CENTER *for* RETIREMENT RESEARCH *at* BOSTON COLLEGE

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HOW EXPOSED ARE RETIREMENT SAVINGS TO MARKET RISK?

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Introduction

As the COVID-19 pandemic emerged in early 2020, the stock market – as measured by the Dow Jones Wilshire 5000 – declined by 35 percent between its February peak and March trough. While the market has largely recovered since then, it remains very volatile and exposes household savings to continued market risk.

During the February to March period, the value of equities in employer-sponsored retirement plans and household portfolios fell by $14.2 trillion. Of that decline, $4.4 trillion occurred in 401(k)s and Individual Retirement Accounts (IRAs), $1.8 trillion in public and private defined benefit plans, and $8.0 trillion in household non-retirement assets.

This *brief* documents where the declines occurred and the extent to which retirement accounts are exposed to equity market risk. The first section looks at overall trends in the stock market and household exposure. The second section breaks down the decline in equity values by source. And the third section focuses specifically on retirement assets.

This information is interesting and important in its own right. But, as the final section concludes, the declines also highlight the fragility of our retirement plans. More than two-thirds of the drop in retirement plan equity holdings was in defined contribution plans. As defined benefit plans become rare, households increasingly bear the full brunt of market turmoil. Much of the discussion about reforming private sector retirement plans has focused on extending coverage. But the current financial downturn also underlines the need to construct arrangements where the full market risk does not fall on retirement plan participants.

The Decline in Equity Values

Between February 19 and March 23, the Dow Jones Industrial Average plunged by 37 percent, the Standard & Poor's 500 Index by 34 percent, and the broadest gauge of market activity – the Dow Jones Wilshire 5000 Index – by 35 percent (see Figure 1 on the next page). Although the markets have since rebounded, the analysis will focus on the initial drop since markets remain volatile and household financial assets remain vulnerable to these fluctuations during the ongoing recession triggered by COVID-19.

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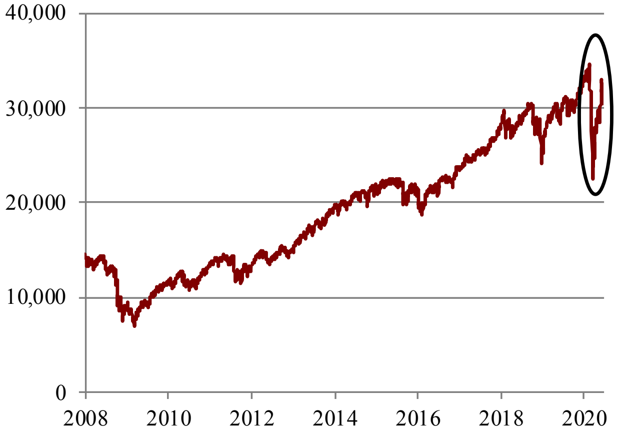
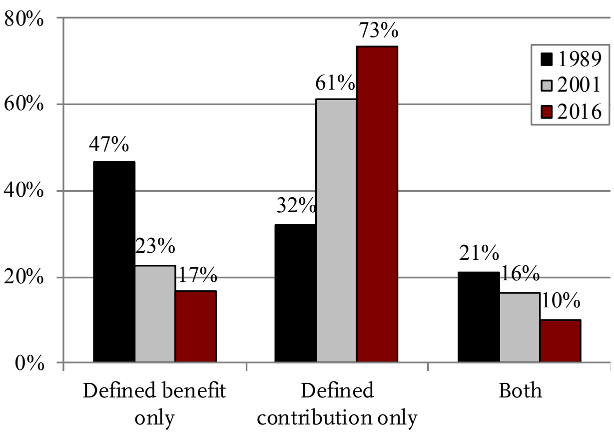
Figure 1. Dow Jones Wilshire 5000, January 2, 2008-June 19, 2020



Source: Wilshire Associates (2020).

The stock market's steep decline has great implications for the retirement assets of American households because of the shift in the nature of pension coverage and the expansion in the ownership of equities. In the 1980s, the majority of those with a retirement plan were covered by defined benefit plans (see Figure 2), which provided a benefit for life based on tenure and earnings. The employer, not the employee, bore the risk of a market downturn. Today, most workers with employer-sponsored plans rely on 401(k)s, where retirement income depends on the amount they accumulate. Here the employee makes the investment decisions and bears the full investment risk.

