

**Risk Matters: Retirees Exposed to Growing Risks**

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## **I. Introduction**

U.S. households lost trillions of dollars in the first few quarters of the economic and financial crisis of 2007, 2008, and 2009. Total wealth relative to after-tax income had thus fallen to its lowest level since March 1995 by the end of 2008. This sharp drop likely had a severe effect on the retirement income security of millions of U.S. households.

A review of the literature suggests that changes in the retirement landscape in the United States led to an increasing individualization of retirement savings, which meant that retirees may have had to manage economic risks increasingly on their own. First, fewer employers offered retirement savings options to their employees than in the past. Second, if such retirement savings options were available, they increasingly came in the form of individual savings accounts instead of managed pension plans. Workers and retirees therefore had to increasingly navigate the world of financial and economic risks on their own.

There are several risks, to which retirees may have become increasingly exposed. First, there is longevity risk, or the chance that a retiree will outlive his or her savings. Next, there is market risk, or the probability of an underperforming market and thus less than anticipated retirement income. Third, there is the chance of idiosyncratic risk, or the chance of unwise or unlucky investment and savings decisions, which can further reduce expected retirement income. Fourth, there is labor market risk, or the possibility of earnings losses alongside financial market declines. All of these risks may have increased over time.

Risks are an economic cost. Investors, for instance, want to be compensated for greater risk with higher expected rates of return. Viewed it from a slightly different angle, this means that savers must now accumulate more wealth than in the past to achieve the same level of economic security because their risk exposure with their personal wealth has also increased.

Understanding if the risk exposure of U.S. retirees has indeed grown over time is thus of great public policy relevance. In recent decades, U.S. policy has shifted the responsibility for saving for retirement away from employers and onto individuals. If policymakers want to help U.S. household reach the same level of retirement income security that they enjoyed before the crisis, total wealth relative to after tax income may actually have to rise above the levels before the crisis to compensate for the increased risk exposure.

Policymakers, though, can pursue two paths to reverse a large part or even all of the loss in retirement income security from the most recent crisis. First, they could help rebuild wealth largely in its previous forms, while maintaining the previous levels of risk. Second, policymakers could help to reduce the risk exposure of individuals with their retirement savings and thus lessen the need to build up as much wealth as in the past.

The rest of the paper is organized as follows. Section II briefly describes the U.S. retirement system, including a discussion of the potential risk exposure of U.S. retirees, followed by a discussion of the existing literature and aggregate national data on recent wealth trends in Section III. Section IV then offers a discussion of the risk exposure of retirees based on micro survey data through 2007. Finally, I offer a few concluding remarks in section V.

## II. The U.S. Retirement System

Two conclusions can be drawn from a review of the existing evidence on U.S. retirement savings. First, many families fail to save much or at all in dedicated retirement savings vehicles. Instead, other forms of wealth, especially owner occupied homes, largely serve as their retirement savings tools. Second, families are exposed to more risks since there has been a shift from traditional defined benefit pensions to individual savings accounts, also known as defined contribution plans. As a result of both factors, savers today face more risks on their own than they have in the past.

Persistently low coverage of retirement savings at work and the shift from defined benefit to defined contribution plans has had serious implications for the types of risks workers and retirees are exposed to in preparing for and in retirement. These risks include longevity risk, financial market risk, idiosyncratic risk, and labor market risk.<sup>1</sup> All of these risks are especially pronounced in individual savings, either in the form of retirement savings plans or individual savings outside of dedicated retirement wealth. The increased risk exposure poses a cost to savers and thus requires that families accumulate more wealth than they have in the past just to maintain the same level of risk-adjusted protection that they previously had. Studies of retirement adequacy, which typically calculate total wealth levels over time without consideration of the risk exposure to the individual, are therefore increasingly overstating the retirement income security of families. The empirical section further below will thus consider changes in the risk exposure of retirees.

The primary source of retirement income in the United States is Social Security. Just over 91% of Americans aged 65 or older receive Social Security benefits and it is the major source of income for two-thirds of beneficiaries. For more than one-third of beneficiaries, Social Security provides over 90% of their income (SSA, 2008a). Social Security, though, is only intended to offer a basic benefit. For a lifetime earner with average earnings, Social Security benefits will amount to a little over 40% of their pre-retirement earnings (SSA, 2008b). Workers thus must rely heavily on private retirement savings to maintain their standard of living in retirement.

Only about half of all private sector workers, however, participate in a retirement plan at work. In 2007, the most recent year for which data are available, just 45.1% of all private-sector wage and salary workers participated in an employer-sponsored retirement plan, down from slightly more than half of all workers —50.3% — in 2000 (Purcell, 2008c). That is, other forms of wealth play a critical and possibly increasing role in supplying retirement income to America's retirees.

Workers who have access to an employer sponsored retirement savings plan have seen significant changes to their plans, most of which have meant that workers are increasingly exposed to substantial risks. Specifically, over the course of the past three decades, the share of private sector workers who participated in a defined benefit pension plans fell from close to 40%

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<sup>1</sup> Employer default can be a concern with defined benefit plans. It is typically mitigated by explicit or implicit government guarantees and by risk pooling in multiemployer private sector and multiple employer public plans.

to roughly 20%. At the same time, the share of private sector workers who participated in a defined contribution plan almost tripled, from 15% to nearly 45% (EBSA, 2008; BLS, 2008).

An equivalent shift has not occurred in the public sector, where most government employees continue to be covered by a traditional pension and often have access to supplemental defined contribution plans. Approximately 12% of the workforce in the United States was employed by state or local government in 2006. State and local government entities typically provide employees a traditional final pay defined benefit pension plan and a supplemental defined contribution plan where employees can make voluntary contributions out of their own salaries (GAO, 2007b).

