

CBO TESTIMONY

Statement of
Peter R. Orszag
Director

Economic Volatility

before the
Joint Economic Committee
United States Congress

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CONGRESSIONAL BUDGET OFFICE
SECOND AND D STREETS, S.W.
WASHINGTON, D.C. 20515

Notes

Some of the figures in this testimony use shaded vertical bars to indicate periods of recession. (A recession extends from the peak of a business cycle to its trough.)

Numbers in the text and tables may not add up to totals because of rounding.

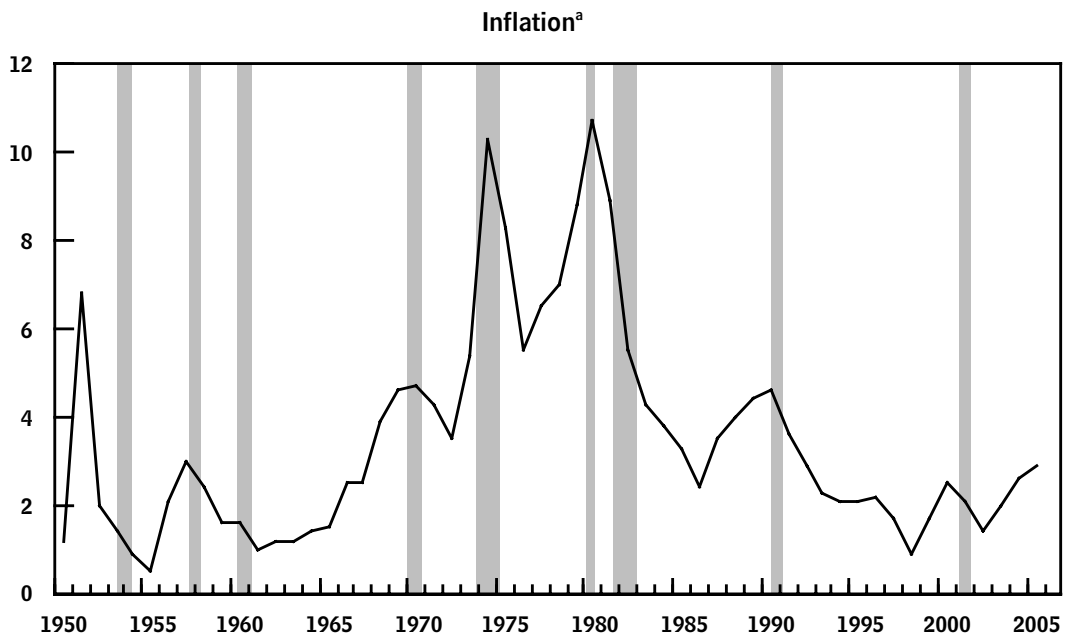
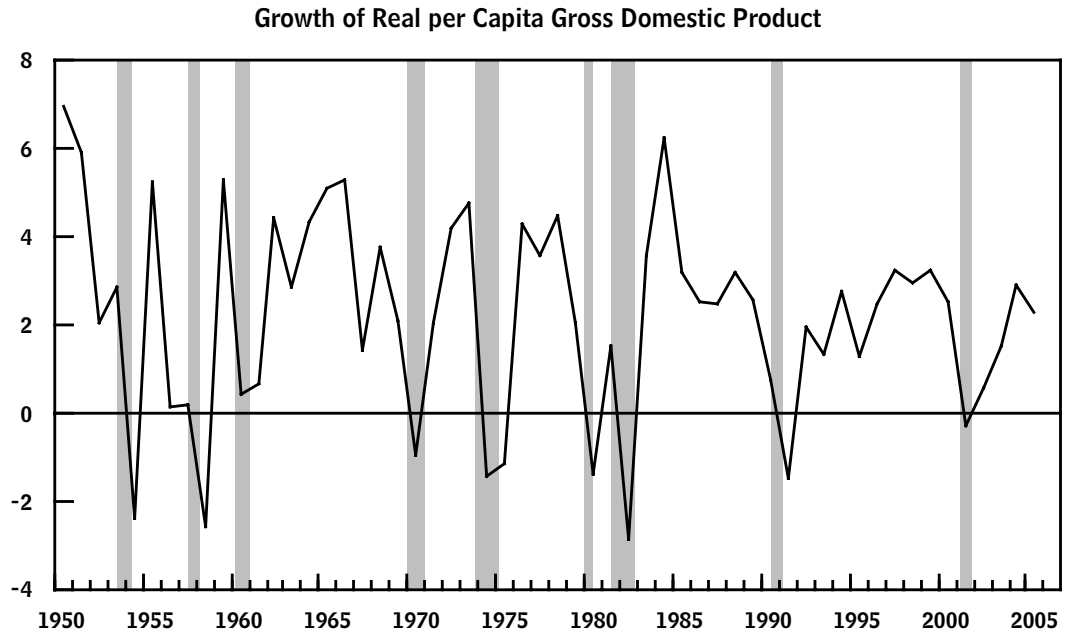
Chairman Schumer, Vice-Chair Maloney, Congressman Saxton, and Members of the Committee, I appreciate the invitation to participate in today's hearing. My testimony makes four main points:

- First, macroeconomic volatility—the ups and downs of overall economic growth and inflation—has declined and is now relatively low. In particular, year-to-year fluctuations in the economy have become smaller than in the past.
- Second, despite the relatively modest volatility in the overall economy, workers and households still experience substantial variability in their earnings and income from year to year. The Congressional Budget Office's (CBO's) analysis shows, for example, that between 2001 and 2002, one in four workers saw his or her earnings increase by at least 25 percent, while one in five saw his or her earnings decline by at least 25 percent. Some of that variability stems from voluntary actions, such as a decision to stay home and rear children, and some stems from involuntary events, such as the loss of a job. Earnings volatility is somewhat higher for people with less education.
- Third, although earnings and income volatility is substantial, more research is required to determine how and when that variability has changed over the past few decades. The existing evidence suggests that annual earnings have tended to fluctuate more, on a percentage basis, over the past 25 years than they did during the 1970s. The number of studies on the topic is limited, however, and they have somewhat different results. Therefore, it is too early to reach firm conclusions about the precise timing or magnitude of any increase. Given their importance, trends in earnings and income volatility seem to warrant significant research attention.
- Fourth, many observers are accustomed to thinking about the federal tax system as an “automatic stabilizer” that helps to reduce variations in national income. The tax system, though, also helps to smooth out variability at the level of households by reducing year-to-year fluctuations in their after-tax income. That insurance effect of the tax system is potentially significant, given the substantial variation in households' earnings and income. At the same time, however, the tax system levies higher average rates on households whose income is more variable and imposes costs on the economy by distorting the decisions that households make about how much to work, how much to save, and how to receive their compensation for doing so. In evaluating different tax structures, policymakers need to weigh the role of the tax system in smoothing income against its other effects on households and the economy.

Figure 1.

Macroeconomic Volatility

(Percent)



Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis.

a. Inflation as measured by the growth of the chained price index for personal consumption expenditures.

Table 1.

Changes in Macroeconomic Volatility

	Volatility	
	1950–1984	1985–2005
GDP Growth	3.1	1.4
Inflation	2.9	1.0

Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis.

Note: Volatility is measured as the standard deviation of the change from the previous year in gross domestic product (GDP) per capita (for GDP growth) and in the chained price index for personal consumption expenditures (for inflation), in each case using quarterly data.

Macroeconomic Volatility

Macroeconomic volatility has been significantly lower during the past 20 years than in preceding decades. Although recessions can still be quite painful for particular sectors and workers, recessions have been less severe overall—in duration, frequency, and magnitude—than they were between 1950 and the mid-1980s. The quarter-to-quarter fluctuations in real (inflation-adjusted) gross domestic product (GDP) have also become smaller (see the top panel of Figure 1). In addition, the level and volatility of inflation over the past 20 years have also been relatively low (see the bottom panel of Figure 1). Volatility in more recent years has been less than half that of the previous period (see Table 1). The corresponding reduction in people’s uncertainty about prices allows them to plan better for the future. Volatility has declined not only in the growth of overall GDP and inflation but also in virtually all of the major components of GDP and in aggregate unemployment, wages, and income.

