ESSAYS ON ISSUES
THE FEDERAL RESERVE BANK OF CHICAGO
JANUARY 2011
NUMBER 282

Chicago Fed Letter

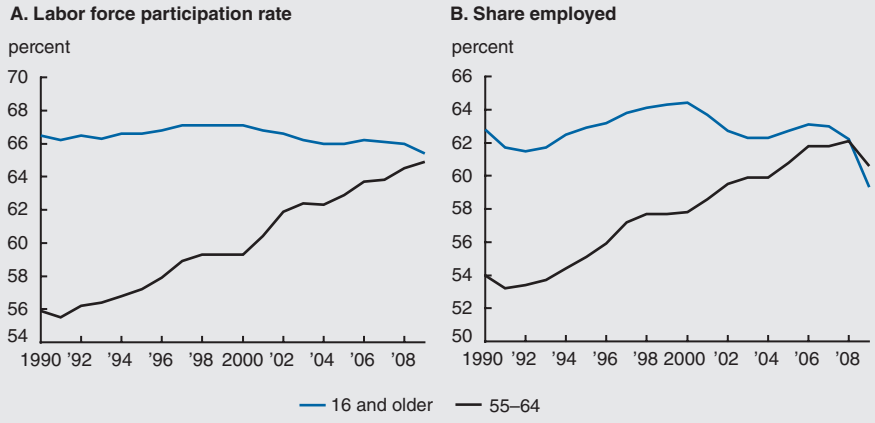
How do sudden large losses in wealth affect labor force participation?

by Eric French, senior economist, and David Benson, associate economist

The authors assess whether the sudden large losses in household wealth due to recent declines in stock and home values have significantly affected the U.S. labor market. They find that the overall labor force participation rate would be 0.7 percentage points lower were it not for the declines in the values of stocks and houses over the 2006–10 period.

There have been many news stories about people in the U.S. delaying retirement to work an extra year or two to recoup large losses on their investments in stocks and housing.[1] In this *Chicago Fed Letter*, we assess whether such stories are isolated incidents or whether the sudden declines in asset prices, or wealth shocks, have significantly affected the labor market.

1. Labor force participation and employment, by age, 1990–2009

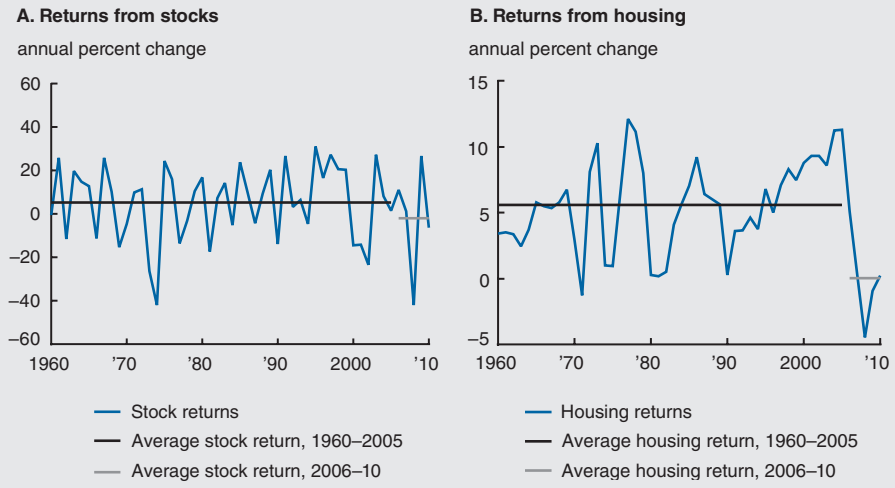


SOURCE: Authors' calculations based on data from the U.S. Bureau of Labor Statistics from Haver Analytics.