Under defined contribution plans, workers implicitly accept certain responsibilities associated with saving for retirement: determining savings amounts over the life-cycle, making decisions about portfolio allocation and rebalancing, timing retirement, managing the drawdown of assets in retirement, et cetera. In doing so, they also accept the consequences of these decisions, thus they may be more exposed to a range of risks in preparing for retirement. Only the amounts of employer and employee contributions are defined under the plan, although there is no requirement that either employers or employees contribute to an existing plan. Contributions are invested, and at retirement, the amount available to the retiree will depend on how well the investments performed over their career. Typically, decisions about how funds in the account are invested are left to the employee. At retirement, employees have the option to take their account balance as a lump-sum or to take periodic distributions from the account. Defined contribution plans are not legally bound to provide employees with the option to receive benefits as a lifetime annuity. Although in theory plan sponsors could provide lifetime annuities in defined contribution plans, in practice they rarely do (Perun, 2007). Employees must therefore typically purchase an individual annuity from an insurance provider if they want to eliminate longevity risk, adding costs to their retirement savings that did not exist before.

In comparison, traditional defined benefit pensions in both the private and public sector promise a specific benefit in retirement, generally in the form of an annuity. Eligible employees automatically earn benefits in a defined benefit plan. Benefits are determined by length of service, age, and employee earnings, but typically not by investment performance.<sup>2</sup> To secure promised benefits, defined benefit plans have to be pre-funded. In particular, employers are required to establish and fund a dedicated trust to pay pension benefits, both of which are funded by employer contributions. The employer bears the downside risk if the plan has too little money to pay promised benefits to employees and requires additional contributions. The employer also bears the upside risk of being able to reduce contributions to the plan if investment returns are better than expected.

As this discussion makes clear, the shift from defined benefit to defined contribution plans, especially in the private sector, has meant that employees are increasingly exposed to a number of risks. These include longevity, market, idiosyncratic, and labor market risks.

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<sup>2</sup> A slight wrinkle to this is that strong investment performance can result in pension plans having more assets than they need to cover current and expected future benefits. This can and has often translated into benefit improvements. The opposite is harder to accomplish since accrued benefits are generally legally protected from cuts, even if a pension plan's assets fall short of the current and promised future benefit payments for extended periods of time.

### *Longevity risk*

Because a retiree cannot know with certainty exactly how long she will live, longevity risk is significant for individual savers. While it is quite simple for a retiree to determine her life expectancy at retirement by consulting an actuary's mortality tables, this represents the *average* expected lifespan for a large number of individuals. If a retiree plans the use of her retirement fund around living only to the average life expectancy, she faces the risk that her actual lifespan is longer and that she may outlive her savings. An efficient way to insure individuals against longevity risk is through lifetime annuities.<sup>3</sup>

Purchasing an individual annuity, though, can be costly. The cost of a lifetime annuity averages approximately five percent of one's total accumulated savings, with smaller account balances accruing larger costs (CBO, 2004; Poterba and Warshawsky, 1999; Geanakoplos, Mitchell and Zeldes, 1999). Retail annuity products have also been criticized for being overly complex and difficult for consumers to understand (Brown and Warshawsky, 2001; Perun, 2007).

Most retirees in the United States therefore avoid purchasing annuities and manage the withdrawal of their retirement savings on their own. Large numbers of households, however, seem to be drawing down their retirement savings too quickly, raising the risk that they will run through their savings before they die (Copeland, 2007). At the other extreme, there is evidence that some retirees may be holding on to defined contribution plan assets too tightly, and experiencing an unnecessarily reduced standard of living as a result (Copeland, 2007; Love, Smith, and McNair, 2007).

### *Market risks*

Individual savings also expose savers to market risks. In defined contribution plans and other individual savings, workers and retirees bear the risk of fluctuations in asset prices. To insure against poor market performance, a saver could purchase, for example, a minimum investment guarantee for financial assets. To guarantee the rate of return on bonds with a balanced portfolio (50% stocks and 50% bonds) over 40 years, though, investors would have to spend 16.1% of their contributions to their retirement account on that guarantee (Lachance and Mitchell, 2003a, 2003b). This comparatively costly insurance still provides only limited protection for individuals and leaves investors exposed to large market fluctuations over the course of a lifetime.

Another, limited protection against market risk is asset diversification. Many retirees, though, rely heavily on their homes as source of retirement income and the sharp rise in home values after 2000 often translated into less diversification of total household assets (Weller and Sabatini, 2008). Consequently, retiree households may have been heavily exposed to both financial market and housing market risks prior to the crisis.

### *Idiosyncratic risks*

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<sup>3</sup> By one estimate, offering a lifetime benefit to a large group of individuals can cost about 25% less than having individuals self insure against longevity risks (Almeida and Forna, 2008).

Idiosyncratic risks result from unlucky or unwise investment decisions. A rich collection of literature in the field of behavioral economics has developed over the past decade on the impact of employee responsibility and discretion of savings in defined contribution plans (Benartzi and Thaler, 2007). The research indicates that defined contribution plans require employees to “do too much.” They have to take action to participate and then figure out how much to save, how to invest, and how to change their investments over time. They must avoid the temptation to withdraw savings before retirement. And then, at retirement, they must figure out how to make their savings last. With each decision, there is the chance to make the wrong choice.

In reality, employees seem to fall short with each of these tasks. Workers generally fail to save enough, make poor asset allocation and investment decisions, withdraw savings before retirement, and are reluctant to purchase annuities with the retirement wealth they do manage to accumulate, even when doing so could enhance their well-being (Benartzi and Thaler, 2007; Englehart, 1999; Hurd and Panis, 2006; Mitchell and Utkus, 2004; Munnell and Sunden, 2004).

A clear reflection of this problem is the lack of diversification of assets. To ensure optimal diversification, there should be minimal correlation between the types of assets. If an outside factor causes a decline in one type of asset, investments that are uncorrelated should not decline at the same rate or time (Fabozzi, Gupta, and Markowitz, 2003).