Although there is no conclusive explanation for the decline in the volatility of GDP growth and inflation, numerous reasons have been advanced, many of which are closely interrelated. The proposed explanations fall into four broad categories.

- **A More “Flexible” Economy.** Improvements in production processes and investments in information technologies (such as those that facilitate just-in-time inventory management), increases in temporary and flexible work arrangements, and the deregulation of many industries (especially in the transportation sector) have made it possible for the economy to adjust much more smoothly to changes in the availability of, or demand for, goods and services. The economy can more easily adapt to shocks, such as the energy price shock of 2004 and 2005, without large changes in output or large jumps in inflation.¹

1. See Congressional Budget Office, *The Economic Effects of Recent Increases in Energy Prices* (July 2006). See also Lawrence F. Katz and Alan B. Krueger, “The High Pressure U.S. Labor Market of the 1990s,” *Brookings Papers on Economic Activity*, no. 1 (1999).

- **Improvements in Financial Markets and Institutions.** Financial innovations since the 1970s have enhanced businesses' and households' access to credit and thereby enabled them to borrow more readily when their income turns down. Those innovations include improved assessment and pricing of risk (including the development of credit derivatives and interest rate swaps) and the greater use of financial markets in supplying credit (through securitization, for example).² In addition, changes in government regulations have allowed more diversification in banking and made housing financing more stable. Even though those changes in capital markets seem esoteric, they appear to have broadened and deepened access to credit for both businesses and households and to have improved the resiliency of the financial system by spreading the risk of default more widely and efficiently.
- **Management of Monetary Policy.** During the past two decades, the Federal Reserve has shown a strong commitment to keeping inflation low and stable. Its actions to reduce and contain inflationary pressures seem, in turn, to have stabilized firms' and households' expectations of future inflation. As a result, the Federal Reserve has not needed to respond as forcefully as in the past to dampen swings in expectations of inflation or to bring inflation down from a high level. The result may be reduced macroeconomic volatility.
- **Fewer Shocks to the Economy.** This explanation—that fewer shocks to the economy, particularly the worldwide economy, have occurred—was proposed before the rapid rise in oil prices from 2004 to mid-2006. Given the mild effect of that oil price shock on economies worldwide, the explanation now seems less persuasive. Moreover, overall U.S. economic growth was little affected by other major shocks during the past 20 years, such as the Asian currency crisis of 1997, the Russian debt crisis of 1998, and the terrorist attacks of September 11, 2001.

Workers' Earnings and Households' Income

The story at the level of the individual worker or household is different from the story at the macroeconomic level. Individual earnings tend to rise over time, but the data suggest that workers and families experience substantial volatility year to year around that underlying trend.

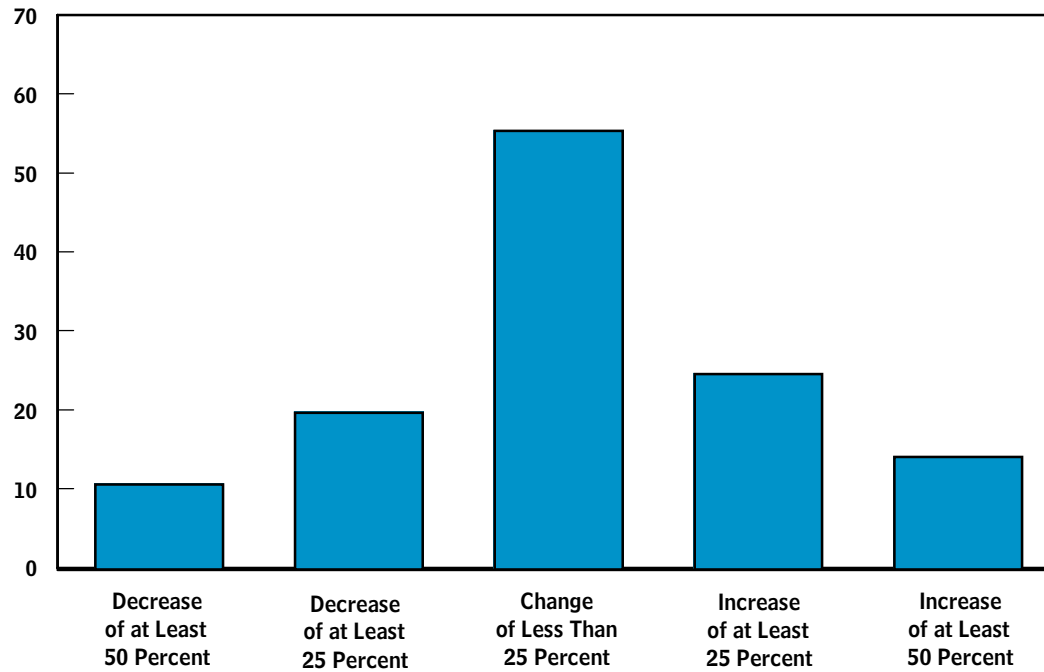
To examine earnings and income volatility, CBO analyzed recent data from the Survey of Income and Program Participation (a data set collected by the U.S. Census Bureau). The analysis focused on workers who were 25 to 55 years old and not

