log(\text{TotAssets})_{ij} + (3) \\ \beta \text{CollectiveBarg}_{ij} + \beta \text{Dummies}_{ij} + \varepsilon_{ij}.$$

where  $i$  represents the pension plan from the form 5500 filings and  $j$  represents the year. Results in Table 8 for plan assets and being a collectively bargained plan are positively associated and significant in both specifications. Although previously we had seen a negative association between collectively bargained and plan conversions, the fact that these are larger firms may explain the positive association here. We also find that funding is insignificant, suggesting that plan financial health does not shape plan conversions.

*Table 8 here*

**Fortune 1000 companies with added pension information from form 5500.** Finally, we examine the sample of Fortune 1000 companies' pension plans found in the Form 5500 data files and the company and pension finance information from the Towers Watson data base. We again look at Fortune 1000 companies that existed in consecutive years and determine whether or not they converted at least one of their traditional DB plans to a hybrid plan. To consolidate the plan

level pension data from the Form 5500 to the company level information, we aggregated the pension plan information for each Fortune 1000 company. We calculated per-plan weighted averages of funding, total number of participants, and actives per retirees, using total plan assets as the weight. If the company had at least one plan in the Form 5500 data series identified as collectively bargained, we coded the company as having at least some collective bargaining coverage. We summed the number of non-frozen plans that each Fortune 1000 company offered.

Table 9 demonstrates that companies which converted at least one plan to a hybrid plan tended to have larger plans, both in terms of total participants and asset size. The median market value for companies that converted at least one plan to a hybrid plan is larger than companies that did not convert any of their traditional DB plans. Interestingly, companies that converted at least one plan and companies that did not convert were equally likely to have at least one collectively bargained plan.

*Table 9 here*

We next estimate logit models using the integrated Fortune 1000 financial and the Form 5500 data base with the dependent variable being equal to one if the plan was converted to a hybrid plan in the specified year. The independent variables used are weighted average funding level, weighted average of actives divided by retirees, whether the company offers a collectively bargained plan or not, weighted average of total participants, average of plan assets, an indicator of whether the sponsor offers at least three plans, PBO and pension assets minus PBO both relative to market value, earnings per share, and logarithm of market value. The general regression is as follows:

$$y = \beta \text{Weighted Avg Funding}_{ij} + \beta \text{Weighted Avg Actives/Retirees}_{ij} + \beta \text{CollBargInd}_{ij} + \beta \text{AvgTotalParticipants}_{ij} + \beta \text{Log(AvgPlanAssets)}_{ij} + \beta \text{ThreePlanInd}_{ij} + \beta \text{PBO/mktVal}_{ij} + \quad (4)$$

$$\beta EPS_{ij} \text{Log}(mktval)_{ij} + \beta Dummies_{ij} + \varepsilon_{ij}$$

where  $i$  represents the Fortune 1000 company and  $j$  represents the year. Table 10 shows one model that excludes year and industry controls, and a second model that includes both both year and industry controls.

*Table 10 here*

In both models, coefficients on plan obligations and plan overall financial status (Assets minus PBO) are positively and significantly associated with converting at least one plan to a hybrid. Interestingly, having at least one plan that is collectively bargained is also positively and statistically significantly associated with converting to a hybrid plan. In the second regression, one more variable becomes significant.

## **Conclusion**

This chapter examines the determinants of plan conversions from traditional DB plans to hybrid plans using three data sources, focusing particularly on firms on the Fortune 1000 lists from 2000-09. From this set, we identify whether they sponsor a pension plan and if they converted at least one of their plans from a traditional DB to a hybrid plan. Company financial information in annual 10-K reports helps understand whether the firm's financial status and that of their pension plans played a role in converting to a hybrid plan. We conclude that the overall cost of pension plans and financial health of the pension plans was not associated with hybrid conversion. Nevertheless the plan sponsor's market value, indicative of how well the overall company is doing, was strongly associated with the probability of converting to a hybrid plan. We also found that DB plans with better funding were more likely to be converted to hybrid plans, as were larger plans and those that were collectively bargained. These results suggest that

companies did not convert to hybrid plans because the pension plans are not financially sound. Finally, the pension obligations relative to market share did influence the probability that firms converted at least one plan to a hybrid plan.

