

Many policy analysts and politicians have been alarmed by the dramatic increase in income inequality in recent decades. Others believe that year-to-year variation in incomes should reduce our concern about income inequality, because individuals may consequently move around in the income distribution.<sup>1</sup> If volatility reflects real mobility, then even though families at the bottom of the annual income distribution are losing ground, they are less likely to stay there. In that case, annual measures of income inequality overstate inequality of economic status.

However, movements from the 8th to the 12th percentile and back again do not much allay concerns about the enormous gap in living standards between the 10th percentile and the 90th, and many estimate that mobility has changed little over time when measured as the probability of switching income quintiles, or similarly large classes.<sup>2</sup> I define mobility as the variation in individual income trends, and volatility as deviations around those individual trends. Mobility captures variation in income changes over time that are not quickly reversed, or long-term trends in income, and volatility measures the extent of short-term changes around the trend. To which category a given change is assigned depends on the time window over which we observe income. Mobility of zero implies every person experiences the same growth rate; volatility of zero implies that growth is perfectly steady.

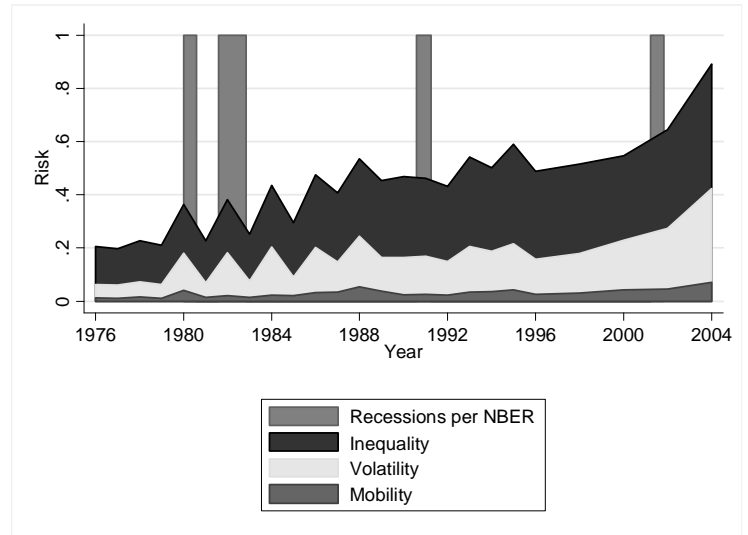
Mobility, volatility, and inequality are each a kind of income risk. Inequality and volatility are easy to interpret as a form of income risk: inequality represents *ex ante* risk<sup>3</sup> to someone who thinks “I could have been that person at the tenth percentile of the income distribution” and volatility represents risk in the income stream that may be imperfectly smoothed, generating variation in consumption that lowers well-being.<sup>4</sup> Mobility represents a different kind of risk from volatility; individual income trends measure longer-term paths of upward and downward mobility that a given individual may face. Variation in income trends has a flavor of long-run inequality (some people have growing income and some falling) and a flavor of volatility (one may not be able to smooth across low- and high-income years given growing or falling income).

Using several decades of PSID data,<sup>5</sup> figure 1 describes all three trends using one index of total income risk, which is the sum of three indices measuring income volatility, mobility, and inequality. The index is variance divided by twice mean income, a common measure of inequality with some desirable properties,<sup>6</sup> that can also describe volatility. I decompose the index<sup>7</sup> into a component capturing inequality across individuals, a component capturing variability across time within individuals (volatility, measured as mean squared deviations from individual-specific trends), and a component capturing mobility (mean squared individual-specific trends).

The measure of volatility<sup>8</sup> shows roughly a fourfold increase and the measure of inequality shows almost a threefold increase over a 29-year period. Mobility increased roughly threefold during the same period, in fits and starts, but remained throughout a relatively small component of aggregate risk. Fluctuations of the indices with the business cycle are less evident than is the overall upward trend. The estimates in figure 1 use family cash income before taxes,

unadjusted for family size, but the impact of including estimated taxes or adjusting for family size is very small.