2. Securitization involves the conversion of cash flows into securities; credit derivatives are financial instruments designed to transfer credit risk from one party to another; and interest rate swaps are exchanges of two series of payments based on different interest rates, which entities undertake to manage their exposure to changes in rates.

Figure 2.

Distribution of Changes in Workers' Annual Earnings from 2001 to 2002

(Percent)



Source: Congressional Budget Office based on data from the 2001 panel of the Bureau of the Census's Survey of Income and Program Participation.

Note: The sample consists of individuals ages 25 to 55 who had positive earnings in 2001 and were not enrolled in school that year or in 2002. Earnings are inflated to 2002 dollars using the research series of the consumer price index for urban consumers.

in school, so it therefore does not capture changes in earnings associated with graduating from school or leaving work for school.³ Even so, the analysis shows substantial variation in workers' before-tax earnings from 2001 to 2002. After an adjustment for inflation, one in four workers saw his or her earnings increase by at least 25 percent, while one in five saw his or her earnings decline by at least 25 percent. A substantial portion of workers, 11 percent, saw their earnings decline by at least half (see Figure 2).

Workers with less education tend to experience more volatility in their earnings than do workers with more education (see Table 2). For example, from 2001 to 2002, 16 percent of workers without a high school education had their earnings

3. For a discussion of wage trends in low-wage labor markets, see Congressional Budget Office, *Changes in Low-Wage Labor Markets Between 1979 and 2005* (December 2006).

Table 2.

Distribution of Changes in Workers' Annual Earnings from 2001 to 2002, by Educational Attainment and Age

(Percent)

	Decrease in Earnings of at Least		Changes in Earnings of Less Than 25 Percent	Increases in Earnings of at Least	
	50 Percent	25 Percent		25 Percent	50 Percent
All Workers	10.7	19.8	55.5	24.7	14.2
Educational Attainment					
Less than high school	15.6	26.0	47.9	26.0	16.4
High school	11.6	19.8	55.0	25.2	14.8
More than high school	9.5	18.8	57.0	24.2	13.6
Age					
25 to 30	11.4	20.0	53.8	26.2	14.6
31 to 40	10.7	19.8	54.5	25.7	14.9
41 to 55	10.5	19.7	56.7	23.6	13.7

Source: Congressional Budget Office based on data from the 2001 panel of the Bureau of the Census's Survey of Income and Program Participation.

Note: The sample consists of individuals ages 25 to 55 in 2001 who had positive earnings in 2001 and were not enrolled in school that year or in 2002. Earnings are inflated to 2002 dollars using the research series of the consumer price index for urban consumers.

decline by 50 percent or more, compared with 10 percent of workers with more than a high school education.