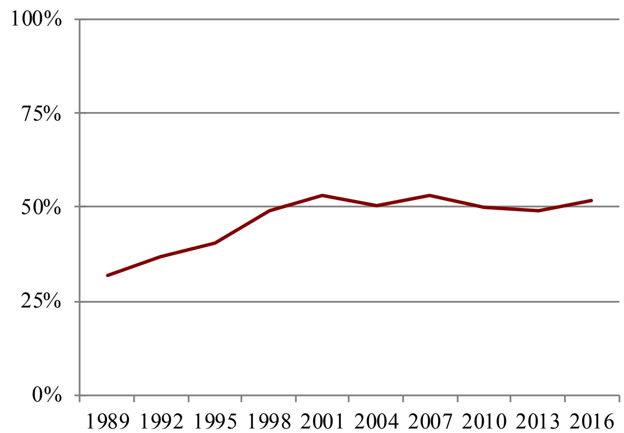
Figure 2. Workers with Pension Coverage, by Plan Type, 1989, 2001, and 2016



Source: Authors' calculations based on U.S. Board of Governors of the Federal Reserve System, *Survey of Consumer Finances* (1989, 2001, and 2016).

The shift to defined contribution plans has resulted in a growing share of households with investments in equities. Today, over 50 percent of households own equities, up from around 30 percent in the late 1980s (see Figure 3). Thus, when the stock market tanks, many households feel it directly.[1]

Figure 3. Percentage of Households Owning Any Equities, 1989-2016



Source: Holden (2018).

Where the Declines Occurred

According to the Federal Reserve's *Flow of Funds* data, the total value of corporate equities was about $57.7 trillion at the peak of the market in February 2020.[2] Applying the 35-percent decline in the Wilshire 5000 to these holdings implies that, one month later, the market value of equities was $37.5 trillion – a decline of $20.2 trillion (see Table 1 on the next page). Some portion of that decline accrued to commercial banks, insurance companies, non-profits, etc., but $14.2 trillion affected households either directly or indirectly.

Table 1. Equity Declines from February 19, 2020 (Peak) to March 23, 2020, Trillions of Dollars

Type of holding	2/19/2019	3/23/2020	Decline
Defined contribution plans	$12.7	$8.2	$4.4
Private defined contribution plans	5.1	3.3	1.8
IRAs	7.2	4.7	2.5
Federal government plan	0.4	0.3	0.1
Defined benefit plans	5.2	3.4	1.8
Private defined benefit plans	1.6	1.0	0.6
State and local plans	3.6	2.3	1.3
Household non-pension assets	22.9	14.9	8.0
Other	16.9	11.0	5.9
Total	$57.7	$37.5	$20.2

Notes: See Endnote 3. Figures may not add to totals due to rounding.
Sources: Authors' estimates based on U.S. Board of Governors of the Federal Reserve System (2020); Wilshire Associates (2020); Investment Company Institute (ICI) (2019); and Vanguard (2019).

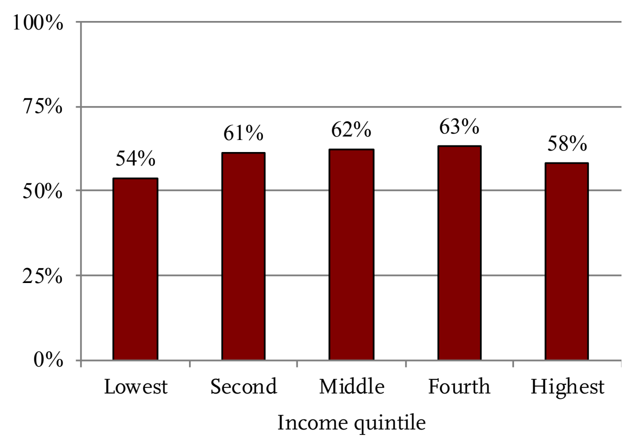
Table 1 also shows where the losses occurred. While the majority of losses affecting households, $8.0 trillion, was through non-pension assets, a substantial portion occurred in retirement plans. Of the retirement plan losses, the lion's share – $4.4 trillion (71 percent) – was through 401(k)s/IRAs; and the remaining amount, $1.8 trillion, was through defined benefit plans.

Importance of Retirement Plan Assets

Large market losses are a major concern because, for households fortunate enough to have a retirement plan, 401(k)/IRA holdings account for the bulk of their financial assets (see Figure 4).

