

ISSUE BRIEF

July 2008



NATIONAL INSTITUTE ON
Retirement Security

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Patience is a Virtue

Asset Allocation Patterns in DB and DC Plans

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Introduction

Public and private retirement funds represent a considerable source of capital in U.S. financial markets. In 2007, retirement plans held close to \$9 trillion in assets. Such retirement plans encompass traditional pension plans, also called defined benefit (DB) plans, where assets are invested and managed on a group basis, and defined contribution (DC) plans, where individuals typically direct investments on their own. This Issue Brief examines how these plans invest their assets and how these investments have changed over time.

The past few decades have witnessed significant changes in retirement plan coverage, especially in the private sector. Traditional pension coverage in the private sector has decreased drastically in recent decades. Today, while 80% of state and local government workers are covered by traditional DB pension plans, only 14% of workers in the private sector are covered by DB plans. DC plans, on the other hand, are the primary retirement plan for 10% of state and local employees, but a full 64% of private employees. (Munnell, Haverstick & Soto 2007)

We examine whether the move from DB to DC plans has had an impact on the way retirement assets are invested. Individual investors, for instance, may have a shorter term investment horizon than DB plans. This raises questions about the risk exposure and investment performance of DC plans relative to DB plans. The shift from DB plans to DC plans may have reduced the supply of patient capital over time, meaning that businesses may have a harder time than in the past getting the financing for long-term productive investment projects.

Key Findings

Using data from the Federal Reserve's Flow of Funds database and other sources, this issue brief finds that:

- Investments of public sector pension plans and private sector DB plans closely resemble each other. In 2007, both types of plans allocated 63% of their assets to corporate stocks, compared to a direct stock allocation of only 37% for DC plans.
- Over the past decades, public sector pension plans have increased their equity allocation to catch up with their private sector counterparts. In 1985, public sector DB plans allocated only 29.9% of their assets to corporate stocks, while private sector DB plans already held 42.3% of their assets in corporate stocks. Private sector DC plans lowered their direct stock holding over the past two decades.
- Legal and regulatory obstacles to portfolio diversification have been reduced over time. This has allowed public sector plans to better balance their asset allocations with their long-term investment goals.
- Defined benefit plans are more long-term investors than DC plans. DC plans shift their allocation to and from corporate stocks more frequently than their DB plan counterparts do. This raises serious questions about the overall risk embedded in individual accounts, the consequences for retirement security and the availability of long-term financing for productive business investments.

Defined Benefit Plans Hold More of Their Assets in Corporate Stocks

The primary focus of any discussion on portfolio allocation is the degree to which assets are spread among a range of assets, including higher return/higher risk assets, such as corporate stocks. This is because incurring some risk will allow investors to take advantage of higher rates of return, especially over long periods of time. Also, if the risk in one asset is unrelated to the risk in another, the allocation to one asset offers some insurance against a decline in the value of other asset classes. That is, diversification into a number of different assets can help to substantially improve retirement income security by enhancing investment returns. Corporate stock returns fluctuate because they help to finance long-term, uncertain business investments. These investments are critical for productivity, economic, wage and profit growth over time. Without financial investors, such as retirement plans willing to take some risk in their portfolios, businesses could not finance their longer-term projects and economic growth may be slower than would be otherwise the case.

The data show that DB plans have most of their assets allocated to widely dispersed holdings of corporate stocks. Table 1, calculated from Flow of Funds data from the Federal Reserve Board of Governors (2007), shows the dollar value of assets by asset class for public sector plans, private sector DB plans and private sector DC plans. It also shows the percent of total assets allocated to each class for each type of plan. Table 1 shows that for each type of plan, assets

are spread across a range of different types of investments. Public plans and private sector DB plans look quite similar in terms of the percentage of assets allocated to each category. This is probably not surprising considering that in 2006, 95% of funds in public plans were DB plan assets. (BOG 2007 and Census 2007)

Private sector DC plans are more reliant on mutual funds and “other investments” (a category that includes insurance contracts and municipal securities) than public plans or private DB plans. DC plans also hold more liquid assets than other types of plans.

Pension Plans’ Diversification Reflects Tenets of Modern Portfolio Theory

At a high-level, then, retirement plans appear to be broadly diversified. Such a pattern of diversification reflects the tenets of modern portfolio theory, which was first introduced by Harry Markowitz in his 1952 paper “Portfolio Selection.” This theory states that rather than focusing on the risk and return of any individual stock or asset, an investor should instead concentrate on ensuring diversification of assets across the entire portfolio. Markowitz found that what he called the expected return-variance of return rule “implies diversification [and] leads to efficient portfolios almost all of which are diversified.” (Markowitz 1952) In other words, the more diversification in one’s overall portfolio, the more that overall risk is minimized, and this minimization of risk ultimately provides for greater efficiency of investment.