Such fluctuations in earnings can result from many sources, including job changes, job losses, job gains, voluntary exits from the labor force to care for children or other family members, changes in the number of hours worked per year, or changes in the wage rate received by workers. Among workers who experienced at least a 50 percent drop in earnings, most did not work at least a month and typically did not work eight months in 2002. When asked why they were not working, the most common responses were that they were caring for a child or other family member or were pregnant; were not able to find work or had been laid off; were unable to work because of disability, illness, or injury; or were not interested in working or were retired.⁴ The responses appear to be split evenly between those suggesting that the departure from the labor force was voluntary and those suggesting that it was not.

Total household income consists not only of the earnings of household members but also other sources of cash income such as unemployment insurance, retirement

4. Only those individuals who had at least four consecutive months without a job responded to the question.

income, dividends, and interest. Compared with earnings, it thus represents a broader measure of the economic resources available to individuals.⁵ Like workers' earnings, household income can vary from year to year, though it tends to be less variable than individual earnings. First, if an individual worker in a household with multiple earners loses a job, the earnings of the other members may partially mitigate the consequences of the job loss. Second, a loss in earned income may be alleviated by an increase in other sources of income, like unemployment insurance, payments from a retirement plan, or disability insurance. Neither the mitigating effects of the presence of other earners in the household nor the potential for increases in nonlabor income is captured in the more narrow measure of individual earnings.

To be sure, household income can vary from changes in the composition of households. Households are not fixed entities: They often evolve, as couples marry, separate, or divorce and working children move out of or into the house.

According to CBO's analysis, the growth of before-tax income varied substantially among households between 2001 and 2002 (see Figure 3). Nearly one in four households experienced an increase in income of at least 25 percent, virtually identical to the number of individuals who experienced a similar percentage increase in earnings. Fewer households, one in seven, experienced a decrease in income of at least 25 percent. And one in 25 households experienced a decrease in income of at least 50 percent—compared with one in nine individuals who experienced such a decline in earnings. Unlike the variability of earnings, however, the variability of household income seems similar across education levels (see Table 3).

For another point of comparison, CBO conducted a similar analysis using data from 1997 to 1998—a period of relatively rapid economic growth, in contrast to the relatively slow growth from 2001 to 2002—and found similar results.⁶ Thus, substantial variability in workers' earnings and income can occur in periods of both strong and weak economic growth.

Using surveys to measure the year-to-year variability in earnings and income is complicated by the fact that individuals' responses are often in error (which could either overstate or understate the actual changes in earnings or income).⁷ In

5. Household income, as reported here, is before-tax income and excludes capital gains and losses.

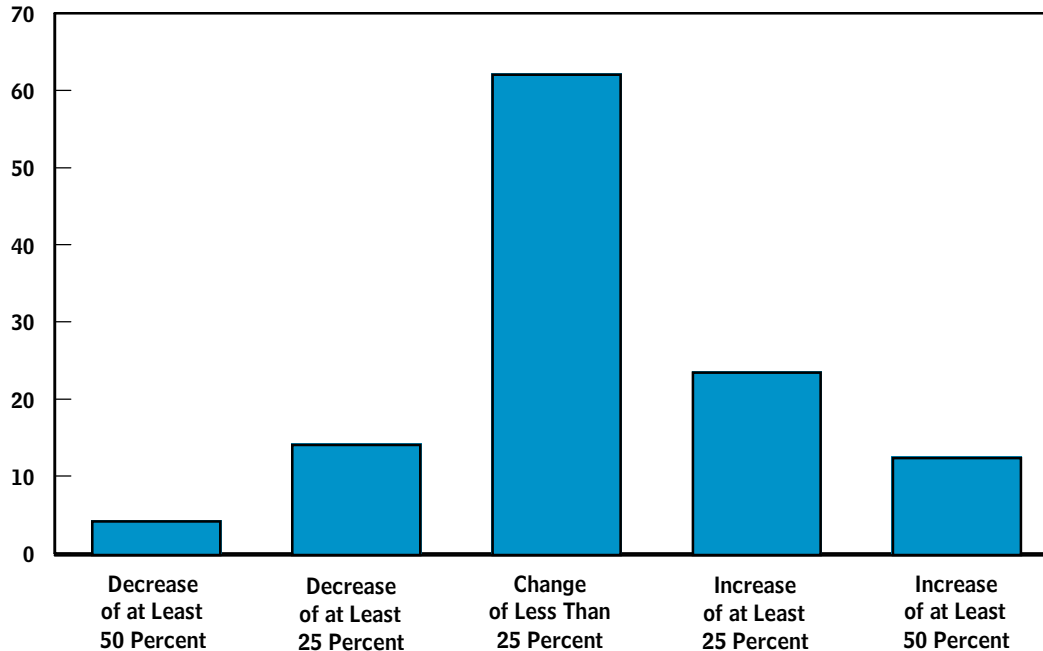
6. The data are from the 1996 and 2001 panels of the Survey of Income and Program Participation, conducted by the U.S. Census Bureau.