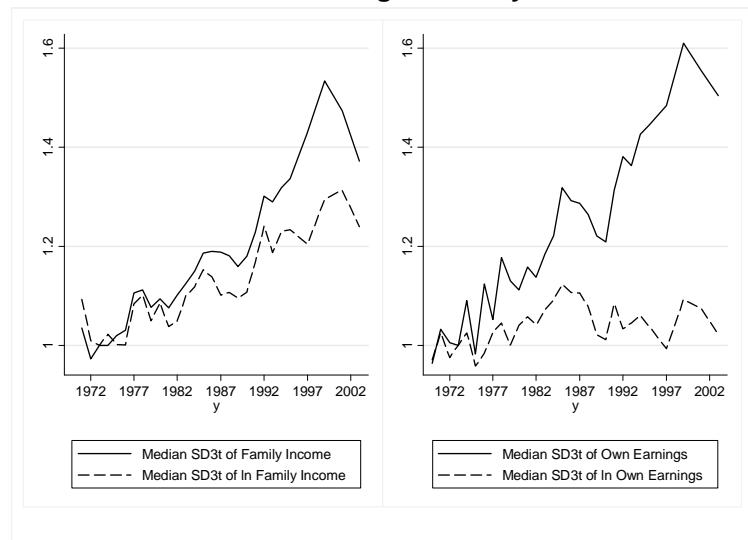
**Figure 1. Growth of Income Risk over Time**



Source: Author's calculations using PSID data and NBER business cycle dates.<sup>9</sup>

Other methods of estimating trends in volatility lead to smaller estimates of percentage growth over time, but nearly all show dramatic increases. For example, the standard deviation of family incomes over time, measuring expected year-to-year swings in income, has increased by half or nearly doubled according to most estimates.<sup>10</sup> At the same time, the volatility of individual earnings may either have increased little, or kept pace, depending on how it is measured (figure 2 shows that individual earnings volatility seems to have increased measured in level but not in logs; the trend for family income is more robust to measurement choices).

**Figure 2. Robust Trend in Family Income Volatility but Not Own Earnings Volatility**



Source: Author's calculations using PSID data.

It is possible that the volatility of individual earnings has not increased and family income volatility has—largely driven by the increasing covariance of husbands' and wives'

earnings. An increase in the proportion of families with two earners has contributed to growing volatility. Having two earners could lower family income risk, not increase it, because one person's earnings make up a smaller share of total family income, but that is not the pattern in the data.

Much of observed volatility arises from major economic shocks, like a health shock or mass layoff. If you are not working, you represent a form of insurance for family income; if your spouse can't work, then you can enter the labor market. With both spouses working, sometimes in the same industry or even the same firm, the impact of a single missed promotion is smaller, but the impact of an economic downturn can be much larger.

Other factors that might mitigate these trends are growth in mean incomes, or increasing availability of credit, which can lower the economic cost of volatile incomes. However, recent growth in incomes has been slow (figure 3) and driven mostly by the widening of the top half of the distribution (this can be seen in figure 3 by noting the much less substantial growth in median incomes, and is even more obvious when additional quantiles are graphed).

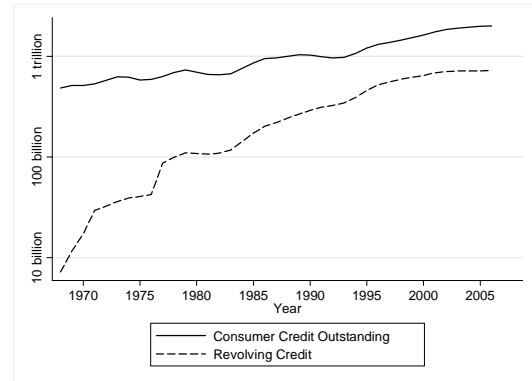
**Figure 3. Slow Growth in Mean Income**



Source: Author's calculations using PSID data and the Social Security Administration Average Wage Index [<http://www.ssa.gov/OACT/COLA/AWI.html>].

No doubt credit is more widely available. In 1970, a sixth of households had a credit card, and in 2005, more than three quarters did.<sup>11</sup> As credit has become more ubiquitous, debt has grown, and unequally—the proportion of debtors who must spend at least 40 percent of their income on debt service rose between 1995 and 2004 for middle-income households but fell for high-income households.<sup>12</sup> The proportion of household debt that is revolving debt has risen dramatically (figure 4).<sup>13</sup> Bankruptcies have soared.<sup>14</sup>

**Figure 4. Growth in Credit Card Debt**



Source: Federal Reserve Statistical Release G.19 [<http://www.federalreserve.gov/releases/g19/hist/>].