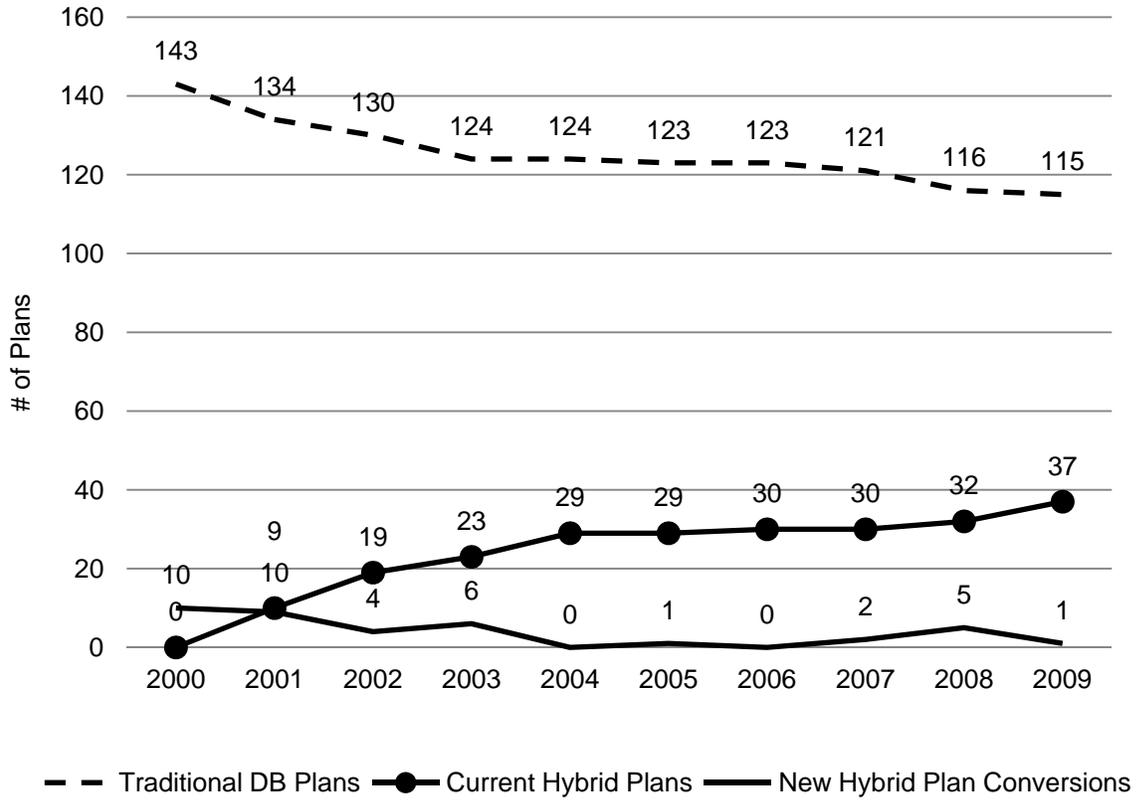
The detailed examination of these data sources showed a relatively high level of plan conversions until 2003 followed by three years of relatively few conversions. After the passage of the PPA in 2006, large employers have begun converting traditional DB plans to hybrid plans. We believe that the uncertain legal environment and changing regulatory status of hybrid plans has substantially affected the number of conversions. Finally, we speculate that the adverse economic climate of the last few years may have altered the desirability of DC plans for some workers, insofar as employees may now desire retirement benefits with a greater degree of certainty. Such changes in worker preferences may increase the demand for hybrid plans, relative to a move away from a DB toward a DC plan.

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**Figure 1** Number of defined benefit plans, hybrid plans, and hybrid plan conversions.  
*Source:* Authors' computations; see text.

**Table 1** Hybrid plan share of all non-frozen DB plans with 1,000+ participants: 2000-07

Plan year	# of hybrid plans	Hybrid plans as a % of DB plans	Active participants in hybrid plans as % of active participants in DB plans	Assets in hybrid plans as % of assets in DB plans
2000	446	11	18	21
2001	510	13	18	21
2002	524	15	21	25
2003	614	16	25	29
2004	611	16	27	30
2005	640	17	27	30
2006	588	17	28	32
2007	583	18	29	33

Source: Authors' calculations from Form 5500 data (see text).

**Table 2** Hybrid plan share of all DB plans in Fortune 1000: 2000-07

Plan year	# of hybrid plans	Hybrid plans as a % of DB plans	Active participants in hybrid plans as % of active participants in DB plans	Assets in hybrid plans as % of assets in DB plans
2000	134	13	27	31
2001	126	13	25	30
2002	163	17	29	34
2003	192	19	36	37
2004	189	20	39	39
2005	207	23	42	40
2006	185	23	40	39
2007	195	25	46	44

Source: Authors' calculations from Form 5500 and 10-K data (see text).

