The Income Rollercoaster
RISING INCOME VOLATILITY AND ITS IMPLICATIONS

BY KAREN DYNAN

Millions of U.S. households have suffered devastating income disruptions as a result of the recent economic downturn. As of late 2009, eight million jobs had been lost to the recession, and one in ten workers was out of work, putting the unemployment rate at its highest level since the early 1980s. Although a variety of indicators suggest that the recession is now over, most analysts foresee a slow and gradual economic recovery and consequently a long, uphill climb back to full employment. Thus, it may be a number of years before the incomes of many families are back to normal. Policymakers have already taken some steps to support these families and stimulate job creation, and they continue to deliberate about what additional steps are still needed.

These short-term swings in income have occurred against a backdrop of equally notable long-term trends. A growing literature has explored longer-term trends in household income fluctuations, and although not every study agrees, many suggest that U.S. households have seen a significant rise in income volatility over the past several decades. For the most part, this increase occurred even as the volatility of aggregate economic activity appeared to be moderating. That is, while households have had to deal with increasing year-to-year flux in the amount of income available to them, the total value of U.S. economic activity has, since the early 1980s, been showing less year-to-year variation than in earlier times (even including the recent recession).

In this article, I document the increase in income volatility among U.S. households. I then discuss how these results square with macroeconomic trends and explore the implications of rising volatility for family well-being, particularly in the context of other important long-run changes in family finances.

The Evolution of Household Income Volatility

My results are based on the 1968 through 2005 waves of the Panel Study on Income Dynamics (PSID), which has tracked the income, employment, and characteristics of a representative sample of U.S. households since the late 1960s. The current sample is an amalgam of the original families, their descendants, and families that have been added over time in order to maintain the representativeness of the survey. The data are generally viewed as very high quality, and with several decades of information now available to analyze, the survey has been and continues to be widely used by researchers examining socioeconomic trends.

The PSID is particularly useful for studying trends in U.S. household income volatility because it provides information about income at the family level. Sources that mainly track the earnings of individual workers—such as Social Security records—can yield key insights about trends in labor market dynamics. However, results about the volatility of individual earnings may not be indicative of trends at the household level because of changes over time in family structure (including the

presence and role of second earners) and in nonlabor income.

Based on my recent work with Doug Elmendorf and Dan Sichel, I define income volatility as the standard deviation across households of the percent change in household income between two periods. If every household's income grows at the same steady rate, then measured volatility will be zero. However, if changes in household income are all over the map—with some households seeing huge gains while at the same time others face big losses—this measure of volatility will be very large.[1] I put few restrictions on the sample. Importantly, I include income changes that result from changes in the male or female heads of household because events like divorce and the death of a spouse clearly can have significant implications for the economic security of a household. However, I exclude households headed by students or retirees, as transitions in and out of these states are often expected and intentional.[2]

Figure 1 shows the evolution of household income volatility over time. As can be seen, the standard deviation of the percent change in household income trended up in the 1970s, stabilized a bit in the 1980s, but then turned up again after 1990. All told, household income volatility increased by about one-third between the late 1960s and the middle part of this decade.

The increase in volatility has largely resulted from an increase in the frequency of large household income changes. The solid red line in Figure 2 shows the fraction of households experiencing a drop in income of 50 percent or more, and the dashed blue line shows the same for increases in income. The shaded areas represent recessions (as dated by the National Bureau of Economic Research); as expected, large income declines tend to go up during such periods, and large increases tend to go down. One can also see that the prevalence of large income increases was particularly high during the late 1990s when macroeconomic conditions were booming.

The figure shows a decided uptrend in the frequency of large drops in income, with about 7 percent of households experiencing declines in income of 50 percent or more in the late 1960s and 12 percent experiencing such drops in the middle part of the 2000s. The share of households seeing a 50 percent or more increase in income rose from about 8 percent to 10 percent over the period. Consistent with these results, my recent work with Doug Elmendorf and Dan Sichel finds that much of the increase in income volatility over time disappears if the largest income changes are removed from the sample. If we ignore very large changes, there is only a 10 percent rise in volatility over the last 40 years.[3]