Research in behavioral economics has shown that many 401(k) participants do not diversify their portfolios to achieve an optimal risk profile. Instead, many participants use “naïve diversification” when making decisions about what type of assets to invest in. Benartzi and Thaler (2007) and Huberman and Jiang (2006) conclude that participants often divide their assets evenly across all available options. That is, more choices of equity funds, for instance, can result in a greater allocation towards equities, all else equal. Alternatively, if there are many available investment options, participants seem to choose one item from each category and then evenly diversify across categories (Benartzi and Thaler, 2007). In fact, if the range of available options becomes too confusing, participants in 401(k) plans may reduce their equity exposure (Iyengar and Kamenica, 2006). Finally, 401(k) participants tend to hold a relatively high share of their assets in their employer’s stock, often because they feel that they know the company (Benartzi and Thaler, 2007). Holden et al. (2008) conclude that 11% of participants’ account balances were invested in employer stock in 2007. Similarly, Fidelity Investments (2008) reports that 10% of 401(k) account balances in the third quarter of 2008 were invested in employer stocks.

This risk exposure of savers may be further exacerbated by the fact that many defined contribution plan participants only infrequently rebalance their portfolios. Researchers at Vanguard, for instance, find that only a minority of defined contribution plan participants rebalanced their portfolio during the IT stock boom of the late 1990s, when large price movements should have been accompanied by regular portfolio rebalancing (Mitchell, Mottola, and Utkus, 2005). Similarly, researchers at the Investment Company Institute find that most defined contribution plan participants did not change the allocation of their assets or their contributions during the stock market decline in 2008 (Reid and Holden, 2008).

By contrast, defined benefit plans are the ultimate “auto-pilot” plan. As long as employees are eligible for the plan, they earn benefits in it. The employer funds the plan and sets up a trust where assets are invested by professionals and benefits are ultimately paid out. Because investing

of defined benefit plan assets is overseen by professionals, rather than it being left to individuals as is the case in defined contribution plans, asset allocation patterns tend to be more stable and more likely to be optimal (Weller and Wenger, 2009a).

Another aspect of idiosyncratic risk exposure that has gained attention in recent years is the fact that many savers are heavily leveraged. Leverage magnifies the effect of changes in price of the original investment. If the changes in prices are positive, leverage can be useful as a way to increase cash flow. If price changes, though, are negative, leverage can turn a bane by eliminating household wealth very quickly. This is especially problematic if leverage increases sharply during an asset boom, when the chance of a sharp downward correction continuously increases, as was the case in the past few years. Leverage is less of an issue in dedicated retirement savings because participants cannot borrow from defined benefit plans and they can only borrow to a limited degree from defined contribution plans (Weller and Wenger, 2008). It is, however, an issue with other forms of wealth, especially housing wealth (Weller and Sabatini, 2008).

### *Labor market risk*

Increasingly, U.S. retirees supplement their incomes by working part-time or having a working spouse. Purcell (2008c), for instance, reports that the labor force participation for workers over 65 began to rise in 1985. By 2006, the labor force participation rate for men over 65 had risen to 20%, up from 17% in 1995 (Purcell, 2008c), in part because fewer workers had access to defined benefit pensions and thus were exposed to more risks. In a similar vein, Munnell et al. (2006) estimate that by 2030, workers will have to work an additional three and a half years to maintain their retirement income compared to workers compared to today due to higher Medicare premiums, higher taxes, and lower Social Security benefits. And, Cahill, Giandrea, and Quinn (2006) argue that a lack of retiree health insurance keeps many older workers in the workforce. That is, increased risk exposure in retirement savings has contributed to rising labor force participation rates among older workers. Similarly, in the current crisis, as people's wealth has decreased, more and more older workers expect to stay in the labor force longer than is currently the case (Helman et al., 2009).

Greater risk exposure, though, is not the only reason older workers are working longer. The labor force participation rates of older workers have increased in part because disincentives under the U.S. tax code to stay in the labor force were reduced in the 1990s (Gustman and Steinmeier, 2009). Additionally health improvements, fewer physically demanding jobs (Mermin, Johnson, and Murphy, 2006), and more employment opportunities for older workers (Maestas, 2005) have also contributed to the increase in older workers' participation in the labor force.

Although having wage income in retirement lessens the need to save as much for retirement, it exposes workers to another risk, commonly referred to as labor market risk (Weller and Wenger, 2009b). A worker's earnings path has direct consequences on their relative retirement savings performance. Since earnings fluctuate with financial market returns — both reflect the performance of an economy — earnings will be lower when financial market prices are lower and many buying opportunities exist. In essence, a worker could pay “too much” for financial assets over the course of a lifetime due to short-term and long-term labor market risks. These

higher purchasing prices for financial assets as a result of coincident changes in a worker's purchasing power due to labor market changes would thus reduce a worker's rate of return over the course of a lifetime relative to a situation without labor market risk. This problem is especially pronounced in individual retirement savings, where savers can decide when and how much to save. As more retirees now rely on earnings and on their assets in defined contribution plans, their exposure to labor market risks may have increased.

### **III. Aggregate Risk Exposure in the Crisis**

The financial and economic crisis is still very recent, so comprehensive data on its impact on retirement income security is relatively sparse. Thus, this section summarizes first the few existing studies on the impact of the crisis on retirement savings and then provides a discussion of wealth and labor market trends from two comprehensive national data sources. The data clearly show that wealth losses have been greater in defined contribution accounts than in defined benefit plans, which suggests that the inherent risks in individual accounts are greater than in managed, pooled assets, such as defined benefit plans. The data also suggest that older workers may have been exposed to substantial labor market risk during the recent crisis.

#### *Summary of findings on retirement wealth during the crisis*

A few researchers have documented the decline in retirement wealth during the crisis. Researchers at Center for Retirement Research at Boston College conclude that during the year following October 9, 2007 – identified as the stock market peak – the value of equities in retirement plans fell by an estimated \$4 trillion (Munnell, Aubry, and Muldoon, 2008).

These equity losses translated into sharp declines in account balances in individual accounts. Just 60.9% of families with heads of household between the ages of 55 and 64 had an individual retirement account in 2007 and their median balance was \$98,000 (Bucks et al., 2009). The average account balances for workers between the ages of 35 and 44 who had been in their current job for at least ten years declined by more than 20% from January 01, 2008 to January 20, 2009 (EBRI, 2009). For workers who had been in their current job for 20 to 29 years, losses exceeded 25% during that same period.