Table 1 Assets Held in Public and Private Sector Pension Plans, 2007 (in billions of dollars)							
	Cash and Liquid Assets	Treasury and Agency Debt	Corporate and Foreign Bonds	Stocks	Mutual funds	Other Investments	Total
Public Plans	\$64	\$534	\$249	\$1,981	\$296	\$16	\$3,139
Private DB	\$55	\$254	\$212	\$1,471	\$226	\$116	\$2,334
Private DC	\$160	\$161	\$101	\$1,296	\$1,385	\$378	\$3,480
(as a percent of total)							
Public Plans	2%	17%	8%	63%	9%	1%	100%
Private DB	2%	11%	9%	63%	10%	5%	100%
Private DC	5%	5%	3%	37%	40%	11%	100%

Source: Flow of Funds, (BOG 2007). Stocks include both foreign and domestic equities.

The seminal role of modern portfolio theory was recognized in 1990 when Markowitz, along with Merton Miller and William Sharpe, received the Nobel Prize in Economics for his work on the subject. Since 1952, other researchers have built on the foundations laid by modern portfolio theory and the field has developed sophisticated techniques to assist investors in designing “optimal portfolios,” which balance the tradeoffs between risk and return embedded in any range of investment options. Researchers continue to verify the importance of portfolio diversification as a tool to manage risk. (See Abdelazim & Wahba 2006; Teulings & de Vries 2003; Elton & Gruber 1997)

In DB plans, where investment decisions are made by professionals, we would expect asset allocations to reflect this tenet of portfolio diversification, especially because different asset classes have different roles to play within a portfolio in order to best diversify overall risk. A discussion of the various asset categories and the role they play in a diversified portfolio appears in the Appendix to this brief.

DC plans, where asset allocation decisions are made by individuals, appear diversified at a high level, but as we will see, these data mask how assets are allocated at the individual account level.

Stock Allocations in Public Plans Have Caught Up to Private Plans

The manner in which retirement plans allocate their assets has changed over time. Table 2, calculated from the Flow of Funds, presents asset allocation data for public and private sector pension plans starting in 1985, at five-year intervals, and ending with the most recent year, 2007. Historically, as shown in Table 2, both public- and private-sector retirement plans have invested in a broad range of assets.

In 1985, the largest differences in asset allocation were between private- (both DB and DC) and public-sector plans, largely because of restrictions which hampered diversification in public plans. That year, public-sector plans tended to invest much more heavily in bonds and less heavily in stocks and other investments, as compared with private plans.

However, each type of plan allocated the largest proportion of assets to stocks. Private DB plans designated 42.3% of funds to stocks, similar to private DC plans’ 41.7% allocation. Public sector plans allocated just 29.9% of funds to equities. All types of plans invested only a small percentage of assets in mutual funds, at 0.7% of funds for private DB plans, 1.2% for private DC plans, and 1.7% for public plans.

Table 2
Asset Allocation of Public and Private Sector Pension Plans, 1985-2007
(% of Assets)

	Cash and Liquid Assets			Treasury and Agency Debt			Corporate and Foreign Bonds			Stocks			Mutual Funds			Other Investments		
	Private DB	Private DC	Public	Private DB	Private DC	Public	Private DB	Private DC	Public	Private DB	Private DC	Public	Private DB	Private DC	Public	Private DB	Private DC	Public
1985	7%	12%	6%	21%	13%	32%	10%	5%	27%	42%	42%	30%	1%	1%	2%	20%	27%	4%
1990	8%	12%	4%	25%	9%	33%	12%	7%	20%	38%	36%	39%	1%	5%	1%	17%	31%	3%
1995	6%	6%	4%	19%	6%	23%	12%	4%	14%	47%	40%	53%	5%	20%	5%	11%	24%	2%
2000	5%	5%	3%	12%	5%	18%	10%	3%	14%	54%	36%	57%	12%	36%	8%	8%	15%	1%
2005	2%	5%	2%	12%	4%	17%	9%	3%	8%	61%	38%	63%	11%	38%	9%	5%	12%	1%
2007	2%	5%	2%	11%	5%	17%	9%	3%	8%	63%	37%	63%	10%	40%	9%	5%	11%	1%

Source: Flow of Funds, (BOG 2007)

Notes: Because of rounding, figures may not sum to 100%. Authors’ calculations based on Flow of Funds (BOG 2007)

The different types of plans diverged the most during this time on allocation to “other investments” (which included investments like real estate as well as insurance contracts and municipal securities). Private DB plans invested 19.6% and private DC plans invested 27.3% in these assets, while the public sector invested only 3.9% of funds in these “other investments.”

