Are retirement savings too exposed to market risk?

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By Alicia H. Munnell and Dan Muldoon*

Introduction

The stock market, as measured by the broad-based Wilshire 5000, declined by 42 percent between its peak in October 9, 2007 and October 9, 2008. Over that one-year period, the value of equities in pension plans and household portfolios fell by $7.4 trillion. Of that $7.4 trillion decline, $2.0 trillion occurred in 401(k)s and Individual Retirement Accounts (IRAs), $1.9 trillion in public and private defined benefit plans, and $3.6 trillion in household non-pension assets.[1]

This *brief* documents where the declines occurred. This information is interesting and important in its own right. But the declines also highlight the fragility of our emerging pension arrangements. Today the declines were divided equally between defined benefit and defined contribution plans, but in the future individuals will bear the full brunt of market turmoil as the shift to 401(k)s continues. Much of the reform discussion regarding private sector employer-sponsored pensions has focused on extending coverage. But the current financial tsunami also underlines the need to construct arrangements where the full market risk does not fall on pension participants.

The Decline in Equity Values

Over the year (October 9, 2007- October 9, 2008), the Dow Jones Industrial Average plunged 39 percent, the Standard & Poor's 42 percent, and the broadest gauge of market activity – the Wilshire 5000 – 42 percent (see Figure 1).

Figure 1. Dow Jones Wilshire 5000, January 1, 1990-October 9, 2008

Source: Wilshire Associates (2008).

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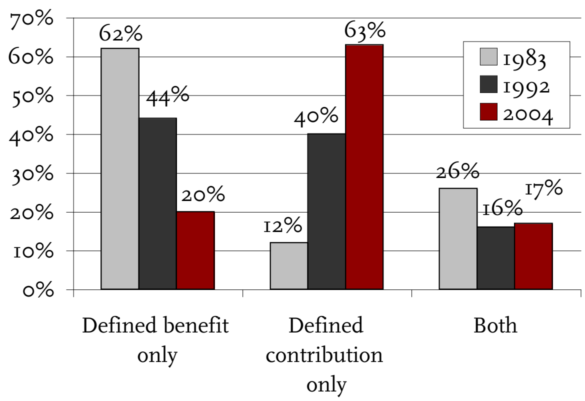
This steep decline has great implications for American households because of the dramatic shift in the nature of pension coverage and the expansion in the ownership of equities. Whereas in the early 1980s, the majority of those with pensions were covered by defined benefit plans, which provided a benefit for life based on tenure and earnings, today most workers with employer-sponsored pensions rely on 401(k) plans, where retirement income depends on the individual's accumulations (see Figure 2 below).

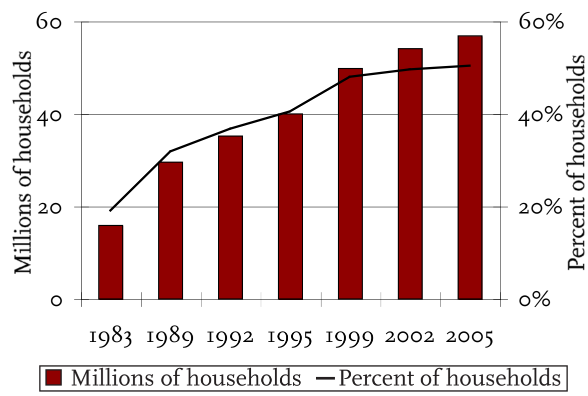
As a result of the changing nature of pensions, the share of households owning equities now exceeds 50 percent (see Figure 3). Thus, when the stock market tanks, households feel it directly.[2]

Figure 2. Workers with Pension Coverage, by Pension Type, 1983, 1992, and 2004



Source: Authors' calculations based on U.S. Board of Governors of the Federal Reserve System, *Survey of Consumer Finances* (various years). Washington, DC.

Figure 3. Number and Percent of U.S. Households Owning Any Equities, 1983-2005



Source: Investment Company Institute (2005).

Where the Declines Occurred

According to the Federal Reserve's Flow of Funds, the total value of corporate equities amounted to about $23.5 trillion at the peak of the market in October 2007.[3] Applying the 42 percent decline in the Wilshire 5000 to these holdings implies that, one year later, the market value of total equities was $13.6 trillion – a decline of $9.8 trillion (see Table 1). Some portion of that decline accrued to commercial banks, insurance companies, etc., but $7.4 trillion affected households either directly or indirectly.