7. See John Bound and Alan B. Krueger, "The Extent of Measurement Error in Longitudinal Surveys: Do Two Wrongs Make a Right?" *Journal of Labor Economics*, vol. 9, no. 1 (January 1991), pp. 1–24.

Figure 3.

Distribution of Changes in Households' Annual Income from 2001 to 2002

(Percent)



Source: Congressional Budget Office based on data from the 2001 panel of the Bureau of the Census's Survey of Income and Program Participation.

Note: The sample consists of households in January 2001 that were surveyed for all of that year and 2002. Income, which is before taxes, includes earnings, unemployment compensation, workers' compensation, Social Security benefits, Supplemental Security Income, public assistance, veterans' payments, survivors' benefits, disability benefits, pension or retirement income, interest, dividends, rents, royalties, income from estates or trusts, alimony, child support, financial assistance from outside the household, and other cash income. Income is inflated to 2002 dollars using the research series of the consumer price index for urban consumers.

addition, while the surveys are intended to be nationally representative, they may not include undocumented workers and can be subject to biases because some people either refuse to respond at all or drop out of the surveys before their completion. An important question, then, is whether, over longer periods of time, earnings and income volatility has increased. According to most studies on the topic, earnings have tended to fluctuate more, on a percentage basis, over the past

Table 3.

Distribution of Changes in Households' Annual Income from 2001 to 2002, by Educational Attainment and Age of the Head of the Household

(Percent)

	Decrease in Income of at Least		Changes in Income of Less Than 25 Percent	Increases in Income of at Least	
	50 Percent	25 Percent		25 Percent	50 Percent
All Households	4.3	14.2	62.2	23.6	12.5
Educational Attainment of the Head of the Household					
Less than high school	4.3	14.6	62.1	23.3	12.6
High school	4.2	13.8	61.9	24.2	12.6
More than high school	4.3	14.3	62.3	23.3	12.4
Age of the Head of the Household					
25 to 30	4.2	14.8	59.3	26.0	13.8
31 to 40	4.3	14.7	59.6	25.7	13.6
41 to 55	4.8	15.1	61.2	23.7	12.1

Source: Congressional Budget Office based on data from the 2001 panel of the Bureau of the Census's Survey of Income and Program Participation.

Note: The sample consists of households in January 2001 that were surveyed for all of that year and 2002. Income, which is before taxes, includes earnings, unemployment compensation, workers' compensation, Social Security benefits, Supplemental Security Income, public assistance, veterans' payments, survivors' benefits, disability benefits, pension or retirement income, interest, dividends, rents, royalties, income from estates or trusts, alimony, child support, financial assistance from outside the household, and other cash income. Income is inflated to 2002 dollars using the research series of the consumer price index for urban consumers.

25 years than they did during the 1970s.⁸ Relative to other questions about income and earnings, however, the trend in their volatility has received relatively little research attention. More research is therefore needed before firm conclusions about the precise time trend in earnings and income volatility can be reached.

8. See, for example, Peter Gottschalk and Robert Moffitt, "The Growth of Earnings Instability in the U.S. Labor Market," *Brookings Papers on Economic Activity*, no. 2 (1994); Costas Meghir and Luigi Pistaferri, "Income Variance Dynamics and Heterogeneity," *Econometrica*, vol. 72, no. 1 (2004), pp. 1–32; Maury Gittleman and Mary Joyce, "Earnings Mobility in the United States, 1967–91," *Monthly Labor Review*, vol. 118, no. 9 (September 1995), pp. 3–13; and Peter Gottschalk and Robert Moffitt, "Trends in the Transitory Variance of Earnings in the United States," *Economic Journal*, vol. 112, no. 478 (2002), pp. 68–73.