Plans also differed on allocations to corporate and foreign bonds with public plans investing more heavily, with 26.7% of assets in bonds, compared to just 9.8% for private DB plans and 4.5% for private DC plans. The same pattern held for treasuries and agency debt (32.3% for public funds, 20.5% for private DB and 12.7% for private DC).

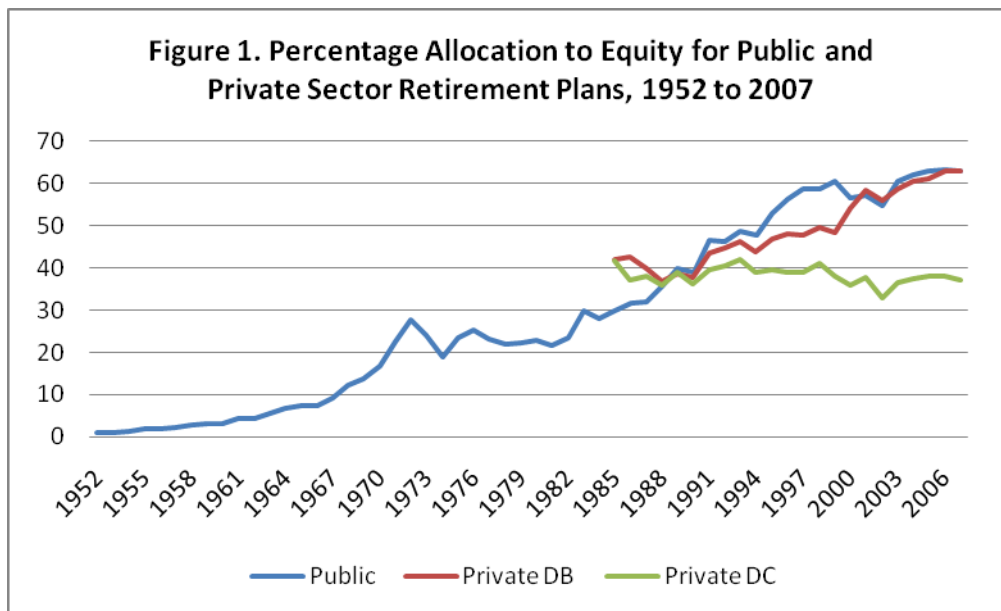
By 2007, the picture had changed. The largest discrepancy was no longer between public and private funds, but rather between DB and DC plans. Public sector plans’ asset allocation closely mirrored that of private sector DB plans, with both types invested most heavily in stocks. The proportion of funds allocated to stocks increased substantially, to 63.0% for private DB and 62.9% for public plans. Private DC plans, meanwhile, reduced their allocation to stocks, to 37.2% of assets, but dramatically boosted their allocations to mutual funds. Also, the large discrepancy between the public plans and private DB plans’ allocations to corporate and foreign bonds that existed in the 1980s virtually vanished: private

DB plans allocated 9.1% and public plans invested 8.2% of funds to this asset class in 2007. Again, private DC plans differed, allocating just 2.9% to corporate and foreign bonds in 2007.

Since the 1980s, then, we have seen a steady convergence in asset allocation patterns of public plans and private sector DB plans, with the result that in 2007 public and private DB plans look very similar. Private sector DC plans have notably different asset allocations, in particular with their much heavier reliance on mutual funds. It should be noted that this period, 1985 to 2007, witnessed a virtual explosion in private sector DC plan participation. Assets in such plans grew from \$431.7 billion to almost \$3.5 trillion.

Legal and Regulatory Changes Have Enhanced Plans’ Diversification

Public pension plans have been steadily increasing the proportion of stocks in their portfolios over time. As far back as 1953, only 1.5% of public plan assets were allocated to stocks, but by 2007 stock allocation had increased to 60.3%—a level on par with private-sector DB plans. (BOG 2007) Figure 1 shows the percentage of portfolio funds allocated to equity since 1952 for public-sector plans, and since 1985 (the first year data is available) for private DB and DC plans.



Source: Flow of Funds (BOG 2007) and authors’ calculations.