Coupled with losses in the housing market, many American households may ultimately have to rely more heavily on Social Security as their primary source for retirement income. As previously discussed, a large share of American families has no retirement savings outside of Social Security by the time they near retirement and thus rely heavily on their homes to provide income in retirement. In 2007, 81% of families nearing retirement owned their home with a median home equity of \$210,000 (Bucks et al., 2009).

The flipside of this reliance on home equity as a source of retirement income is that the concurrent decline in the housing and the stock markets quickly depleted workers' retirement savings. Baker and Rosnick (2008), for example, conclude that families, especially those nearing retirement, will likely have little wealth outside of Social Security due to large asset price losses in individual accounts and the housing market.

Losses also occurred in private-sector defined benefit plans, although these plans generally seemed to be better equipped to handle the consequences of the crisis due to professional risk management and a longer time horizon. The funding ratio – the ratio of assets to liabilities – of private-sector defined benefit plans had fallen to an estimated 85% in October 2008, down from 98% when the financial crisis began a year earlier. This means that these plans had “more than enough money to meet their immediate benefit commitments,” but also that plan sponsors will have to increase their contributions to their pension plans to cover the difference between assets and liabilities (Munnell, Aubry, and Muldoon, 2008).

Defined benefit pension plans for state and local government employees equally appear to have experienced a sharp decline in the average funding ratio. Munnell, Aubry, and Muldoon (2008) document that experts typically consider a funding ratio of 80% of assets to pension plan liabilities for public sector plans to be adequate. They estimate an average funding ratio of 87% of assets to liabilities for state and local government pension plans in 2007, but that had dropped to an estimated 65% by October 9, 2008. Munnell, Aubry, and Muldoon (2008) also forecast that if equity values return to their peak level reached in 2007 by the end of 2010, assets of public pension plans will average 75% of liabilities at that time.

*Summary data on retirement wealth and labor force participation of older workers in the crisis*

Data from the Federal Reserve’s Flow of Funds Accounts (BOG, 2009) also show relatively large declines in defined contribution plans during the first year of the crisis. From 2007 to 2008, total retirement wealth in private and public sector pension plans and retirement savings plans dropped by \$2.8 trillion (in 2008 dollars). Holding gains and losses – changes in asset values minus contributions – relative to initial asset values tend to be higher for traditional pension plans than for defined contribution plans. Holding gains are typically used as an approximation of rates of return for these data. In 2008, holding losses for retirement savings plans were equal to 28.7% relative to the balance at the end of 2007. In comparison, relative to holding losses for traditional pension plans were equal to 24.2% relative to the balance at the .<sup>4</sup>

This was not a one-time occurrence. Over the entire duration of the last business cycle – from 2000 to 2007 – the average holding gain for traditional private sector pension plans came to 4.0%. The same average for retirement savings plans came to less than half of this with 1.6%.

The same data source also shows that during the previous business cycle, family wealth became increasingly less diversified and increasingly more leveraged. In particular, households were increasingly less diversified across all of their assets at the time of the financial crisis, making them even more vulnerable to drops in housing and stock prices (Weller and Lynch, 2009). The values of homes accounted for a large share of total assets, while stocks made up a large share of retirement accounts. Historically, real estate and corporate equities made up 43% of total assets on average. However by 2001, real estate and corporate equities made up more than 50% of total assets on average. Furthermore, the rise in leverage can be shown by a near-constant decline in home equity relative to home values after 2002 (Weller and Lynch, 2009). By December 2008, home equity was roughly 43% of the total value of homes, a historic low.

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<sup>4</sup> All calculations based on data from BOG (2009).

Finally, the labor force participation rate of older workers increased more in the first twelve months of the most recent recession than during the first twelve months of any recession since the early 1960s, as calculations based on data from the Bureau of Labor Statistics' Current Population Survey (BLS, 2009) show. This masks the fact, though, that the employed share of the population 65 and older started to decline in October 2008 – ten months into the recession. That is, older workers were not immune from the impact of the recession. This is further supported by the fact that the unemployment rate of the population 65 and older reached a historic high with 6.8% in February 2009 after standing at only 4.2% in October 2008, when the employment to population rate started to decline (BLS, 2009).

#### **IV. The Risk Exposure of U.S. Retirees Over Time**

This section details several risk measures of U.S. households using the Federal Reserve's triennial Survey of Consumer Finances (SCF). The SCF provides detailed information on households' assets and debt. Consistent data are available from 1989 to 2007, although some data are only available from 2001 on. The last available data year is 2007, which marks the last full year before the economic and financial crisis contributed to sharp wealth losses. The data presented here thus paint a picture of the risk exposure of retirees before the crisis began.

The measures of risk exposure that I use here mirror the previous discussion. In particular, to capture families' exposure to longevity risk, I look at how much income families received in the form of annuities from pensions and from Social Security. I report both the real amount of annuities and the share of annuities out of total income. Less annuity income translates into greater longevity risk exposure. Moreover, I calculate two indicator variables for longevity risk. I determine that a household is not exposed to risk if its annuity income is greater than the poverty line or greater than twice the poverty line – a common basic living standards measure.

Second, household can be adversely affected by market fluctuations. The effect of these fluctuations can be exacerbated by individual actions, or what was discussed as idiosyncratic risk in the previous section. When considering household wealth data, market risk and idiosyncratic risk are indistinguishable. I thus consider a range of measures that capture market and idiosyncratic risk exposure. These measures include diversification, leverage, debt, and capital income. In particular, I consider two indicators of household asset diversification: the share of owner occupied real estate out of total assets and the share of directly and indirectly held equities out of total financial assets. Indirectly held equities refer to corporate equity owned by a household through retirement plans and other managed assets. Furthermore, I report the leverage of homeowners, defined here as the share of home equity relative to total home values, and total indebtedness of retirees. And finally, I calculate real capital income and the share of capital income out of total income for retirees. Capital income includes dividends, interest payments, and realized capital gains. Less diversification, more leverage and debt, and more capital income expose retirees to more market and idiosyncratic risks.

Third, I capture labor market risk by considering trends in labor market income. As before, I report both real wage income and wage income as share of total income.

All data are reported for retirees over the age of 55. Additional divisions by age between near-elderly – between the ages of 55 and 64 – and elderly – 65 and older – show that the results are robust and are not reported separately here.