Quantifying the effects of recent wealth shocks helps explain current (and forecast future) variation in labor force participation, employment, and unemployment. Consider a worker near retirement age. If the value of her stocks or home unexpectedly falls by a significant amount, this reduced wealth might be equivalent to years of income from wages. It is reasonable, then, that such a worker might leave the work force later than she had planned in order to replace that lost wealth. In such a scenario, years of additional wage income would be necessary to afford the retirement lifestyle she had desired before the sudden loss in wealth. Knowing the magnitude of this effect from changes in wealth nationwide is valuable for labor forecasts.

On the surface, labor force participation statistics for older individuals seem consistent with anecdotes about delayed retirements. Labor force participation for most age groups has been falling, whereas it has been rising for those aged 55–64 in the wake of the stock and housing market busts. Panel A of figure 1 shows that the labor force participation rate for everyone aged 16 and older fell from 66.0% in 2005 to 65.4% in 2009, whereas the participation rate for those aged 55–64 rose from 62.9% to 64.9%. Although employment rates of those aged 55–64 have fallen in the past two years, presumably on account of stagnant wages and fewer employment opportunities, panel B of figure 1

2. Returns from stocks and housing, 1960–2010



NOTES: For panel A, year-end to year-end stock returns are computed and plotted. See notes 2 and 3 for details on how housing returns are computed for panel B. All returns in both panels are adjusted for inflation.

SOURCES: Authors' calculations based on data from the University of Chicago Booth School of Business, Center for Research in Security Prices (CRSP) stock index; Wilshire Associates Inc., Wilshire 5000 Total Market Index; U.S. Bureau of Economic Analysis, national income and product accounts; Federal Housing Finance Agency, House Price Index; U.S. Bureau of Labor Statistics, Consumer Price Index, owners' equivalent rent component; French, Doctor, and Baker (2007); and Haver Analytics.

shows that the decline for them has been smaller than for other age groups.

The general upward trend in labor force participation for older individuals is not a new phenomenon. Since the trend has persisted from the early 1990s onward, the role of wealth shocks in driving these movements is not clear. Improving health and life spans, as well as changes in pensions and the Social Security rules, have all likely encouraged delayed retirements. For these reasons, we estimate the distribution of wealth shocks for older households and combine this value with estimates of the effect of changes in wealth on labor supply to infer the likely effect of recent wealth shocks on aggregate labor supply. We find that the aggregate labor force participation rate would be 0.7 percentage points lower were it not for the recent losses in household wealth. The effect is larger for those near retirement: For those aged 51–65, the labor force participation rate would be 2.9 percentage points lower.

Declines in wealth

We first estimate the distribution of wealth shocks faced by different households over the past five years. From January 2006 through August 2010, returns from both stocks and housing were well below their averages over the period 1960–2005. The annual real return from stocks was 5.4% and the annual real return from housing was 5.6% over the 1960–2005 period.[2] The returns from stocks and housing were much lower over the 2006–10 period. Figure 2 illustrates stock and housing returns over time.

We assume that households in 2006 expected that asset prices would continue to grow at their 1960–2005 averages. Thus, the expected cumulative return over the 2006–10 period for stocks was $(1 + 0.054)^5 = 1.30$; and this return for housing was 1.32. The realized cumulative return, however, turned out to be 0.78 for stocks and 1.00 for housing (house prices fell over the 2006–10 period, but their declines were offset by the returns from the service flow from housing, i.e., the value of rents that homeowners need not pay).[3] Thus, for every $1 in stock held in 2006, households anticipated an increase to $1.30 by 2010; but that $1 in stock turned out to be worth $0.78, which amounts to a predicted wealth loss of $0.52. This predicted wealth loss is $0.32 for housing.

To estimate how these wealth shocks have affected the portfolios of those approaching retirement, we use the University of Michigan's *Health and Retirement Study* (HRS). The HRS is a nationally representative sample of noninstitutionalized individuals aged 51 and older. We ignore the effect of changes in asset prices on the labor supply of younger workers for two reasons. First, younger people tend to have less wealth than those over 50, and so they have less wealth to lose. Second, younger people are likely further from retirement. Cheng and French[4] show that for these two reasons, those younger than 51 are unlikely to adjust their labor supply much in response to asset price changes.