**Table 3** Hybrid plans as percent of DB plans by industry: 2007

Industry	# of hybrids in Form 5500	Large hybrid plans as % of all large DB plans in Form 5500	# of hybrids sponsored by Fortune 1000	Hybrid plans as % of all DB plans sponsored by Fortune 1000
Aerospace and Defense	11	23	5	28
Communications/High Technology	40	22	16	24
Energy/Utilities/Natural Resources	66	35	36	35
Financial Services	91	21	25	39
Food Services and Beverages	23	11	13	16
Healthcare	113	23	2	100
Manufacturing	142	17	49	17
Pharmaceuticals	7	18	3	21
Professional and Business Services	30	23	7	47
Property and Construction	18	6	3	60
Retail	8	15	6	46
Transportation and Transportation Equipment	28	12	10	23
Wholesale	13	14	2	8
Other	51	15	18	32

Source: Authors' calculations from Form 5500 Large Plans and Fortune 1000 Companies; see text.

**Table 4** Pension plan conversions over time

## Panel A. Fortune 1000 firms

Year	# Continued sponsoring traditional DB plan (active and closed DB plans)	# Converted to hybrid plan	Total #
2000 - 2001	433	18	451
2001 - 2002	414	12	426
2002 - 2003	395	11	406
2003 - 2004	347	1	348
2004 - 2005	313	1	314
2005 - 2006	308	1	309
2006 - 2007	288	5	293
2007 - 2008	232	8	240
2008 - 2009	219	2	221

## Panel B. Form 5500 pension plans with 1000+ participants

Year	# Continued sponsoring traditional DB plan (active and closed DB plans)	# Converted to hybrid plan	Total #
2000 - 2001	2850	25	2875
2001 - 2002	2661	37	2698
2002 - 2003	2659	48	2707
2003 - 2004	2993	18	3011
2004 - 2005	2937	24	2961
2005 - 2006	2618	15	2633
2006 to 2007	2475	21	2496

Source: Authors' calculations from Form 5500 data; see text.

**Table 5** Plan features by conversion status: 2000-09

## Panel A. Fortune 1000 companies

	Did not convert to hybrid		Converted to hybrid plan	
	Mean	Median	Mean	Median
Av. PBO/Market Value (\$)	0.29	0.16	0.25	0.16
Av. (Pension Assets - PBO)/Mkt Value (\$)	-0.04	-0.02	-0.03	-0.02
Av. Mkt Value (\$)	\$25,485,367	\$8,287,465	\$20,622,479	\$15,526,278
Av. EPS	6.77	2.37	19.60	2.79

## Panel B. Form 5500 pension plans with 1000+: 2000-07

	Did not convert to a hybrid plan		Converted to a hybrid plan	
	Mean	Median	Mean	Median
% Funded	0.94	0.90	1.03	0.97
Actives/retirees	11.05	2.40	10.21	3.27
Total actives	4,168	1,350	7,185	2,945
Total participants	8,522	2,659	14,189	5,029
Total assets (000)	\$429,136	\$102,661	\$1,060,625	\$219,522
Collectively-bargained	45%	n/a	22%	n/a

Notes: Panel A: Number that did not convert to hybrid =115; number that did = 38. Panel B: Number that did not convert to hybrid =19,193; number that did = 118. All dollar values in \$2010.

Source: Authors' calculations; see text.

**Table 6** Logit regression analysis of the overall probability of hybrid plan conversion in Fortune 1000 companies: 2000-09

	Coefficients	Std. error
Average PBO/market value	-0.289	0.630
Average (pension assets-PBO)/market value	2.22	3.75
Average EPS	-0.004	0.004
Ln average market value	-0.421***	0.111
Manufacturing	-0.059	0.394
Transportation	-0.751*	0.4.09*
Wholesale/retail	0.256	0.766
Finance, Business Services and Real Estate	-0.045	0.419

Notes: \* denotes significance at 10% level \*\*\* denotes significance at 1% level.

Source: Authors' calculations, see text.

**Table 7** Logit regression analysis of the annual probability of hybrid plan conversion in Fortune 1000 Companies: 2000-09

	-1		-2		-3	
	Coefficients	Std. error	Coefficients	Std. error	Coefficients	Std. error
PBO/market value	0.460***	0.165	0.445***	0.168	0.511***	0.178
(Pension assets-PBO)/market value	0.875**	0.39	0.890*	0.466	1.031**	0.484
EPS	0	0	-6E-05	0.0001	-7E-05	0.0001
Ln market value	-0.178***	0.05	-0.171***	0.05	-0.097*	0.055
Year controls	No		Yes		Yes	
Industry controls	No		No		Yes	
-2 Log L	1775.393		1601.97		1576.086	

Notes: N=2677; \* denotes significance at 10% level; \*\* denotes significance at 5% level; \*\*\* denotes significance at 1% level. Source: Authors' calculations using Fortune 1000 Companies; see text.