### *Longevity risk*

Table 1 summarizes the data on annuitized forms of retirement income. This includes income from pensions and from Social Security. Consistent data on pensions are only available for 2001, 2004, 2007, while data on the combined income from pensions and Social Security are available for all years. In general, there are four different measures presented for each indicator of secure retirement income: the mean and the median real amount and the mean and median share out of total income.

The exposure to longevity risk was substantial for America's retirees in 2007. Less than half of all retirees – 44.7% – had annuitized income from pensions and Social Security that was above the poverty line in 2007. And, only slightly more than one-fifth – 20.4% – had annuitized incomes from pensions and Social Security that were greater than twice the poverty line – a common standard for living standards adequacy. Furthermore, Social Security plays a larger role in reducing longevity risks for retirees than do pensions. Only 56% of retirees had some pension income, while more than 99% of retirees received Social Security retirement benefits.

There also was a consistent decline in the reliance of retirees on secure forms of income from 2004 to 2007, as Table 1 shows. The median and mean real amounts of pension income and total annuitized income for the respective populations were generally lower in 2007 than in 2004. Similarly, the shares of total income that retirees received either as pension or total annuitized income declined after 2004, which seemed to erode the retirement security more for middle-income households than for low-income households. In particular, the share of households that had annuitized income above the poverty threshold increased from 2004 to 2007, while the share of families with annuitized incomes above twice the poverty threshold declined during the same period.

These decreases, though, followed sharp gains after 2001 (Table 1). These gains were the result of several factors after 2001. In particular, retirees benefited from higher Social Security benefits, as a result of an extraordinarily strong labor market in the late 1990s, already enacted Social Security benefit cuts impacted only a very small group of retirees, and retirees gain from solid pension benefits due to an extended stock market run (Weller and Wolff, 2005). The overall improvement in the share of annuity income from 2001 to 2004 and the decline thereafter were hence no accidents. This also implies that the especially weak labor market after 2001, already enacted Social Security benefit cuts for retirees turning 60 in 2000 and thereafter, and the sharp wealth losses in 2001 and then again in 2007 and 2008 will likely prohibit strong growth of annuitized incomes in the future.

**Table 1**  
**Amounts and Income Shares of Annuitized Retiree Income, 1989 to 2007**

	1989	1992	1995	1998	2001	2004	2007
Share of households with pension income	n.a.	n.a.	n.a.	n.a.	49.4%	56.0%	56.1%
Mean real pension income for households with pension income	n.a.	n.a.	n.a.	n.a.	\$18,578	\$22,474	\$19,188
Median real pension income for households with pension income	n.a.	n.a.	n.a.	n.a.	\$12,351	\$14,497	\$13,200
Mean real annuitized income for households with annuitized income	\$20,790	\$19,832	\$21,155	\$22,802	\$22,866	\$28,181	\$25,016
Median real annuitized income for households with annuitized income	\$17,859	\$15,918	\$17,574	\$17,795	\$17,544	\$20,867	\$20,000
Mean share of pension income out of total income for households with pension income	n.a.	n.a.	n.a.	n.a.	39.6%	41.5%	40.1%
Median share of pension income out of total income for households with pension income	n.a.	n.a.	n.a.	n.a.	34.0%	38.2%	34.0%
Mean share of annuitized income out of total income for households with annuitized income	65.2%	69.4%	68.0%	68.5%	68.4%	73.7%	72.8%
Median share of annuitized income out of total income for households with annuitized income	73.8%	81.3%	76.3%	77.5%	77.8%	85.0%	83.2%
Annuitized income exceeds twice the poverty line, all households	13.6%	13.0%	13.6%	16.9%	13.3%	23.0%	20.4%
Annuitized income exceeds the poverty line, all households	33.9%	36.0%	32.3%	37.3%	37.1%	43.4%	44.7%

Notes: Due to the survey design, shares of income can theoretically be greater than 100%, but are capped at 100% for calculations presented here. The mean of the share of income is the population-weighted mean, but not the income-weighted mean. Separate data for pensions are only available for 2001, 2004, and 2007. "n.a." indicates that data are not available.

## *Diversification*

Table 2 presents data on the diversification of retirees' assets. In particular, the table summarizes the shares of owner occupied real estate out of total assets and the share of directly and indirectly held equity out of total financial assets.

The figures show that more retirees were exposed to equity market fluctuations in 2007 than was the case before, but that the typical retiree household that held any equity was less vulnerable to stock market fluctuations than in the past. The share of retiree households, for instance, with direct or indirect equity holdings was 46.1% – the highest on record, going back to 1989. On the other hand, the share of equities out of total financial assets was substantially lower in 2007 than at any point since 1992 for the average share and since 1995 for the median share (Table 2).<sup>5</sup>

In comparison, the risk exposure in the real estate market was substantially greater for retiree households than in the equity market. After all, the vast majority of retirees – 82.6% in 2007 – owned their own home. And, homes constituted a larger share of total assets than ever before. In 2007, the median share of home values out of total retiree assets was 66.7%, higher than at any point since 1989. Sharp price declines in the U.S. residential real estate market thus likely reduced retiree wealth to a substantial degree after 2008. This was even more so the case since a growing share of retirees owed money on an outstanding mortgage over time and since leverage only gradually declined during the years of the real estate boom, as I discuss further below.

Retiree households were thus susceptible to price declines in asset markets, more so in the residential real estate market than in the corporate equity market.

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<sup>5</sup> To some degree, this reflects the rising average age of retiree households from 72.2 years in 1989 to 74.6 years in 2007. Data on retiree household ages are not shown here. It is also possible that this may reflect some price declines as the data are collected between May and December of each survey year. However, the fact that home values as share of total assets did not decline during the same period indicates that price movements played a subordinated role in determining retirees' asset allocations.