Public pensions' transition to portfolios more heavily weighted toward equities has been gradual and occurred over a period that saw these plans move from operating more as pay-as-you-go systems (in which, similar to Social Security, current contributions to the system pay for current retirees' benefits) to pre-funded entities (in which each employee's pension is funded throughout his/her career). In 1952, the public plan system held just \$6.6 billion in assets; by 2007, having fully moved to a pre-funding system, public plans held \$3.1 trillion in assets. (BOG 2007)

Along with the move to pre-funding came a series of legislative adjustments to lower restrictions on public plans' investment options. Up to that time, many public plans' investment activities were strictly constrained by "legal lists" and other legislative dictates. (Mitchell et al. 2001) Although these funds were restricted by state legislation from owning certain securities at one time, eventually, "under pressure by local lobbying from public funds and faced with data showing the relatively poor returns earned by such restricted funds, [many] states amended their rules." (Wallace 1983) With these two changes, public pension plans began shifting to a longer-term view of investment allocation, and thus moved more into equity. (Logue and Rader 1998) That is, public sector DB plans were finally able to "catch up" to the private sector in diversified, efficient asset allocation, resulting in "high returns earned in financial markets, especially domestic equities." (Mitchell et al. 2001)

Turning to private sector DC plans, the period 1985 to 2007 witnessed substantial change. In 1985, 401(k) plans had not yet been widely adopted. At that time, assets in private sector DC plans stood at \$432 billion, with many DC plans set up as Employee Stock Ownership Plans (ESOPs). ESOP adoption peaked in 1993. (National Center for Employee Ownership 2008) Employers preferred ESOPs because they gave them the ability to leverage plan assets, which ultimately decreases the tax burden of the company. (Munnell & Sunden 2004)

The mutual fund industry grew up along-side the growth of DC plans, as mutual funds seemed to represent the "logical investment for 401(k) plans." (Munnell & Sunden 2004) That is, with most employers electing not to bear the responsibility of managing DC plan assets,

mutual funds stepped in as a way for employees to achieve some diversification in their 401(k) accounts. Today, DC plans are ubiquitous in the private sector, with 58 percent of households depending solely on 401(k) or similar plans in 2001, (Munnell & Sunden 2004) and assets totaling \$3.5 trillion in 2007, (BOG 2007) with investment of these assets almost entirely self-managed.

Changes to Asset Allocations in Public Plans Have Been Gradual and Smooth

Given the differences in investment patterns between plans and the changes in these patterns over time, it may be useful to examine the extent to which changes in asset allocations have been gradual and smooth, versus volatile and unpredictable. Increased volatility may be an indication that investors in one particular type of retirement plan are less patient with their financial investments.

In particular, investors in DC plans may be less patient with their financial investments than DB plans because individuals have a shorter time horizon during which to invest. Importantly, if the shift to DC plans has gone along with more volatile financial market investments in certain assets, it may indicate that businesses may have found it harder to find the necessary long-term financing for their projects through traditional financing vehicles, such as stock issues.

To assess the volatility of the portfolio allocation of a particular type of retirement plan, we calculate the standard deviation (a typical measure of volatility) of the change in the share of assets plans allocate to equity. Table 3 shows these standard deviations, measured on a quarterly basis, since 1952, for state and local plans as well as for private plans.

However, the better measure of volatility in one's portfolio allocation may be the relative standard deviation, considering that both types of plans have seen allocation to equities change over time. The relative standard deviation is the standard deviation relative to the average. In this case, the standard deviation of the quarterly growth rate of the equity allocation for a particular type of plan over a specified period of time is divided by the average growth rate of the equity allocation for that type of plan during the particular time period.

Table 3

**Volatility and Relative Volatility of Asset Allocation
in Public and Private Sector Retirement Plans,
1952-First Quarter 2008**

	Public Sector Plans	Private Sector Plans
Total standard deviation 1952-2008	1.3	1.8
Relative standard deviation 1952-2008	4.8	12.5
Last 30 year standard deviation	1.5	1.6
Relative 30-year standard deviation	4.6	32.2
Last 20 year standard deviation	1.5	1.3
Relative 20-year standard deviation	2.2	12.1
Last 15 year standard deviation	1.5	1.1
Relative 15-year standard deviation	5.2	13.6

Source: Authors' calculations based on data from Flow of Funds (BOG 2007)

Table 3 shows that changes to equity allocations in state and local plans exhibit much lower volatility than private plans. Overall, since 1952, changes to private plans' equity allocations have been nearly three times more volatile, with a relative standard deviation of 12.5, as compared with public plans' 4.8 relative standard deviation.

Even within the last fifteen years—during which public plans have been substantially increasing allocations to equity—the standard deviation of changes to public plan equity allocations is only slightly higher than that of private plans (1.5 versus 1.1), and the relative standard deviation is still significantly lower (5.2 versus 13.6).

These results strongly suggest that changes to equity allocations for public plans have been more stable than those of private plans.

Asset Allocation Changes in DC Plans Have Been More Volatile

Because DB and DC investments have varied so much in recent years, it may also be valuable to analyze the volatility of changes in equity allocations for such plans in the private sector.