The outlook for more rapid growth in family incomes does not look bright, and reversing the trends in income risk would require major policy interventions. Making taxes more progressive, and eliminating tax preferences that primarily benefit higher-income taxpayers, could address the trends in both inequality and volatility. Other policies are also possible, including a variety of new health, labor market, and education initiatives. Unlike new spending programs, however, a tax policy intervention could actually improve the fiscal health of the government while reducing inequality.

## Notes

- <sup>1</sup> See e.g. Friedman, Milton, and Simon Kuznets, *Income from Independent Professional Practice*, New York: National Bureau of Economic Research, 1945; Buchinsky, Moshe, and Jennifer Hunt, 1999, "Wage Mobility in the United States," *The Review of Economics and Statistics*, 81(3): 351–68. See also Shorrocks, Anthony F., 1978, "Income Inequality and Income Mobility," *Journal of Economic Theory* 19(2): 376–93; Jenkins, Stephen P. and Philippe Van Kerm, 2006, "Trends in income inequality, pro-poor income growth, and income mobility," *Oxford Economic Papers* 58: 531–48.
- <sup>2</sup> See e.g. Acs, Gregory and Seth Zimmerman, 2008, "Like Watching Grass Grow: Intragenerational Mobility in the United States," prepared for The Pew Charitable Trusts' Economic Mobility Project. But see also Department of the Treasury, 2007, "Income Mobility in the U.S. from 1996 to 2005" [<http://www.treas.gov/offices/tax-policy/library/incomemobilitystudy03-08revise.pdf>].
- <sup>3</sup> However, I measure inequality in outcomes, not inequality in opportunities. Some level of inequality of outcomes is desirable, to encourage work and investment.
- <sup>4</sup> There is also a "prudence" cost to having no income insurance; see Miles S. Kimball, 1990, "Precautionary Saving in the Small and in the Large," *Econometrica* 58(1): 53–73. However, volatility can also be welfare-enhancing, if consumers desire to take on more risk and earn higher returns.
- <sup>5</sup> Estimates are constructed using family income data on individuals aged 25–61 (other subsamples yield similar results) from the Panel Study of Income Dynamics (PSID) for 1969 to 2005, a source of detailed longitudinal data on income in a sample roughly representative of the US population in the late 1960s and additions to their families. Five income values from nine years of data, excluding every other year, are used for each annual estimate, and the estimate is assigned to the last year of data, so estimates are retrospective.
- <sup>6</sup> See e.g. Shorrocks, Anthony F., 1980, "The Class of Additively Decomposable Inequality Measures," *Econometrica* 48(3): 613–625.
- <sup>7</sup> See Nichols, Austin, 2008, "Intertemporal Variability Decompositions: Inequality, Mobility and Volatility," Washington, DC: Urban Institute.
- <sup>8</sup> Some caveats are in order. The GE<sub>2</sub> measure is scale-free, but uses squared incomes and so is sensitive to outliers at the top of the distribution. Other measures of inequality also show dramatic increases, but lower percentage growth.
- <sup>9</sup> See [<http://www.nber.org/cycles/cyclesmain.html>].
- <sup>10</sup> See Nichols, Austin and Seth Zimmerman, 2008, "Measuring Trends in Income Variability," Washington, DC: Urban Institute.
- <sup>11</sup> See Evans, David S., 2004, "The Growth and Diffusion of Credit Cards in Society," *Payment Card Economics Review* 2: 59–76, and Johnson, Kathleen W., 2005, "Recent Developments in the Credit Card Market and the Financial Obligations Ratio," *Federal Reserve Bulletin* [[http://www.federalreserve.gov/pubs/bulletin/2005/autumn05\\_lead.pdf](http://www.federalreserve.gov/pubs/bulletin/2005/autumn05_lead.pdf)].
- <sup>12</sup> Bucks, Brian K., Arthur B. Kennickell, and Kevin B. Moore, 2006, "Recent Changes in U.S. Family Finances: Evidence from the 2001 and 2004 Survey of Consumer Finances," Washington, DC: Board of Governors of the Federal Reserve [<http://www.federalreserve.gov/pubs/bulletin/2006/financesurvey.pdf>].
- <sup>13</sup> This has been accompanied by a decline in installment credit outstanding, however.
- <sup>14</sup> E.g. Athreya, Kartik, 2004, "Shame As It Ever Was: Stigma and Personal Bankruptcy," *Federal Reserve Bank of Richmond Economic Quarterly* 90(2): 1–19.