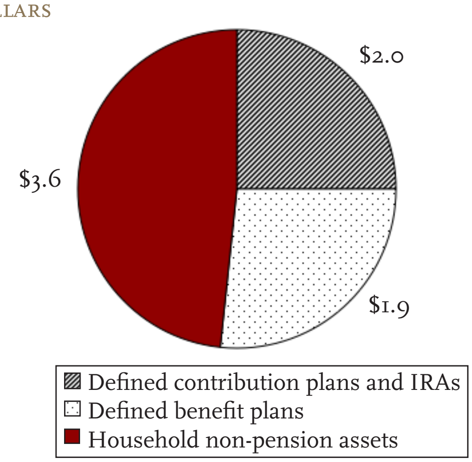
Table 1. Equity Declines from October 9, 2007 (Peak) to October 9, 2008, Trillions of Dollars

Type of holding	10/9/07	10/9/08	Decline
Defined contribution plans	**$4.7**	**$2.7**	**$2.0**
Private defined contribution plans	2.6	1.5	1.1
IRAs	2.0	1.1	0.8
Federal government plan[a]	0.2	0.1	0.1
Defined benefit plans	**4.4**	**2.6**	**1.9**
Private defined benefit plans	2.1	1.2	0.9
State and local plans	2.4	1.4	1.0
Household non-pension assets	**8.5**	**5.0**	**3.6**
Other[b]	**5.8**	**3.4**	**2.4**
Total	**23.5**	**13.6**	**9.8**

[a] The federal government plan holdings are those in the Thrift Savings Plan.
[b] Other includes state and local government non-retirement holdings, U.S. equities owned by foreign residents, commercial banks, savings institutions, life and property-casualty insurance companies, closed-end funds, exchange-traded funds, and holdings of brokers and dealers.
Note: Figures may not add to totals due to rounding.
Sources: Authors' estimates based on U.S. Board of Governors of the Federal Reserve System (2008); and Wilshire Associates (2008).

With this table, it is possible to answer questions about where the declines occurred. How much did households lose through their non-pension assets? Answer – $3.6 trillion. How much did households lose through their 401(k) plans and IRAs? Answer – $2.0 trillion. (It is important to include IRAs since most of the balances in these accounts are rollovers from 401(k)s.) How much did defined benefit plans lose? Answer – $1.9 trillion. In short, half the decline in the value of equities held directly or indirectly by households occurred in retirement assets – divided almost equally between 401(k)s/IRAs and defined benefit plans (see Figure 4).

Figure 4. $7.4 Trillion Decline in Pension and Household Equity Values by Type of Holding, October 9, 2007 – October 9, 2008, Trillions of Dollars



Note: Figures may not add to totals due to rounding.
Sources: Authors' estimates based on U.S. Board of Governors of the Federal Reserve System (2008); and Wilshire Associates (2008).

Conclusion

During a one-year period, the value of equities in retirement accounts declined by almost $4.0 trillion. Individuals were sheltered from the immediate impact of the $1.9 trillion of losses in defined benefit plans. But they did experience a direct hit on the $2.0 trillion in losses that occurred in 401(k)s and IRAs. In all likelihood, many panicked amid the turmoil and sold assets at depressed prices. And these people may be late in getting back into the market to enjoy gains as the market recovers. Equally important, holders of 401(k)s/IRAs were left feeling vulnerable and impotent as their savings evaporated. The question this crisis raises is whether pension participants need to be protected from this type of gut-wrenching volatility.

Endnotes

1 In recent testimony before the U.S. House of Representatives Committee on Education and Labor, Peter Orszag, Director of the Congressional Budget Office, testified that public and private pension funds combined lost roughly $1 trillion between the second quarter of 2007 and the second quarter of 2008 and another $1 trillion between the second quarter of 2008 and October 7, 2008 (Congressional Budget Office, 2008). The numbers reported in this *brief* are consistent with these estimates. They are larger, however, because they begin with the peak in October 9, 2007 and include two additional days of large declines after October 7, 2008.

2 Of course, market declines experienced by defined benefit pension plans could also potentially affect individuals if the sponsor were forced to shut the plan. But major impacts are unlikely because private sector participants are protected by the Pension Benefit Guaranty Corporation and public plans virtually never default.

3 We applied daily changes in the Wilshire 5000 index to estimate the increase between the Flow of Funds' September 30th number and the peak on October 9th. For full details of our calculations, see the Appendix.

4 Household sector mutual fund assets invested in equities were calculated as the difference between the total amount of mutual fund assets invested in equities directly from Table L.213 and our estimates for pension funds (excluding IRAs). This residual turned out to be roughly 79 percent of all mutual fund assets held by the household sector (Table L.100), which suggests that 80 percent is a reasonable weight for mutual fund assets invested in equities. See Investment Company Institute (2008).