Due to data limitations, we can only examine this back to 1985, and only on an annual basis. Results appear in Table 4, which show that changes in equity allocations in DC plans have been much more volatile than those of public plans or private sector DB plans.

Overall, since 1985 all three types of plans showed similar standard deviations, with 0.07 for private DC, 0.06 for private DB, and 0.06 for public plans. The relative standard deviation, however, was just 3.0 for private DB and 1.8 for public sector plans, but a sizeable 473.0 for private DC plans.

Within the last 15 years, the volatility in equity allocations for private DC plans remained similar to the 22-year total, at 0.06, while volatility for other plans declined slightly, to 0.05 for private DB and 0.05 for public plans. The relative standard deviation for the last 15 years shows that even in this shorter timeframe, changes in equity allocations in private DC plans have been much less stable than for other plans, with a measurement of 10.8 for DC plans, compared to 2.0 for private sector DB plans and 2.3 for public sector plans.

Table 4
Volatility and Relative Volatility of Private DB, Private DC, and Public Sector Pension Plans, 1985-2007

	Public Sector Plans	Private Sector DB Plans	Private Sector DC Plans
Total standard deviation 1985-2007	0.06	0.06	0.07
Relative standard deviation 1985-2007	1.8	3.0	473.0
Last 20 year standard deviation	0.06	0.06	0.06
Relative 20-year standard deviation	1.9	2.4	58.5
Last 15-year standard deviation	0.05	0.05	0.06
Relative 15-year standard deviation	2.3	2.0	10.8

Source: Authors' calculations based on data from Flow of Funds (BOG 2007)

Other recent findings corroborate the conclusion that allocations to equity in DB plans may be more stable and efficient than allocations to equity in DC plans. For example, Holden and VanDerhei (2001) found that more than half of all DC plan participants had either no funds invested in stocks, which exposes them to very low investment returns, or had almost all their assets allocated to stocks, making for a much more volatile portfolio. Another diversification shortcoming in DC plans is the issue of company stock. Many employees have large holdings of their own employer's stock in their DC plans. Among large employers, company stock made up 37.6% of assets in DC plans. (Profit Sharing/401k Council of America 2002) The risk inherent in this practice was summed up in the case of Enron, where employees had some 60% of their DC plan assets allocated to their employer's stock, which became worthless when the company crashed. (Munnell & Sunden 2004)

That DC plans exhibit higher volatility in asset allocation than DB plans suggests different investment behavior between individuals and institutional investors. This is perhaps not surprising, considering that public sector plans and private sector DB plans are professionally managed with "considerable financial education, experience, discipline and access to sophisticated investment tools" (Watson Wyatt 2008), while the individualized nature of DC plans means that these rely on self-management.

Such factors may help to explain why DC plans tend to achieve poor investment returns, as compared with DB plans. A 2007 report from the global benchmarking firm, CEM, Inc., concluded that between 1998 and 2005 DB plans showed annual returns 1.8 percentage points higher than DC plans, largely due to differences in asset mix. (Flynn & Lum 2007) And Watson Wyatt (2008) found that between 1995 and 2006 DB plans outperformed DC plans by 1.09 percentage points annually, on average.

Policy Challenges Presented by Asset Allocation Patterns in DC Plans

In light of the explosion in DC plan participation in the private sector, these findings present a challenge. Inefficient asset allocation and the resulting lower investment returns may leave individuals with insufficient resources to meet their needs in retirement.

Research in the field of behavioral finance reinforces these concerns, with findings that most individuals are relatively poor at making investment decisions (van Rooij 2007), and possess "little knowledge of the investment strategies or financial details of their investments." (Capon et al. 1996) Many employees make the mistake of chasing short-term returns, which often leads to the practice of buying high and selling low, and which reduces overall returns, while increasing standard deviation of return. (Watson Wyatt 2008; Keim 2003) Moreover, many individuals understand

that they can be poor investors: a recent survey of 1,000 Dutch citizens found that the “average respondent considers himself financially unsophisticated and is reluctant to take control of retirement savings investment, even when offered the possibility to increase expertise.” (Orth 2006)

Also, because DC plans are individually managed, they do not have access to certain asset classes, especially alternative investments such as private equities, hedge funds and venture capital, which require investments in the millions of dollars. Because such alternatives can offer high rates of return that may not be correlated with the returns of other assets, the inability of individuals with DC plans to invest in these assets presents a significant disadvantage to their investment strategies and overall portfolio returns.