To the extent that variability in earnings and income has increased, the phenomenon may be consistent with—and indeed perhaps part of the explanation of—the decreased macroeconomic volatility described earlier. For example, more-flexible labor markets could enable the economy to adjust to changes in the economic environment more quickly but also could mean that individuals change jobs and have their wages change more frequently.

Risk Sharing, Income Fluctuations, and Taxation

Economists have long noted that the tax system serves as an automatic stabilizer that offsets at least part of demand shocks to the economy.⁹ A decline in aggregate before-tax income of one dollar generates a decline in aggregate after-tax income of less than one dollar. As a result, the tax system helps to stabilize demand for goods and services, which in turn helps to reduce fluctuations in the overall economy.¹⁰

In addition to its well-recognized role as a macroeconomic automatic stabilizer, the tax system can serve as a microeconomic automatic stabilizer by helping to smooth out variability at the level of workers' earnings and households' income.¹¹ The tax system automatically reduces the tax burden when before-tax income declines and automatically raises the burden when before-tax income rises. After-tax income therefore tends to vary less than before-tax income.¹² In that way, the tax system provides a form of after-tax earnings or income insurance, which complements the social insurance provided through a variety of government programs.

9. See Alan J. Auerbach and Daniel Feenberg, "The Significance of Federal Taxes as Automatic Stabilizers," *Journal of Economic Perspectives*, vol. 14, no. 3 (Summer 2000), pp. 37–56; and Thomas J. Kniesner and James P. Ziliak, "Tax Reform and Automatic Stabilization," *American Economic Review*, vol. 92, no. 3 (June 2002), pp. 590–612

10. The stabilizing effect of the tax system on the overall economy reached a peak around 1980 and by 1995 had declined to about the same level as in the 1960s. Since 1995, according to CBO's estimates, there has been relatively little change. Those movements mirror the increase and then the decline in effective tax rates. See Auerbach and Feenberg, "The Significance of Federal Taxes as Automatic Stabilizers."

11. See Hal R. Varian, "Redistributive Taxation as Social Insurance," *Journal of Public Economics*, vol. 14, no. 1 (August 1980), pp. 49–68; Jonathan Eaton and Harvey S. Rosen, "Labor Supply, Uncertainty, and Efficient Taxation," *Journal of Public Economics*, vol. 14, no. 3 (December 1980), pp. 365–374; Jonathan Eaton and Harvey S. Rosen, "Taxation, Human Capital, and Uncertainty," *American Economic Review*, vol. 70, no. 4 (September 1980), pp. 705–715; Jonathan Eaton and Harvey S. Rosen, "Optimal Redistributive Taxation and Uncertainty," *Quarterly Journal of Economics*, vol. 95, no. 2 (September 1980), pp. 357–364.

12. Variability of income can be measured in different ways. Some analysts measure it as the change in dollar income; other analysts measure it as the percentage change in income. A pure proportional tax system can reduce the dollar amount of variability but does not affect the variability in percentage terms; a progressive tax system can reduce variability by both measures.

Table 4.

Effect of Taxes on the Variability of Income: An Example

(Dollars)

	Initial Wages	Lower Wages	Change in Wages	
			Dollars	Percent
Before-Tax Wages	45,000	36,000	-9,000	-20
Income Taxes	5,695	3,755		
Payroll Taxes	3,443	2,754		
Total taxes	9,138	6,509		
After-Tax Wages	35,863	29,491	-6,372	-18

Source: Congressional Budget Office.

Note: Based on the tax schedule for a single worker in 2006.

(Although the federal tax system generally works to smooth out fluctuations in income, that attribute does not apply for each and every taxpayer.¹³)

The risk-sharing features of the tax system can be illustrated in a simple example (see Table 4). Consider a single worker earning \$45,000 in 2006 with no other sources of income. At that level of income, the worker would owe \$5,695 in federal income taxes and \$3,443 in payroll taxes and would therefore have \$35,863 in after-tax income. If the worker's earnings fell by 20 percent, to \$36,000, after-tax earnings would decline to \$29,491. Although before-tax earnings fell by \$9,000 (20 percent), after-tax earnings declined by only \$6,372 (18 percent).