**Table 2**  
**Asset Diversification of Retiree Households, 1989 to 2007**

	1989	1992	1995	1998	2001	2004	2007
Share of households with direct or indirect equity holdings	30.5	31.3	33.9	38.0	39.5	41.3	46.1
Share of households who are homeowners	80.3	79.9	76.5	81.0	81.5	85.2	82.6
Mean share of equities out of financial assets for households with equity investments	31.6	32.4	42.4	45.0	53.1	45.5	42.0
Median share of equities out of financial assets for households with equity investments	27.4	26.0	34.5	42.0	52.1	45.3	39.5
Mean share of home values out of total assets for homeowners	56.9	61.8	60.3	57.3	57.9	62.2	63.2
Median share of home values out of total assets for homeowners	58.2	64.3	63.0	56.7	58.1	64.0	66.7

Notes: All figures are in percent.

### *Leverage and debt*

Table 3 presents data on leverage and household debt. The figures show that the share of retirees with debt in 2007 was relatively high in historical comparison as were the levels of debt they held. Almost half of all retirees – 48.4% – owed any debt in 2007, slightly less than the 48.5% recorded in 2004 and more than one-fourth of retired homeowners, 27.1%, owed money on a mortgage, which was the largest such share for any data year since 1989. Furthermore, the median debt to income ratio in 2007 was the largest since 1989, while the average debt to income ratio and the median and mean ratio of mortgages to income were the second highest, slightly below their peak in 2004. The end of the lending boom in 2007 helped to reduce the indebtedness of retired households, although even with the declines in debt relative to income after 2004, the total indebtedness of retirees was still high by historical standards.

The indebtedness of retirees also meant that retired homeowners, for instance, remained comparatively heavily leveraged, despite a boom in home prices during the 2000s. In 2007, the mean ratio of home equity to home values was 67.9% and the median ratio was 72.1%. In other words, close to one third of the homes owned by retired homeowners with a mortgage were still owned by a bank. These median and mean ratios of home equity to home values in 2007 were slightly higher than the same ratios for 1998, 2001, and 2004, but well below the ratios of the years from 1989 to 1995. The unprecedented home price boom of the 2000s thus helped to

reduce the leverage of retired homeowners somewhat, but it also meant that more homeowners were in debt than in the past and that mortgage growth almost kept pace with home price growth. The result of this persistently high leverage was that homeowners stood to lose a larger share of their home equity than would have been the case with less leverage (Weller and Sabatini, 2008).

**Table 3**  
**Indebtedness and Leverage of Retiree Households**

	1989	1992	1995	1998	2001	2004	2007
Households with debt	36.4	42.7	42.4	38.9	41.8	48.5	48.4
Homeowners with a mortgage	15.7	16.8	18.4	18.4	18.9	25.1	27.3
Average debt to income for households with debt	53.2	68.9	171.5	104.7	83.0	199.5	140.1
Median debt to income for households with debt	27.4	23.0	27.7	46.0	37.5	50.8	65.6
Average mortgage to income for homeowners with a mortgage	67.4	99.6	172.0	144.6	127.2	223.5	171.2
Median mortgage to income for homeowners with a mortgage	42.6	68.9	83.7	103.1	87.2	126.9	120.2
Mean leverage of homeowners with a mortgage	81.8	73.5	70.0	65.7	65.8	66.3	67.9
Median leverage of homeowners with a mortgage	86.8	78.5	77.9	72.9	70.5	70.0	72.1

Notes: All figures are in percent. Leverage can theoretically be negative, but is capped at zero percent for calculations here. The mean of leverage is the population-weighted mean, but not the housing value weighted mean.

### *Capital income*

Table 4 summarizes the data on capital income of retirees. Interestingly, fewer retirees report having capital income in 2007 than had been the case in the past. The share of retirees with capital income was 42.2% in 2007, slightly higher than the 39.4% for 2004, but well below the shares of earlier years (Table 4).

Capital income seems to have become more concentrated over time, in line with greater wealth inequality. In particular, the average real amount of capital income is typically substantially larger than the median amount. Also, the average real amount of capital income has grown over time, while the median amount has fallen. This divergence between the average and the median typically indicates increasing inequality.

The data on capital income suggests that there has been a declining source of risk for the typical household, even though total financial wealth has grown for retirees. This may reflect the fact that many retirees continue to accumulate wealth and draw down less wealth than is necessary to maintain their consumption levels as was discussed in the previous section.

Furthermore, a declining reliance on capital income through 2007 is consistent with the fact that retirees had enjoyed growing income support from annuitized income. If annuitized income, though, becomes a less important source of retiree income due to the factors previously mentioned, the question arises whether retirees will be able to continue their declining exposure to potential risks included in capital income.

**Table 4**  
**Capital Income of Retirees, 1989 to 2007**

	1989	1992	1995	1998	2001	2004	2007
Household has capital income	65.6%	57.8%	57.3%	49.6%	49.5%	39.4%	42.2%
Mean real amount of capital income	\$19,399	\$13,226	\$19,386	\$22,254	\$22,721	\$21,869	\$30,587
Median real amount of capital income	\$4,789	\$3,184	\$2,569	\$3,813	\$5,263	\$3,295	\$2,600
Mean share of capital income out of total income	21.0%	20.1%	17.6%	18.9%	19.3%	16.1%	17.4%
Median share of capital income out of total income	12.8%	11.4%	7.2%	9.9%	11.7%	6.6%	6.5%

Notes: All figures only for household with capital income. Due to the survey design, capital income can exceed 100% of the total income, but the share is capped at 100% for these calculations. The mean of the share of income is the population-weighted mean, but not the income-weighted mean.

### *Labor income*

Another way retirees may have managed to avoid exposure to capital market fluctuations is through increased wage earnings. Table 5 summarizes the relevant data on labor income. The figures show that there is some exposure to labor market risks for retirees, although it seems to have declined over time, rather than increased. Typically, less than one-fifth of retirees report having wage earnings. For those retirees who report having any wage earnings, wages amount to more than 40% of their income. And, the share of income generated by wage earnings seems to depend on the strength of the labor market. In particular, the share of wage earnings increased during the labor market boom years of 1995 and 1998, fell during the recession of 2001, and continued to fall during the weak labor market recovery after 2001. By 2007, wages as a share of retiree income for those retirees with wage earnings had consequently reached the lowest level since 1989, with an average share of 44.7% and a median share of 40.8% (Table 5).