Overall, economists and financial analysts generally agree that taking on appropriate risk in one’s portfolio is advisable, especially in the long term. (Romaniuk 2006; Campbell & Viceira 2002; Srinivas et al. 2000) Maintaining a reasonable mix of low, medium, and higher risk investments in one’s portfolio is both an important aspect of diversification, as well as a prudent and efficient way to maximize returns in the long term. (Romaniuk 2006; Siegmann 2003)

Congress essentially endorsed this principle—that individuals should take on equity risk as part of a diversified portfolio—in its passage of the 2006 Pension Protection Act (PPA). The PPA not only allows employers to automatically enroll employees in a DC retirement plan (PPA Section 902), but also permits employers, under this automatic enrollment, to direct assets to be invested in a “qualified default investment alternative” (QDIA). (PPA Section 624)

Congress explicitly recognized that most individuals have a difficult time effectively managing their own portfolios in its designation of four types of QDIAs allowed under the regulation, which include life-cycle or targeted-retirement-date funds, in which the asset allocation changes based on an employee’s age, a professionally managed account, and a balanced fund. (U.S. Department of Labor 2008) These PPA regulations represent a Congressional attempt to encourage enrollment in a retirement portfolio consisting of some risk—but especially in one that is managed, or at least designed, by professional managers.

Conclusion

The evidence indicates that professional asset management provides important benefits for retirement plan participants and the employers who sponsor retirement plans. Economic growth is boosted as businesses tap patient capital for long-term projects. Professionally-directed asset allocations are more likely to reflect an optimal strategy of diversification, generating investment returns that are higher and more stable, thus lowering the costs of delivering retirement benefits and improving benefit adequacy.

Unlike individuals, who must adopt more conservative investment strategies as they age, DB plans, whose participants can include young, middle-aged, and retired individuals, are not bound by such life-cycle based constraints and can remain invested in equities because of their perpetual nature. Thus, the greater stability in asset allocations, or patient capital, among public plans and private sector DB plans may also provide benefits for financial markets as a whole, since professional investors who follow a long-term strategy are less likely to cause market disruptions by chasing short-term returns.

The dramatic shift away from professionally-managed group DB plans in the private sector in favor of individually-directed DC plans raises important policy concerns. Although Congress has taken steps to attempt to foster more efficient asset allocations in individual DC plan accounts, it is too soon to know what effect these attempts may have. Considering the research findings presented herein, any steps by policymakers that can encourage more optimal asset allocations in DC plans are to be welcomed. However, so long as investment decisions in DC plans are directed by individuals, the risk of less-than-optimal asset allocations will still exist. Another concern is that because there is no easy way for individuals to capture the uncorrelated returns offered by alternative investments, it seems that individual DC plan participants will remain at a disadvantage as compared with professionally managed DB plans.

Our findings suggest that the seismic shift from DB to DC plan coverage, at least in the private sector, has been accompanied by equally important shifts in asset allocations. While the ultimate effects are not yet known, these shifts have been significant enough to warrant further study on their potential consequences.

Appendix

The Role of Stocks and Bonds in a Diversified Portfolio

Perhaps the most important way to diversify one's portfolio is between stocks (mainly corporate equities) and bonds (including treasury debts as well as corporate bonds). Bonds, whose returns tend to be more stable than those of equities, can help to reduce the volatility of investment returns, when they are used as part of a diversified portfolio. Stocks are an important asset class for long-term investors because they offer much higher rates of return over longer time horizons, as compared with bonds.¹ (Siegel & Thaler 1997) Mutual funds, which account for a large share of DC plan assets, may be invested in stocks, bonds, liquid assets, or a combination thereof. Mutual funds are a favored way for individuals to invest, because they allow small investors (or even large ones) a simple way to achieve a broadly diversified portfolio. For example, an investor can purchase shares of a S&P 500 mutual fund, which will mimic the performance of all 500 stocks in the S&P index. In 2007, for instance, 74.2% of mutual fund assets were allocated to common and preferred stocks, 8.4% to long-term U.S. government bonds, 8.8% to corporate bonds, 4.1% to municipal bonds, 4.2% to liquid assets, and 0.2% to other investments. (Investment Company Institute 2008) In this way, even a small investor can get a broad, diversified exposure to hundreds of individual stocks. Allocation of assets to both stocks and bonds, either directly or through mutual funds, then, is the most common way to obtain at least a moderately diversified portfolio.