**Table 8** Logit regression analysis of the annual probability of hybrid plan conversion in form 5500 plans with 1000+ participants: 2000-07

	(1)		(2)	
	Coefficient	Std. error	Coefficient	Std. error
Funding	0.241	0.199	0.204	0.215
Actives/retirees	0.0001	0.0007	0.0002	0.0007
Total participants (000)	-0.003	0.003	-0.002	0.003
Ln(total assets)	0.414***	0.063	0.412***	0.065
Collective bargained plan	0.580***	0.090	0.557***	0.093
Year controls	No		Yes	
Industry controls	No		Yes	
-2 Log L	1951.864		1898.965	

Notes: N=18907\* denotes significance at 10% level; \*\* denotes significance at 5% level; \*\*\* denotes significance at 1% level. Source: Authors' calculations using Form 5500 Plans with 1000+ Participants; see text

**Table 9** Plan features by conversion status for form 5500 pension plans sponsored by Fortune 1000 companies: 2000-07

	<i>Did not convert to a hybrid plan</i>		<i>Converted to a hybrid plan</i>	
	Mean	Median	Mean	Median
Weighted avg. funding level	0.90	0.87	0.88	0.83
Weighted avg. actives/retirees	6.58	2.08	12.93	1.90
1+ Plan collectively bargained	0.35	0	0.46	0
Weighted avg. total participants per plan	15,691	5,910	25,188	5,068
Avg. plan assets (\$000)	1,162,491	334,329	3,527,991	543,750
# Plans offered	1.42	1	1.61	1
PBO/market value	0.69	0.14	0.65	0.43
(Total pension assets-PBO)/market value	-0.10	-0.02	-0.10	-0.05
EPS	-21.94	1.83	1.55	1.56
Market value (\$000)	21,298	5,793	13,564	6,149

*Notes:* Number that did not convert to hybrid =1,347; number that did = 28. All dollar values in \$ 2010.

*Source:* Authors' calculations; see text.

**Table 10** Plan conversion logit regression results for Fortune 1000 companies with plans found in the form 5500: 2000-07

	(1)		(2)	
	Coefficient	Std. error	Coefficient	Std. error
Weighted avg. funding level	-0.511	0.796	0.704	0.666
Weighted avg. actives/retirees	-0.001	0.004	-0.000	0.004
1+ plan collectively bargained	0.497***	0.166	0.464***	0.175
Weighted avg. total participants/ plan (000)	0.000	0.000	-0.006**	0.003
Ln avg. % of plan assets	0.079	0.147	0.168	0.157
3+ Indicator	0.142	0.286	0.198	0.291
PBO/market value	2.334***	0.461	2.193***	0.487
(Total pension assets-PBO)/ market value	3.167***	2.148	2.12	2.317
EPS	0.000	0.000	-0.000	0.000
Ln market value	-0.158	0.132	-0.123	0.139
Year controls	No		Yes	
Industry controls	No		Yes	
-2 Log L	559.605		5419.408	

Note: N=1,375. \* denotes significance at 10% level; \*\* denotes significance at 5% level; \*\*\* denotes significance at 1% level.

Source: Authors' calculations using form 5500 plans with 1000+ participants; see text.

## Endnotes

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<sup>1</sup> A detailed discussion of hybrid plans appears in Chapter 12 of McGill et al (2010). Hill et al. (2010) describe the key characteristics of hybrid plans.

<sup>2</sup> C.F. Brown et al. (2000) and Clark and Munzenmaier (2001) for additional discussion of early conversions to hybrid plans.

<sup>3</sup> The PPA is a much broader bill that affects many aspects of plan design, management, and funding. Hill et al. (2010) cover how the PPA relates to hybrid plans.

<sup>4</sup> Although the PPA offered some guidance, additional guidance was still needed. In October 2010, the Internal Revenue Service (IRS) issued final and proposed regulations on the Pension Protection Act of 2006 (PPA) provisions relating to hybrid pension plans, such as cash balance and pension equity plans (PEPs). The final regulations mostly firmed up the rules proposed in 2007; the 2010 proposed regulations focus on other issues, paying particular attention to interest crediting rates that satisfy the market-rate-of-return standard.

<sup>5</sup> Using the indicators to separate hybrid plans and traditional DB plans may yield a few misidentifications because some plans have a complicated plan design due to multiple structures and various transition provisions. Unfortunately, we are only able to remove plans that have no participants currently accruing benefits, (i.e. frozen plans). We cannot identify plans that are closed, (i.e., plans that have some participants who are not currently accruing further benefits because they did not meet service/age requirements or they were hired after a certain date).