**Table 5**  
**Wage Income of Retirees, 1989 to 2007**

	1989	1992	1995	1998	2001	2004	2007
Household has wage income	19.1%	17.7%	19.6%	17.1%	16.3%	18.1%	17.1%
Average real wage income	\$32,271	\$37,409	\$37,960	\$41,078	\$52,269	\$46,034	\$50,499
Median real wage income	\$21,106	\$23,153	\$17,574	\$26,692	\$28,070	\$21,966	\$24,000
Average share of wage income to total income	47.4%	50.0%	52.5%	53.0%	49.8%	44.6%	44.7%
Median share of wage income to total income	44.3%	48.8%	48.8%	58.2%	49.5%	44.0%	40.8%

Notes: All figures only for household with wage income. Due to the survey design, wage income can exceed 100% of the total income, but the share is capped at 100% for these calculations. The mean of the share of income is the population-weighted mean, but not the income-weighted mean.

## V. Conclusion

The recent economic and financial crisis led to a massive loss of household wealth in the United States. The onslaught of declining house and stock prices and rising unemployment will likely leave many retirees in much worse financial shape than previous generations of retirees.

Data collected before the onset of the recent crisis in 2007 show that U.S. retirees were already exposed to a number of risks, some of which ultimately materialized. In particular, U.S. retirees were exposed to more asset market fluctuations in 2007, due to comparatively low levels of diversification, especially outside of residential real estate, along with relatively high levels of household debt and homeowners' leverage. Declines in home and stock prices are thus able to damage retiree wealth more than they could in the past. Also, retirees had already felt the impact of a weak labor market after the last recession, which meant that a relatively modest share of retirees reported any wage earnings and that wages amounted to comparatively low shares of total income for these retirees in 2007. In all likelihood, the sharp labor market recession of 2008 and 2009 further eroded access to wage income for U.S. retirees.

On the plus side, U.S. retirees still had a comparatively good buffer from annuitized income from pensions and Social Security in 2007. There are, however, good reasons to believe that the decline in the relative importance of these secure retiree income sources that occurred between 2004 and 2007 will continue in the future. In particular, pension plans have become underfunded, which could lead employers to reduce benefits for new hires, and the weak labor market of the past years will likely translate into fewer Social Security benefits in addition to the benefit cuts that are already scheduled by law.

The combination of these trends implies that U.S. retirees will increasingly have to rely on capital income as a source of retirement income. Over time, retirees had actually relied less and less on capital income, but the onset of several adverse economic trends will likely mean that more and more retirees will turn to capital income to supplement their retirement incomes from other, less readily available sources. Retirees may consequently have to dip into their individual savings accounts exactly at a time when asset values have been hit hard because other sources of income, such as pensions, Social Security, and wages, are also less than they were in the past. The effect of this is that secure income is replaced with volatile income, translating the risk exposure in household wealth into risky retiree income that can fluctuate more than in the past.

Public policy will thus have to consider two separate, yet connected goals. First, public policy needs to help retirees rebuild their economic security by improving their personal wealth, especially since other sources of retirement income security have been gradually declining. And second, public policy needs to reduce the risk exposures that are currently included in individual retirement savings. Individuals are increasingly exposed to market, idiosyncratic, longevity, and labor market risks, which is a tall order, but also offers several entry ways for public policy. If public policy can reduce the risk exposure of individuals, it will require less wealth than otherwise would be the case to achieve the same level of economic security for retirees. That is, achieving the second goal will make it easier to reach the first goal. Retirement risks can be reduced by encouraging more diversification and less leverage in individual accounts, increasing the annuitization of retirement savings, and by creating more stable labor market options for older workers, among other policy steps.

## References

- Almeida, B. & F. Forna. 2008. "A Better Bang for the Buck: The Economic Efficiencies of Defined Benefit Pension Plans." Washington DC: National Institute on Retirement Security.
- Baker, D. & D. Rosnick. 2008. "The Housing Crash and Retirement Prospects of Late Baby Boomers." Washington, DC: Center for Economic and Policy Research.
- Benartzi, S. & R. Thaler. 2007. "Heuristics and Biases in Retirement Savings Behavior." *Journal of Economic Perspectives* Vol. 21 No. 3: 81-104.
- Board of Governors, Federal Reserve System. 2008. "Release Z.1 Flow of Funds Accounts of the United States." Washington, DC: BOG.
- Brady, P. & S. Sigrist. 2008. "Who Gets Retirement Plans and Why." *Investment Company Institute Perspective 14*, No. 2, Washington, DC: Investment Company Institute.
- Brown, J. & M. Warshawsky. 2001. "Longevity-Insured Retirement Distributions from Pension Plans: Market and Regulatory Issues." *NBER Working Paper* No. 8064. Cambridge, MA: National Bureau of Economic Research.
- Bucks, B., A. Kennickell, T. Mach, & K. Moore. 2009. "Changes in U.S. Family Finances from 2004 to 2007: Evidence from the Survey of Consumer Finances." *Federal Reserve Bulletin* February: A1-A55.
- Bureau of Labor Statistics. 2009. "Current Population Survey." Washington, DC: BLS.
- Cahill, K. E., M. D. Giandrea, & J. F. Quinn. 2006. "Retirement Patterns From Career Employment." *The Gerontologist* Vol. 46 No. 40: 514-523 (2006)
- Congressional Budget Office. 2004. "Administrative Costs of Private Accounts in Social Security." Washington, D.C.: CBO.
- Copeland, C. 2007. "How Are New Retirees Doing Financially in Retirement?" *EBRI Issue Brief* No. 302. Washington DC: Employee Benefit Research Institute.
- Employee Benefit Research Institute. 2009. "401(k) Balances and Changes Due to Market Volatility – Data to January 21, 2009". Washington, DC: EBRI.
- Employee Benefit Security Administration, 2008, Private Pension Bulletin, Abstract of Form 5500, Washington, DC: EBSA.
- Englehart, G. 1999. "Have 401(k)s Raised Household Saving? Evidence from the Health and Retirement Study." Aging Studies Program Working Paper No. 14. Syracuse, NY: Syracuse University.