Many other studies of trends in household income volatility over time find increased volatility since the early 1970s. For example, recent papers by Scott Winship in 2009, Austin Nichols and Seth Zimmerman in 2008, and by Elisabeth Jacobs and Jacob Hacker, also in 2008, all find increases in the income volatility of PSID households, albeit with some disagreement on the magnitude of the change. Likewise, papers by Tom Hertz in 2006 and by Neil Bania and Laura Leete in 2007 find increases between the early 1990s and early 2000s using the Current Population Survey and Survey on Income and Program Participation (SIPP), respectively. Not all studies, however, have revealed an increase in volatility. Most prominently, a 2008 paper by Molly Dahl, Thomas DeLeire, and Jonathan Schwabish found little evidence

FIGURE **1.** Volatility of Household Income

Standard Deviation of Percent Changes
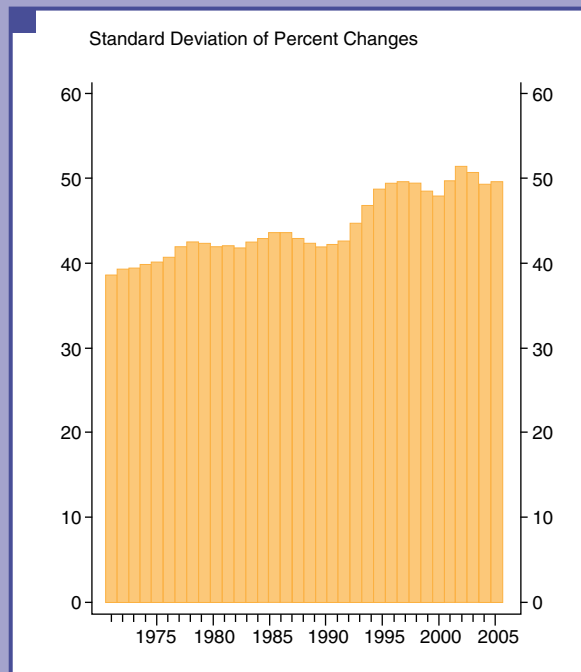
Source: Panel Study on Income Dynamics; 3-year moving averages of 2-year percent changes

FIGURE **2.** Frequency of Large Increases and Decreases in Household Income

- - - Increases > 50%
—— Decreases >50%
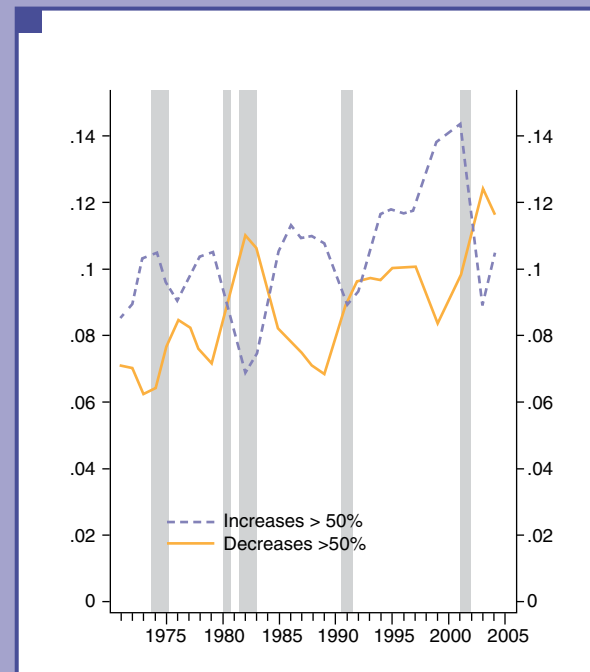
Source: Panel Study on Income Dynamics; 3-year moving averages of 2-year percent changes; shaded area denote recessions

of a trend in the frequency of large household income changes in a data set combining information from the SIPP with information about the household head's earnings from the Social Security Administration. Although the bulk of the evidence suggests that the increase in household income volatility is real, determining why some studies reach a different conclusion represents an important direction for future research.

What About Macroeconomic Trends?