The HRS asks its respondents detailed questions about their household wealth in stocks, housing, and businesses.[5] Of those aged 51–65 in 2006, 53% of their wealth was in housing, 23% in stocks, and 13% in businesses.[6] These three asset groups all suffered large price declines over the period 2006–10. The HRS likely understates total stock market wealth among the richest people. Examining data from the Federal Reserve Board's *Flow of Funds Accounts of the United States*, we show this potential understatement: In the national aggregate, 39% of household wealth is from housing, 34% from stocks, and 14% from businesses. Part of this difference is likely due to the fact that portfolios of those aged 51–65 are different than those of other ages, but part of this is likely due to the underreporting of stock market wealth. Using the HRS data and the predicted wealth loss described previously, we can calculate the wealth lost for each member of the HRS sample by taking the amount of wealth held in each asset class in 2006 and multiplying that by the likely wealth loss (over the 2006–10 period) per dollar held in that asset in 2006.

The HRS has not only data on asset holdings but also data on earnings. Thus, we can compare the wealth loss to their earnings if they were still working in 2010. Figure 3 shows that, relative to their annual earnings, 51.7% of those aged 51–65 lost at least one year's worth of earnings and 6.6% lost at least eight years' worth of earnings over the period 2006–10.[7]

3. Predicted wealth shock effect on labor force in 2010

	Mean
Employment rate (percent)	55.1
Decline in labor force participation (percentage points)	2.9
Years' worth of earnings lost	2.9
Share of sample with earnings loss worth at least (percent)	
1 year	51.7
3 years	20.0
8 years	6.6

NOTES: The HRS surveys noninstitutionalized individuals aged 51 and older. The values here are calculated for those aged 51–65. The wealth shock effect over the 2006–10 period is shown.

SOURCES: Authors' calculations based on data from the University of Michigan, Institute for Social Research, *Health and Retirement Study* (HRS); and Haver Analytics.

Effect of changes in wealth on labor supply

We next provide calibrations showing the predicted effect of these wealth shocks on the aggregate labor force participation rate. Identifying the effect of changes in wealth on labor supply is difficult because those who enjoy working will work longer, attaining higher wealth.

Fortunately, however, there are several studies of the labor supply response for workers with unanticipated gains in wealth. For example, Cheng and French (2000) review studies of the labor supply response of those receiving an inheritance or winning the lottery. More recent studies have estimated the labor supply response to the stock market run-up in the 1990s and the stock market rundown in the 2000s.[8] All of these studies have shown that people reduce their work hours after an unanticipated wealth gain. Cheng and French (2000) suggest that the results from the inheritance and lottery studies are consistent with the following relationship between wealth shocks and labor force participation:

$$-\Delta LFPR_i = \begin{cases} 0.010 \times \left(\frac{\Delta A}{Y}\right)_i & \text{if } \left|\left(\frac{\Delta A}{Y}\right)_i\right| < 8 \\ 0.032 + 0.006 \times \left(\frac{\Delta A}{Y}\right)_i & \text{if } 8 \le \left|\left(\frac{\Delta A}{Y}\right)_i\right| < 30, \\ 0.152 + 0.002 \times \left(\frac{\Delta A}{Y}\right)_i & \text{if } \left|\left(\frac{\Delta A}{Y}\right)_i\right| \ge 30 \end{cases}$$

where $\left(\frac{\Delta A}{Y}\right)_i$ is the unexpected wealth shock for an individual between 2006 and 2010, divided by her earnings. We then average the predicted change in labor force participation over all members of the sample. In other words, the equation states that an individual who lost one year's worth of income over the 2006–10 period is 1% more likely to be in the labor force in 2010; an individual who lost two years' worth of income is 2% more likely to be in the labor force; and so on.