Fabozzi, F. J., F. Gupta, & H. M. Markowitz. 2003. "The Legacy of Modern Portfolio Theory." *CFA Digest*.

Fidelity Investments. 2009. "Fidelity Reports on 2008 Trends in 401(k) Plans". Boston.

Geanakoplos, J., O. Mitchell, & S. Zeldes. 1999. "Social Security Money's Worth." In O. Mitchell, R. Myers & H. Young, Eds., *Prospects for Social Security Reform*. Philadelphia, PA: University of Pennsylvania Press.

Government Accountability Office. 2007b. "State and Local Government Retiree Benefits: Current Status of Benefit Structures, Protections, and Fiscal Outlook for Funding Future Costs." GAO-07-1156, Washington, DC: GAO.

Gustman, A.L. & T. L. Steinmeier. 2009. "How Changes in Social Security Affect Recent Retirement Trends." *Research on Aging*. Mar 2009, Vol. 31 Issue 2, p261-290.

Helman, R., Matthew Greenwald & Associates, C. Copeland, & J. VanDerhei. 2009. "The 2009 Retirement Confidence Survey: Economy Drives Confidence to Record Lows; Many Looking to Work Longer." Washington, DC: Employee Benefit Research Institute.

Holden, S., VanDerhei, J., Alonso, L, and Copeland, C. 2008. "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2007." *Research Perspective* Vol. 14, No. 3 Washington: Investment Company Institute

Huberman, G. & W. Jiang. 2006. "Offering versus Choice in 401(K) Plans: Equity Exposure and Number of Funds." *Journal of Finance* 61.2, 763 – 801.

Hurd, M. & C. Panis. 2006. "The Choice to Cash Out Pension Rights at Job Change or Retirement." *Journal of Public Economics* Vol. 90, No. 12: 2213-2227.

Iyengar, S., & Kamenica, E. 2006. "Choice Overload and Simplicity Seeking," Working paper. New York, NY: Columbia University.

Lachance, M. & O. Mitchell. 2003a. "Guaranteeing Individual Accounts." In O. Mitchell and K. Smetters, Eds. *The Pension Challenge: Risk Transfers and Retirement Income Security*. New York, NY: Oxford University Press, pp. 159-186.

Lachance, M. & O. Mitchell. 2003b. "Understanding Individual Account Guarantees." *American Economic Review* Vol. 93, No. 2: 257-260.

Love, D., P. Smith & L. McNair. 2007. "Do Households Have Enough Wealth for Retirement?" *Finance and Economics Discussion Series* No. 2007-17. Washington, DC: Board of Governors, Federal Reserve System.

Maestas, N. 2005. "Back to Work: Expectations and Realizations of Work After Retirement." Labor and Population Working Paper WR-196-1. Santa Monica, CA: RAND.

Mermin, G.B.T., R. W. Johnson, & D. P. Murphy. 2006. "Why Do Boomers Plan to Work So Long?" Washington, DC: Urban Institute.

Mitchell, O., Mottola, G.R., and Utkus, S., 2005, *The Inattentive Participant: Portfolio Trading Behavior in 401(k) Behavior*, Pension Research Council Working Paper 2006-5, Philadelphia, PA: Pension Research Council, Wharton School, University of Pennsylvania.

Munnell, A. & A. Sunden. 2004. "Coming Up Short: The Challenge of 401(k) Plans." Washington, DC: Brookings Institution Press.

Munnell, A., J. Aubry, & D. Muldoon. 2008. "The Financial Crisis and Private Defined Benefit Plans." *CRR Issues in Brief* No. 8-18, Boston, MA: Center for Retirement Research at Boston College.

Orszag, P. 2008. "The Effects of Recent Turmoil in Financial Markets on Retirement." Testimony before the Committee on Education and Labor of the U.S. House of Representatives, October 7. Washington, DC: Congressional Budget Office.

Perun, P. 2007. "Putting Annuities Back into Savings Plans." In T. Ghilarducci and C. Weller, eds. *Employee Pensions: Policies, Problems, and Possibilities*. Champaign IL: Labor and Employment Relations Association.

Poterba, J. & M. Warshawsky. 1999. "The Costs of Annuitizing Retirement Payouts from Individual Accounts." *NBER Working Paper* No. 6918, Cambridge, MA: National Bureau of Economic Research.

Purcell, P. 2009. "Retirement Plan Participation and Contributions: Trends from 1998 to 2006." *CRS Report 7-5700*, Washington, DC: CRS.

Purcell, P. 2008. "Pension Sponsorship and Participation: Summary of Recent Trends." *CRS Report 30122*, Washington, DC: Congressional Research Service.

Reid, B. and Holden, S., 2008. "Retirement Saving in Wake of Financial Market Volatility." Washington: Investment Company Institute.

Social Security Administration, 2008a. "*Annual Statistical Supplement to the Social Security Bulletin, 2007*." SSA Publication No. 13-11700, Washington, DC: SSA.

Social Security Administration. 2008b. "Social Security Trustees Report 2008." Washington, DC: SSA.

Weller, C. & E. Wolff, E., 2005. "Retirement Security: The Particular Role of Social Security." Washington, DC: Economic Policy Institute.

Weller, C. & J. Lynch. 2009. "Fraying the Private Safety Net: Household Wealth in Freefall." Washington, DC: Center for American Progress.

Weller, C. & J. Wenger. 2009a, "Prudent Investors: The Asset Allocation of Public Pension Plans." forthcoming in *Journal of Pension Economics and Finance*.

Weller, C., & J. Wenger. 2009b. "What Happens to Defined Contribution Accounts When Labor Markets and Financial Markets Move Together?" forthcoming in *Journal of Aging and Social Policy*.

Weller, C. & J. Wenger. 2008. "Robbing Tomorrow to Pay for Today." Washington, DC: Center for American Progress.

Weller, C. & K. Sabatini. 2008. "From Boom to Bust: Did the Financial Fragility of Homeowners Increase in an Era of Greater Financial Deregulation?" *Journal of Economic Issues* Vol. 42 No.3: 607-632.