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Source: *The American Economic Review*, Vol. 103, No. 3, PAPERS AND PROCEEDINGS OF THE One Hundred Twenty-Fifth Annual Meeting OF THE AMERICAN ECONOMIC ASSOCIATION (MAY 2013), pp. 184-188

Published by: [American Economic Association](#)

Stable URL: <http://www.jstor.org/stable/23469726>

Accessed: 28-01-2016 07:57 UTC

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Measuring the Trends in Inequality of Individuals and Families: Income and Consumption[†]

By JONATHAN D. FISHER, DAVID S. JOHNSON, AND TIMOTHY M. SMEEDING*

The 2012 *Economic Report of the President* states: “The confluence of rising inequality and low economic mobility over the past three decades poses a real threat to the United States as a land of opportunity” (p. 181). President Obama stated that “[t]his kind of gaping inequality gives lie to the promise that’s at the very heart of America: that this is a place where you can make it if you try.”¹ Virtually all researchers show that American income inequality has increased over the past three decades (e.g., Atkinson, Piketty, and Saez 2011; Jenkins et al. 2011). While not denying that income inequality rose, researchers dispute the extent of the increase, which depends on the resource measure used, the definition of the resource measure, the

time period over which inequality is measured, and the population of interest.

This paper examines the distribution of both income and consumption from the same set of individuals using the 1985–2010 Consumer Expenditure (CE) Surveys. Differing from the findings in other recent research, we find that the trends in income and consumption inequality are similar between 1985 and 2006, but diverge during the Great Recession with consumption inequality decreasing and income inequality increasing. Nevertheless, given the differences in the trends in inequality in the last four years, using both income and consumption provides useful information.

Most inequality studies use annual income data. A difficulty with using annual income to measure inequality is that if everyone goes through a life-cycle current-income path, annual snapshots of income would suggest greater inequality than that which actually exists in permanent income. In addition, people may experience many transitory changes in income that would cause the distribution of annual income to indicate more inequality than actually exists.²

Economists have suggested that consumption may be a more appropriate indicator of permanent income. Slesnick (2001) and Cutler and Katz (1991) were among the first to show different trends in income and consumption inequality. Most recent research shows that consumption inequality is lower than income inequality, and its increase is less than the increase in income inequality (e.g., Heathcote, Perri, and Violante 2010).

Three studies find similar increases in consumption and income inequality by adjusting the CE Interview Survey data or by using an alternative data source (Attanasio, Battistin, and Leicester 2006; Aguiar and Bils 2011; Attanasio,

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[†] To view additional materials, and author disclosure statement(s), visit the article page at <http://dx.doi.org/10.1257/aer.103.3.184>.

¹ “Remarks by the President on the Economy in Osawatimie, Kansas,” Dec. 6, 2011. <http://www.whitehouse.gov/the-press-office/2011/12/06/remarks-president-economy-osawatimie-kansas>.

² See Fisher, Johnson, and Smeeding (2012) for examples.

Hurst, and Pistaferri 2012). In addition to finding similar increases in income and consumption inequality, these three papers claim that the CE Interview Survey data are flawed. Bee, Meyer, and Sullivan (forthcoming) conduct a validation study of the CE Survey and state that “[t]he Interview Survey does quite well in terms of a high and roughly constant share of expenditures relative to the national accounts for some of the largest components of consumption” (p. 16). Even if it were agreed that the consumption data were problematic, to properly compare the adjusted consumption data to the income data, the income data would also need to be adjusted. Consumption cannot be adjusted for measurement error if income is not similarly adjusted.

I. Methodology and Data

It is important to use a consistent theoretical framework to define income and consumption. The most comprehensive concept of income and consumption is drawn from the writings of Haig and Simons. Haig (1921) stated that income was “the money value of the net accretion to one’s economic power between two points of time” (p. 7) and Simons (1938) defined personal income as “the algebraic sum of (1) the market value of rights exercised in consumption and (2) the change in the value of the store of property rights between the beginning and end of the period in question” (p. 50). No current household survey has the necessary variables to create a full measure of Haig-Simons income.³

Our goal is to have measures of disposable income and consumption that are accurate and as closely linked as possible (given the data limitations) to compare their distributions. While there may be reasons to exclude durable goods, education, or medical care from the measurement of consumption, removing these items from consumption while leaving income unadjusted distorts the relationship between and among income, consumption, and the change in net worth.