Conclusion

Based on this equation, the U.S. labor force participation rate among those aged 51–65 would be lower by 2.9 percentage points were it not for the declines in asset prices over the 2006–10 period. Furthermore, this age group represents 23.4% of the population aged 16 and older. So, our best guess is that were it not for the declines in asset prices, the overall labor force participation rate would be lower by 0.7 percentage points ($2.9 \times 0.234 = 0.7$).

That said, there are a few caveats to consider. Our choice of 2006 as the base year is somewhat arbitrary, and 2006 was a fairly good year for asset prices. For example, if we began in 2007 and ended in 2010, we would generate slightly larger wealth losses. Also, the HRS wealth data are good, but not perfect. By using the HRS data, we likely understate the total amount of stock wealth for older individuals and thus the stock market losses for them, as we mentioned earlier. Finally, it is likely that those younger than 51 and those older than 65 had some labor supply responses to the asset price declines. Given these caveats, it is very likely that, even if our assumed behavioral responses to the recent wealth shocks are correct, we are actually understating the wealth losses in the economy and thus the labor supply responses.

[1] See, e.g., Steven Greenhouse, 2008, "Working longer as jobs contract," *New York Times*, October 22, available at www.nytimes.com/2008/10/23/business/retirement/23SQUEEZE.html.

[2] To measure the return from housing, we use the methods described in Eric French, Phil Doctor, and Olesya Baker, 2007, "Asset rundown after retirement: The importance of rate of return shocks," *Economic Perspectives*, Federal Reserve Bank of Chicago, Vol. 31, No. 2, Second Quarter, pp. 48–65.

[3] We calculate housing returns by using the Federal Housing Finance Agency, or FHFA (formerly the Office of Federal Housing Enterprise Oversight), House Price Index. These returns are augmented to account for service flows due to housing by using the methods described in French, Doctor, and Baker (2007). Using other methods described in that article, we also derive returns to liquid assets and business wealth. We adjust all returns for inflation.

[4] Ing-Haw Cheng and Eric French, 2000, "The effect of the run-up in the stock market on labor supply," *Economic Perspectives*, Federal Reserve Bank of Chicago, Vol. 24, No. 4, Fourth Quarter, pp. 48–65.

[5] The HRS has data on the value of housing and real estate, autos, liquid assets (which include money market accounts, savings accounts, and Treasury bills), individual

ISSN 0895-0164

retirement accounts (IRAs), Keogh plans, stocks, farms and businesses, mutual funds, bonds, and other assets and investment trusts. We measure wealth as the sum of all these assets, less debts, and exclude wealth from defined benefit pensions and Social Security. We assume that 60% of defined contribution pension wealth is invested in stocks and the remainder is invested in bonds.

[6] We calculate these shares as mean wealth in a given asset class for all households in the sample and dividing by mean net worth for all households in the sample.

[7] For households with both a husband and a wife, we divide household wealth equally between the two spouses.

[8] There are several recent papers that estimate the labor supply response to stock market fluctuations. See, e.g., Julia Lynn Coronado and Maria Perozek, 2003, "Wealth effects and the consumption of leisure: Retirement decisions during the stock market boom of the 1990s," Finance and Economics Discussion Series, Board of Governors of the Federal Reserve System, working paper, No. 2003-20, May; Courtney C. Coile and Phillip B. Levine, 2006, "Bulls, bears, and retirement behavior," *Industrial and Labor Relations Review*, Vol. 59, No. 3, April, pp. 408–429; and Michael D. Hurd, Monika Reti, and Susann Rohwedder, 2009, "The effect of large capital gains or losses on retirement," in *Developments in the Economics of Aging*, David A. Wise (ed.), Chicago: University of Chicago Press, pp. 127–163. These works find that labor supply does respond to stock market fluctuations, although the responses appear smaller than those in Cheng and French (2000).