APPENDIX

Appendix: Equity Holding Calculations

The calculations start with the September 18, 2008 Flow of Funds (FOF) release. The most recent information in that release is 2008:II data for quarterly tables and 2007:IV data for annual tables (see Table A1). The calculations begin with data for 2007:III, which is closest to the stock market peak of October 9, 2007.

Table A1. Flow of Funds Tables Used for Estimates in this *Brief*

Flow of Funds table	Category	Frequency of data
L.100	Household sector assets and liabilities	Quarterly
L.118	Total private pension assets	Quarterly
L.118.b	Private defined benefit pension assets	Annually
L.118.c	Private defined contribution pension assets	Annually
L.119	State and local government retirement plans	Quarterly
L.120	Federal government retirement funds	Quarterly
L.213	Corporate equity holdings	Quarterly
L.225.i	Individual retirement accounts	Annually

Source: U.S. Board of Governors of the Federal Reserve System (2008).

Table A2 shows how equity holdings for 2007:III were allocated among pension and non-pension holdings. Some figures were taken directly from the FOF tables; others, specifically defined contribution and defined benefit plan's equity holdings, required more calculations because detailed information was only available on an annual basis. For mutual funds, the assumption was that 80 percent were invested in equities.[4]

Table A2. Flow of Funds Equity Holdings, 2007:III, Billions of Dollars

	Sector	2007:III	Flow of Funds tables used for calculations
1	**Household sector**	**$10,202.2**	(2 + 3)
2	Equities	6,131.9	L.100 2007:III
3	Mutual funds	4,070.3	(L.213 2007:III - 7 - 10 - 13)
4	**Private pension plans**	**4,484.0**	(5 + 8)
5	Defined contribution	2,482.7	(6 + 7)
6	Equities	1,345.0	(L.118.c 2007:IV) * (L.118 2007:III / L.118 2007:IV)
7	Mutual funds	1,137.6	(L.118.c 2007:IV) * (L.118 2007:III / L.118 2007:IV) * (.8)
8	Defined benefit	2,001.3	(9 + 10)
9	Equities	1,754.0	(L.118.b 2007:IV) * (L.118 2007:III / L.118 2007:IV)
10	Mutual funds	247.3	(L.118.b 2007:IV) * (L.118 2007:III / L.118 2007:IV) * (.8)
11	**State and local gov't retirement funds**	**2,306.4**	(12 + 13)
12	Equities	2,060.4	L.119 2007:III
13	Mutual funds	246.0	(L.119 2007:III) * (.8)
14	**Federal government retirement funds**	**150.1**	L.120 2007:III
15	**Other**	**5,676.2**	(16 - 1 - 4 - 8 - 11 - 14)
16	**Total:**	**22,818.9**	L.213 2007:III

Note: Figures may not add to totals due to rounding.
Source: Authors' estimates from U.S. Board of Governors of the Federal Reserve System (2008).

Once the equity holdings for 2007:III were allocated, they were increased by 2.9 percent to account for the increase in equity prices between September 30, 2007 and the market peak of October 9, 2007 (see Table A3). The October 9, 2008 values were calculated by reducing the peak equities values by 42 percent to reflect the decline in the Wilshire 5000. Finally, the holdings of the household sector were allocated between IRAs and other assets based on the assumption that 40 percent of IRA balances were in equities.

Table A3. Changes in Equity Holdings from September 30, 2007 to October 9, 2008, Billions of Dollars

	Sector	2007:III	Peak 10/9/07	10/9/08
1	**Household sector**	**$10,202.2**	**$10,497.6**	**$6,101.9**
2	Equities	6,131.9	6,309.4	3,667.5
3	Mutual funds	4,070.3	4,188.2	2,434.4
4	**Private pension plans**	**4,484.0**	**4,613.8**	**2,681.8**
5	Defined contribution	2,482.7	2,554.5	1,484.9
6	Equities	1,345.0	1,384.0	804.5
7	Mutual funds	1,137.6	1,170.5	680.4
8	Defined benefit	2,001.3	2,059.2	1,197.0
9	Equities	1,754.0	1,804.7	1,049.0
10	Mutual funds	247.3	254.5	147.9
11	**State and local gov't retirement funds**	**2,306.4**	**2,373.2**	**1,379.4**
12	Equities	2,060.4	2,120.0	1,232.3
13	Mutual funds	246.0	253.1	147.1
14	**Federal government retirement funds**	**150.1**	**154.4**	**89.8**
15	**Other**	**5,676.2**	**5,840.5**	**3,394.9**
16	**Total:**	**22,818.9**	**23,479.4**	**13,647.9**

Note: Figures may not add to totals due to rounding.
Source: Authors' estimates from U.S. Board of Governors of the Federal Reserve System (2008).

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