The foregoing trends pertain to income volatility at the household level. We can also calculate income volatility at the macroeconomic level by comparing the flux in aggregate economic activity over different time periods. When we do so, we find that the rise in household income volatility occurred at the same time that aggregate economic activity stabilized. A wide range of macroeconomic indicators show considerably less volatility over the two decades beginning in the mid-1980s than over preceding decades. As can be seen in the first two columns of Table 1, the standard deviation of growth in real GDP fell from 4.4 percentage points between 1960 and the mid-1980s to 2.1 percentage points between the mid-1980s and the mid-2000s—a decline of about 50 percent. The volatility of employment growth fell from 2.5 to 1.4 percentage points, and that of real disposable personal income growth fell from 3.9 to 3.2 percentage points.[4] This stabilization of aggregate activity—now termed the Great Moderation—occurred in other countries as well and spawned numerous papers that sought to explain it in terms of milder economic shocks, better monetary policy, improved inventory management, and financial innovation. The events of the past couple years have, of course, presented a serious challenge to the view that a Great Moderation has occurred. Yet, as shown in the third column of Table 1, post-1985 aggregate GDP volatility is still 44 percent lower than in the preceding quarter century even if recent data are included in the calculation.

Macroeconomic volatility can decline even as household-level income volatility rises if the covariance of income shocks across households decreases. Plainly put, households can be suffering more significant income disruptions, but if such shocks become less synchronized across households, then aggregate volatility need not rise and may even decline. Indeed, this is what my colleagues Doug Elmendorf, Dan Sichel, and I found in the PSID in 2006. The combination of larger (but more idiosyncratic) individual shocks is consistent with the popular view that the U.S. economy has become more dynamic in recent decades. Many commentators have pointed to globalization, deregulation, and rapid technological change as increasing the amount of "creative destruction" in the economy, as well as the competitive pressures bearing down on workers and firms.

Implications for Economic Security

The rise in household income volatility would warrant little concern if it primarily reflected changes in income that were under the control of households. For the calculations above, I excluded some households (students and retirees) whose changes in income may be intentional. However, there are other groups

TABLE 1. Volatility of Macroeconomic Indicators

	1960–1984	1985–2006	1985–present
Real GDP	4.4	2.1	2.5
Real Disposable Personal Income	3.9	3.2	3.4
Employment	2.5	1.4	1.8

Note: Standard deviation of annualized quarterly percent change.

that are harder to exclude, such as households that are making voluntary changes to their hours in order to accommodate changing dependent care needs. If employers or social mores have allowed for more such adjustments over time, the resulting greater volatility of income may partly reflect choices that leave households better off than they were previously.

However, evidence from my recent work with Elmendorf and Sichel suggests that such voluntary choices are not the dominant force behind increasing household income volatility. We present a decomposition of the increase in earnings volatility for household heads that shows that the volatility of earnings per hour has increased much more than the volatility of hours worked. The former is presumably much less likely to be voluntary, given that workers rarely choose to cut back their hourly compensation rate.

A second consideration that bears on the interpretation of growing household income volatility is the degree to which it has translated into corresponding variability in spending. Because consumption is more directly related to well-being than is income, we care especially about trends in consumption volatility. Advances in credit markets over the past few decades have made it easier for households to obtain credit cards and to access accumulated home equity through lines of credit and cash-out refinancing transactions (at least until the recent financial crisis). One might therefore expect that households have become increasingly able to borrow to sustain consumption in the face of disruptions to income. This view is supported by an analysis I conducted with Elmendorf and Sichel in 2005; my coauthors and I found that the propensity to consume out of current income has fallen substantially over time and that the sensitivity of aggregate consumption to unusual declines in aggregate income has fallen much more than that for unusual increases. One implication of these findings is that the increase in household income volatility may not have fully translated into a corresponding rise in consumption volatility. In other words, Americans appear to have been better able to maintain consumption levels in the face of large swings in income. It remains to be seen, however, whether the recent financial crisis will permanently change the availability of credit in a way that undoes the (relative) stability of household consumption.

The Big Picture

The rise in household income volatility is only one of many trends that have important implications for the economic security of households. In a recent paper in the *Journal of Economic Perspectives*, I highlight several notable developments in households' financial environment. Most prominently, the long-run increase in the supply of credit, while enhancing households' ability to smooth their consumption over time, has exposed households to more risk in other ways. For example, households have taken on much more debt over the past couple of decades, and as a result, they have to meet much higher debt service obligations. Data from the Survey of Consumer Finances suggest that, for the typical household, the ratio of debt service obligations to income rose from 5 percent of income in 1983 to 10 percent in 1995 and 13 percent in 2007. Higher debt obligations are associated with a higher probability of becoming delinquent on debt, which can impair future access to credit, and ultimately, lead to a loss of any property securing debt.