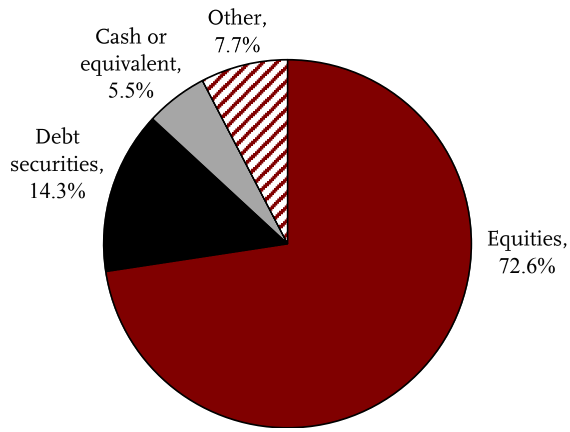
In addition, the bulk – nearly three quarters – of 401(k)/IRA assets are allocated to equities (see Figure 5 on the next page). The bottom line is that a substantial portion of household financial assets were exposed to the recent stock market drop.

Figure 4. Share of Financial Assets in 401(k)s/IRAs, for Households with 401(k)/IRA Assets, 2016



Note: See Endnote 4.
Source: Authors' calculations based on U.S. Board of Governors of the Federal Reserve System (2020).

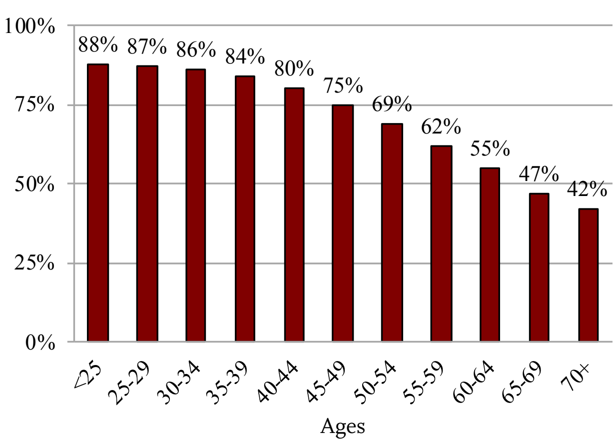
Figure 5. Average Asset Allocation in 401(k)/IRA Plans, 2019



Note: IRAs are assumed to be 70 percent invested in equities (see the Appendix for more details).
Sources: Authors' estimates based on U.S. Board of Governors of the Federal Reserve System (2020); Wilshire Associates (2020); ICI (2019); and Vanguard (2019).

Finally, it is important to understand which age groups are exposed to fluctuations in the stock market. If younger employees hold most of the equities, they would have time to recover and gain back the losses before retirement. However, Figure 6 shows that, while allocations to equities are certainly higher at younger ages, many workers nearing retirement have over 60 percent of their 401(k) assets in equities.

Figure 6. Average Equity Allocation in 401(k) Plans by Age, 2019



Source: Vanguard (2019).

Conclusion

Over a month-long period earlier this year, the value of equities held in retirement plans declined by \$6.2 trillion before rebounding. Individuals were sheltered from the immediate impact of the \$1.8 trillion of losses in defined benefit plans. But they did experience a direct hit on the \$4.4 trillion of losses in 401(k)s/IRAs. As a result, a substantial portion of household financial assets were exposed in the recent market downturn. Some employees may have panicked amid the turmoil and sold assets at depressed prices. And these people may have been late in getting back into the market to enjoy gains as the market has recovered. Equally important, holders of 401(k)s/IRAs were left feeling vulnerable as their savings evaporated. Other arrangements are possible, such as those in the Netherlands and elsewhere, where employers and employees share the risk of market declines in workplace retirement plans.[5]

Endnotes

1 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.

2 This analysis applied daily changes in the Wilshire 5000 Index to estimate the increase between the *Flow of Funds'* December 31, 2019 number and the market peak on February 19, 2020. For full details of the calculations, see the Appendix.

3 IRAs are assumed to be 70 percent invested in equities (see the Appendix for more details). The federal government plan holdings are those in the Thrift Savings Plan. 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, close-end funds, exchange-traded funds, and holdings of brokers and dealers.

4 Financial assets exclude housing, vehicles and other durables, and equity in businesses. Financial assets include insurance values, time deposits, money market funds, un-invested cash at brokerage accounts, and other miscellaneous assets.

5 See Ponds and Van Riel (2009).

6 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.223 of the *Flow of Funds* 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.101 of the *Flow of Funds*), which suggests that 80 percent is a reasonable weight for mutual fund assets invested in equities.