The Role of Other Investments in a Diversified Portfolio

The Flow of Funds "other investments" category comprises assets such as unallocated insurance contracts (including guaranteed investment contracts (GICs) and variable annuities) as well as so-called "alternative investments" such as private

equity, hedge funds, real estate, and commodities. Unallocated insurance contracts are contracts with an insurance company under which payments are accumulated in a fund to be used to meet benefit payments, either directly or through the purchase of annuities. Variable annuities are insurance contracts in which the insurer makes periodic payments, either at present or in the future. GICs are contracts under which, once a lump-sum payment is made, the insurer ensures a relatively high interest rate for a set amount of time. Unallocated insurance contracts "were introduced by insurers to attract large pension funds" (Investments & Income 2008), because they are a good hedge against overall market risk in that, similar to bonds, they offer a fixed rate of return; however, the rate of return is usually higher than that of bonds.

The Role of "Alternative Investments" in a Diversified Portfolio

"Alternative investments" include assets such as such as real estate, commodities, financial derivatives, hedge funds, private equity, and/or venture capital. Real estate and commodities are sometimes referred to as "real" assets, in that these investments are actual physical goods, unlike most financial assets. Commodities—which include agricultural goods and other resources such as crude oil, iron ore, and gold—and real estate both serve as a hedge against inflationary pressures. (Steil 2008) In the face of inflation, when the value of most financial assets decreases, investment in real estate or commodities can protect the real value of one's portfolio. Real estate specifically is commonly believed to show a "strong record of high-return, low-volatility performance," due to its heterogeneity, which is a means, once again, of diversification. (Logue & Rader 1998)

Other alternatives that are used to diversify portfolios, such as hedge funds, private equities and venture capital, have traditionally held a reputation for being higher risk investments with the potential for high returns. However, such investments are often incorporated into a portfolio, not because of higher expected rates of return, but because they can offer uncorrelated returns that are somewhat insulated from stock market shocks. That is, should the market as a whole see a substantial downturn, these alternatives can be somewhat more shielded from showing a large loss than other equities might be, due to their relative independence. (Seco

¹ The greater rate of return that equities have delivered, what economists call the "equity premium," can only partly be attributed to stocks greater riskiness. Economists have determined the size of the equity premium is too large to be explained by standard economic models, and have labeled this phenomenon the "equity premium puzzle."

2005; Phillips & Surz 2003; Indjic & Partners 2002)

This ability—to show just single digit losses in a market decline, for example, when other equities may show double digit losses—can significantly impact a retirement plan’s compounded rate of return over time. Thus, in recent years, some DB plans have allocated a small share of assets to “alternative assets.” In 2007, for example, a survey conducted of the 52 largest public pension funds reported that the average allocation to real estate was 5.5% of assets, private equity 5.7% of assets, and hedge funds 1.1% of assets. (NASRA 2007)

In order to successfully invest in these “alternative” assets, investors must have a long time horizon and must have a high degree of sophistication to understand these often-complex investments. These factors can make alternatives a sound investment choice for DB plan investors, which have the benefit of professional investment advisors and staffs, very long-term time horizons, and the need and ability to diversify to reduce risk.

Individual investors in DC plans typically do not have the access or the expertise to invest in these types of assets, which may put them at a disadvantage. Data from Watson Wyatt (2008) show that during 2000-2002 market downturn, DB plans outperformed DC plans, in part, because of their exposure to a broader range of assets, including alternatives. The decision to invest a small proportion of one’s portfolio in such alternative investments once again follows modern portfolio theory’s central principle of diversification. In other words, when DB investors choose to allocate some assets to alternatives, they are employing a reasonable, long-term investment strategy. (James & Karceski 2002)

References

- Abdelazim, H.Y., & Wahba, K. 2006. An artificial intelligence approach to portfolio selection and management. *International Journal of Financial Services Management*, 1(2-3), 243-254.
- Board of Governors, Federal Reserve System. 2007. *Flow of Funds Accounts of the United States*. Washington, DC: BOG.
- Campbell, J.Y., & Viceira, L.M. 2002. *Strategic Asset Allocation: Portfolio Choice for Long-term Investors*. New York: Oxford University Press.
- Capon, N., Fitzsimons, G.J., & Prince, R.A. 1996. An individual level analysis of the mutual fund investment decision. *Journal of Financial Services Research*, 10(1), 59-82.
- Elton, E.J., & Gruber, M.J. 1997. Modern portfolio theory, 1950 to date. *Journal of Banking & Finance* 21, 1743-1759.
- Flynn, C., & Lum, H. 2007. *DC Plans Underperformed DB Funds*. Toronto, ON: CEM Benchmarking, Inc.
- Holden, S. & VanDerhei, J. 2001a. *401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2000*. EBRI Issue Brief 239. Washington: Employee Benefit Research Institute.
- Indjic, D. & Partners, F. 2002. Strategic asset allocation with portfolios of hedge funds. *Alternative Investment Management Association Journal*, December 2002, 29-33.
- Investment Company Institute. 2008. *2008 Investment Company Factbook, 48th Edition*. Washington, DC: Investment Company Institute.
- Investments & Income. 2008. *U.S. Pension System*. Investments & Income.
- James, C.M., & Karceski, J.J. 2002. *Captured Money? Differences in the Performance Characteristics of Retail and Institutional Mutual Funds*. Working Paper. Gainesville, FL: University of Florida.
- Keim, D.B. 2003. *The Cost of Trend Chasing and the Illusion of Momentum Profits*. Philadelphia, PA: The Rodney L. White Center for Financial Research, University of Pennsylvania.