Greater access to credit has also enhanced households' ability to "leverage up" to purchase homes. The ratio of home purchase price to income for the median homebuyer rose from 1½ in 1983 to 2¾ in 2007. This increase was even more pronounced for households in the lowest third of the income distribution, where the ratio rose from 3 in 1983 to nearly 6 in 2007. The tremendous risk associated with purchasing more expensive homes has been vividly illustrated by the damage to household balance sheets caused by the recent collapse in home prices. In the aggregate, housing wealth fell from a peak of 6¼ times income in 2007 to less than 5 times income in 2009. According to real estate information firm First American CoreLogic, one-quarter of mortgage borrowers had mortgage balances as of late 2009 exceeding the values of their homes. The recent financial crisis has also shown that enhanced access to credit not only endangers those households that choose to take on large amounts of debt but may also subject the economy as a whole to more risk if households' excessive leverage produces an unsustainable bubble in asset prices.

Household financial opportunities have expanded in other important ways. For example, the past several decades have seen the development of new products and services that have made it easier for households to invest in stocks. In addition, structural changes in our pension system have produced a shift away from defined benefit pensions and toward defined contribution pensions, which has given households much more control over the amount and allocation of their retirement savings. These developments have yielded important benefits—they have allowed households to choose to take more risks in pursuit of higher expected future well-being. However, as with the greater availability of credit, the downside is that these choices will not always work out as hoped. The degree to which regulators should limit these choices is subject to debate, but researchers and policymakers are beginning to grapple with increasing evidence that the risk of confusion and mistakes is particularly high for newer, more complex financial products.

Conclusion

Household income volatility appears to have trended significantly upward over the past several decades, with much of the rise tied to an increase in the frequency of very large changes in income. Volatility of earnings per hour has risen more sharply than the volatility of hours, suggesting an important involuntary component to the increase in income variability. Expanded access to credit has probably mitigated the degree to which income declines translate into consumption declines, but this development has posed other risks to household economic security, as have other trends in household financial opportunities.

It is too early to know what effects the current economic crisis will have on these trends. The high current degree of weakness in labor markets—together with the expectation that the economic recovery will proceed only slowly—implies that household income volatility may be unusually elevated for several years to come.

Karen Dynan is Robert S. Kerr Senior Fellow and Vice President for Economic Studies at The Brookings Institution, as well as a former staff member at the Federal Reserve Board of Governors and the White House Council of Economic Advisers. The author would like to thank Howard Lempel for excellent research assistance and comments.

NOTES

1. Average income over the two periods is used in the base of the percent change, as it yields changes that are symmetric with respect to increases and decreases and that are naturally bounded between 200 percent and -200 percent. In particular, we define the percent change as $100*(Y_t-Y_{t-2})/Y_{average}$, where $Y_{average}$ equals $(Y_t+Y_{t-2})/2$. The change is measured over two years because the PSID switched to biennial surveying in the late 1990s. Other studies have captured income volatility in more complicated ways, such as methods that isolate the permanent and transitory components of income, as pioneered by Peter Gottschalk and Robert Moffitt in an influential 1994 paper. Such methods lack the transparency and flexibility of that used here, but represent a useful complement.

2. A description of other aspects of sample and data construction are available upon request, including how I deal with top-coding and what appear to be some technical breaks in the data. None of the restrictions imposed here change the qualitative results. For example, including households headed by retirees generally raises the level of volatility (consistent with transitions in and out of retirement generating large changes in household income), but one still finds a significant uptrend in volatility over time.

3. Specifically, we removed the top 25 percent of increases and the bottom 25 percent of decreases to do this calculation.

4. The smaller proportional decline in the volatility of aggregate real disposable income growth relative to the volatility of GDP growth is largely attributable to short-term variability in wage disbursements. For example, quarterly volatility in wages was boosted in the early 1990s by a shifting of bonus payments in anticipation of tax-rate increases. In addition, short-lived countercyclical changes in tax collection—such as tax rebates—have continued to boost the quarterly variability of real disposable income growth.