7 The *Flow of Funds* did not provide investment allocations for IRAs. ICI (2019) provided IRA asset allocations in equities, bonds, hybrid funds, and money market funds. In order to determine the equity portion of hybrid funds, the analysis applied the percentage of equities (about 70 percent) reported by Vanguard (2019) in their Target Date Funds.

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APPENDIX

Appendix: Equity Holding Calculations

The calculations start with the March 12, 2020 *Flow of Funds* (FOF) release. The most recent information in that release is 2019:IV data for quarterly tables (see Table A1). The calculations begin with data for 2019:IV, which is closest to the stock market peak of February 19, 2020.

Table A1. *Flow of Funds* (FOF) Tables Used for Estimates in This *Brief*

FOF table	Category	Frequency of data
B.101h	Household sector assets and liabilities	Quarterly
L.118	Aggregate private pension assets	Quarterly
L.118.b	Private defined benefit pension assets	Quarterly
L.118.c	Private defined contribution pension assets	Quarterly
L.119	Federal government retirement funds	Quarterly
L.120	State and local government retirement plans	Quarterly
L.223	Corporate equity holdings	Quarterly
L.227	Pension entitlements	Quarterly

Source: U.S. Board of Governors of the Federal Reserve System (2020).

Table A2 (on the next page) shows how equity holdings for 2019:IV were allocated among pension and non-pension holdings. Some figures were taken directly from the FOF tables; others, specifically defined contribution and defined benefit plans' equity holdings, required more calculations because detailed information was only available on an annual basis. For mutual funds, the assumption was that 80 percent was invested in equities.[6] For IRAs, the assumption was that 70 percent was invested in equities.[7]

Table A2. *Flow of Funds* (FOF) Equity Holdings, 2019:IV, Billions of Dollars

Sector	2019:IV	FOF tables
1. Household sector	$29,086.6	B.101.h
2. Private pension plans	6,352.6	(3 + 6)
3. Defined contribution	4,828.3	(4 + 5)
4. Equities	1,724.4	L.118.c 2019:IV
5. Mutual funds	3,103.9	(L.118.c 2019:IV) * (.8)
6. Defined benefit	1,524.3	(7 + 8)
7. Equities	1,187.2	L.118.b 2019:IV
8. Mutual funds	337.1	(L.118.b 2019:IV) * (.8)
9. State and local government retirement funds	3,438.2	(10 + 11)
10. Equities	2,999.5	L.120 2019:IV
11. Mutual funds	438.7	(L.120 2019:IV) * (.8)
12. Federal government retirement funds	370.4	L.119 2019:IV
13. Other	15,658.6	(14 - 1 - 2 - 9- 12)
14. Total	$54,906.4	L.223 2019:IV

Note: Figures may not add to totals due to rounding.
Source: Authors' estimates from U.S. Board of Governors of the Federal Reserve System (2020).

Once the equity holdings for 2019:IV were allocated, they were increased by about 5 percent to account for the increase in equity prices between December 31, 2019 and the market peak of February 19, 2020 (see Table A3 on the next page).

Table A3. Changes in Equity Holdings from December 31, 2019 to March 23, 2020, Billions of Dollars

Sector	2019:IV	Peak 02/19/2020	3/23/2020
Household sector	$28,661,611.0	$30,097,188.8	$19,577,602.8
Private pension plans	6,352,561.8	6,670,743.4	4,339,181.5
Defined contribution[a]	4,828,299.8	5,070,135.5	3,298,018.9
Equities	1,724,355.0	1,810,723.0	1,177,838.1
Mutual funds	3,103,944.8	3,259,412.5	2,120,180.8
Defined benefit	1,524,262.0	1,600,607.9	1,041,162.6
Equities	1,187,198.0	1,246,661.3	810,927.6
Mutual funds	337,064.0	353,946.6	230,235.0
State and local government retirement funds	3,438,216.4	3,610,426.8	2,348,508.4
Equities	2,999,482.0	3,149,717.4	2,048,826.5
Mutual funds	438,734.4	460,709.3	299,682.0
Federal government retirement funds[b]	370,424.0	388,977.5	253,021.9
Other[c]	16,083,585.8	16,889,166.4	10,986,055.7
Total	$54,906,399.0	$57,656,502.9	$37,504,370.3

[a] IRAs are assumed to be 70 percent invested in equities (see Endnote 6).
[b] The federal government plan holdings are those in the Thrift Savings Plan.
[c] 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, close-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 (2020); Wilshire Associates (2020); ICI (2019); and Vanguard (2019).

The March 23, 2020 values were calculated by reducing the peak equities' values by 35 percent to reflect the decline in the Wilshire 5000.

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