- Logue, D.E., & Rader, J.S. 1998. *Managing Pension Plans: A Comprehensive Guide to Improving Plan Performance*. Boston: Harvard Business School Press.
- Markowitz, H. 1952. Portfolio selection. *Journal of Finance*, 7(1), 77-91.
- Mitchell, O.S., McCarthy, D., Wisniewski, S.C & Zorn, P. 2001. Developments in state and local pension plans. In: Mitchell, O.S., and Husted, E.C., eds. *Pensions in the Public Sector*. Philadelphia: University of Pennsylvania Press.
- Munnell, A.H., & Sunden, A.E. 2004. *Coming Up Short: The Challenge of 401(k) Plans*. Washington, DC: Brookings Institution Press.
- Munnell, A.H., Haverstick, K., & Soto, M. 2007. *Why Have Defined Benefit Plans Survived in the Public Sector? SLP Number 2*. Boston: Center for Retirement Research at Boston College.
- National Association of State Retirement Administrators. 2007. *NASRA/NCTR Asset Allocation Survey*. December 12, 2007.
- National Center for Employee Ownership. 2008. *A Statistical Profile of Employee Ownership*. Oakland, CA: National Center for Employee Ownership.
- Orth, B. 2006. Managing longevity risk in U.S. retirement plans through mandatory annuitization. *North American Actuarial Journal*, 1-16.
- Pension Protection Act of 2006, Pub. L. no. 109-280, 780 Stat 120 (2006).
- Phillips, K.S., & Surz, R.J. 2003. *Hedge Funds: Definitive Strategies and Techniques*. New York: John Wiley & Sons.
- Profit Sharing/ 401(k) Council of America. 2001. *Automatic Enrollment 2001: A Study of Automatic Enrollment Practices in 401(k) Plans*. Chicago: Profit Sharing/ 401(k) Council of America.
- Quirk, K. 2008. Hedge funds: An institutional perspective. Presented at the AIMSE/P&I Hedge Fund Conference, New York, February 27, 2008.
- Romaniuk, K. 2006. The optimal asset allocation of the main types of pension funds: A unified framework. *The Geneva Risk and Insurance Review* 32, 113-128.
- Seco, L.A. 2005. Hedge funds: Truths and myths. *Revista de Economía Financiera*, 6, 82-114.
- Siegel, Jeremy J. & Richard H. Thaler. 1997. "Anomalies: The Equity Premium Puzzle." *Journal of Economic Perspectives*, 11(1), 191-200.
- Siegmann, A.H. 2003. Optimal investment policies for defined benefit pension funds. *Journal of Pension Economics and Finance*, 6(1), 1-20.
- Srinivas, P.S., Whitehouse, E., & Yermo, J. 2000. *Regulating Private Pension Funds' Structure, Performance and Investments: Cross-country Evidence*. Washington, DC: Social Protection Unit, Human Development Network, The World Bank.
- Steil, B. 2008. *Financial Speculation in Commodity Markets*. Statement before the Committee on Homeland Security and Governmental Affairs, United States Senate. May 20, 2008.
- Teulings, C.N., & de Vries, C.G. 2006. Generational accounting, solidarity, and pension losses. *De Economist*, 154(1), 63-83.
- U.S. Census Bureau. 2007. *State and Local Government Employee-Retirement Systems*. Washington, DC: U.S. Census Bureau, Government Division.
- U.S. Department of Labor, Employee Benefits Security Administration. 2008. *Fact Sheet: Regulation Relating to Qualified Default Investment Alternatives in Participant-Directed Individual Account Plans*. Washington, DC: U.S. Department of Labor.
- van Rooij, M.C.J., Kool, C.J. M., & Prast, H.M. 2007. Risk-return preferences in the pension domain: Are people able to choose? *Journal of Public Economics*, 91(3-4), 701-22.
- Wallace, A.C. 1983. A horse race for high states at teachers' pension fund. *The New York Times*, February 27, 1983.
- Watson Wyatt. 2008. Defined benefit vs. 401(k) plans: Investment returns for 2003-2006. *Watson Wyatt Insider*, 18(5).

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