The predictability of households' income will affect how much value they place on the insurance provided through the tax system. To the extent that swings in earnings or income are unpredictable, households will tend to value the insurance more. However, the value of that insurance will be smaller for households whose earning or income swings are largely expected or stem from intentional decisions about how much and when to work.

The insurance provided by the progressive tax system to households with variable income comes at a price: it can reduce average after-tax income for such households. Consider two people who have the same amount of lifetime earnings; one has steady earnings and the other, large swings in earnings. Under a progressive tax system based on annual income, the steady earner pays less in taxes over a

13. See Robert Moffitt and Michael Rothschild, "Variable Earnings and Nonlinear Taxation," *Journal of Human Resources*, vol. 22, no. 3 (Summer 1987), pp. 405–421. For example, the payroll tax for the Old-Age, Survivors, and Disability Insurance program does not apply to earnings above the taxable maximum (\$97,500 in 2007). As a result, when earnings fluctuate across that threshold, after-tax earnings can be more variable in percentage terms than before-tax earnings.

lifetime even though both people have the same total amount of earnings. Thus, progressive taxation combined with an annual accounting period fails to treat people in similar circumstances in the same way. Various options for changing the tax system would alter the trade-off between the income smoothing insurance provided and the average cost imposed on households with variable income.

In addition to that trade-off between the insurance provided to and the price paid by households with variable income, any risk-sharing benefits that the tax system generates must be weighed against the potential costs that it imposes on the economy at large. Marginal tax rates affect households' decisions about how much to work and save, as well as the form in which to receive compensation for doing so, and those distortions reduce the efficient operation of the economy. The implicit insurance that the government provides through the tax system may have other effects, such as changing the types and forms of insurance products offered by the private markets or encouraging people to take risks they would not take in the absence of that implicit insurance.¹⁴

Comparing the various costs and benefits is difficult, and a complete accounting of all of those effects has not yet been achieved. Nonetheless, some recent studies have found that, compared with some alternatives, the current tax system may provide insurance benefits that are larger than the costs that it imposes on the economy by distorting decisions about working and saving.¹⁵ However, those analyses depend on many assumptions, and alternative assumptions could yield different estimates, so the studies should be viewed with caution. Despite those caveats, a reasonable conclusion from this new research is that the income-smoothing insurance provided through the tax system could be quantitatively important and should be taken into account in any analysis of the relative costs and benefits of different tax systems.

Finally, it is important to note that the benefits of risk sharing and the costs of distortions are not captured by changes in GDP. Although GDP is a useful summary measure that may be related to households' well-being, it does not measure the value that households place on smoother incomes or the cost of distorted decision-making. Instead, GDP is merely a measure of how much output the market economy produces using its capital, labor, and technology. It does not measure what ultimately matters and what needs to be measured: changes in the well-being of households.

14. See Dirk Krueger and Fabrizio Perri, "Public Versus Private Risk Sharing" (working paper, December 2005).

15. See Shinichi Nishiyama and Kent Smetters, "Consumption Taxes and Economic Efficiency with Idiosyncratic Wage Shocks," *Journal of Political Economy*, vol. 113, no. 5 (October 2005), pp. 1088–1111; Juan Carlos Conesa and Dirk Krueger, "On the Optimal Progressivity of the Income Tax Code," *Journal of Monetary Economics*, vol. 53, no. 7 (October 2006), pp. 1425–1450.

Conclusion

The U.S. economy has become less volatile: Macroeconomic fluctuations are now much milder than they were in the past. At the same time, however, households continue to experience substantial variability in their earnings and income, and that variability may now be greater than in the past—perhaps contributing to anxiety among workers and families. The tax system can help to smooth fluctuations in income not only at the macroeconomic level but also at the level of workers and households. The income insurance provided as a result may be quite valuable but needs to be weighed against the other effects of the tax system.