We use the only dataset in the United States that contains both income and consumption-expenditure information for the same households, the CE Interview Survey data, and we compute

measures of consumption and income inequality. We begin our analysis in 1985 as this is the first year with the most consistently comparable data. We examine two resource measures: disposable income and consumption. Disposable income is money income from employment, investment, government transfers, and inter-household transfers of money, plus the value of food stamps and federal tax credits, less federal and state income taxes, and FICA taxes. Consumption is spending on all goods and services for current consumption, excluding life insurance, pensions, and cash contributions. For consumption, we then subtract the purchase price of vehicles and the expenditures for homeownership and, in their place, add the service flow from vehicles, the reported rental equivalence of homeownership, and the value of federal government rental assistance.⁴

To match the income and consumption for each household and obtain annual measures of consumption, we use only those consumer units who participated in the survey for all four quarters. In this manner, we obtain the income and consumption for the same 12-month period. We do not restrict our sample by age, place of residence, or income reporting status as previous research has done. Previous papers also restricted their samples to “complete income reporters” as defined by the CE Survey.⁵

The CE Survey began imputing income in 2004 but did not impute previous years.⁶ We replicate the BLS methodology as closely as possible and impute income for 1985–2010. For income taxes we use the National Bureau of Economic Research’s TAXSIM program (see Feenberg and Coutts 1993) to estimate federal, state, and FICA taxes, and tax credits such as the Earned Income Tax Credit.⁷ All values are equivalized using the square root of household size, and the weights are adjusted to account for using only four-quarter consumer units and to reflect person weights.

⁴ See Fisher, Johnson, and Smeeding (2012) for details.

⁵ Fisher (2006) finds that incomplete income reporters have lower consumption than complete income reporters, which may affect any conclusions about the level of and trend in inequality.

⁶ Note that the BLS has imputed missing values for consumption for every year of our sample. By imputing income, we are treating income and consumption consistently.

⁷ <http://www.nber.org/taxsim/>. See Fisher, Johnson, and Smeeding (2012) for a description of the tax estimation and income imputation.

³ Smeeding and Thompson (2011) construct a more complete income measure that attempts to account for the realized and unrealized returns on asset income.

Although our measures of income and consumption do not use the complete Haig-Simons definition, we provide a more complete measure of consumption than has previous research. Our consumption measure is better linked to disposable income and more fully captures the levels of and trends in the distribution.

II. Levels of and Trends in Inequality

To obtain a summary measure of inequality, we use the Gini index, the most commonly used measure of inequality that satisfies all of the key properties of an inequality index. Many previous studies use the standard deviation of logs; however, this measure does not satisfy the principle of transfers, as it is a consistent measure of inequality only for log normal distributions.⁸

Similar to previous work and consistent with the life-cycle permanent income hypothesis, the levels of consumption inequality are lower than those for income. Figure 1 shows the Gini index for before-tax income, disposable income, and consumption, and compares these to the Gini obtained using before-tax income from the CPS.⁹ The Gini for income using the CE shows similar trends as the Gini for income in the CPS data, with fairly close end points in 1985 and 2010. However, the income Gini using CE is more volatile because of the smaller sample size in the CE survey as compared to CPS.¹⁰

Figure 1 shows that disposable income inequality and consumption inequality track each other between 1985 and 2006 but diverge during the 2006 to 2010 period. Between 1985 and 2006, consumption inequality increases 7.2 percent,

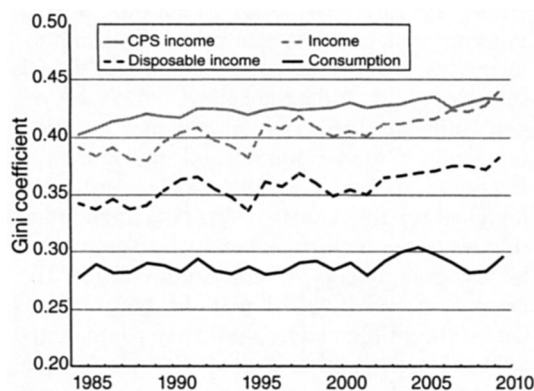


FIGURE 1. INEQUALITY USING THE GINI COEFFICIENT (1985–2010)

Source: Consumer Expenditure Surveys, 1985–2010.

while disposable income inequality increases 8.0 percent. But from 2006 to 2010, consumption inequality falls 0.7 percent and disposable income inequality increases by 3.9 percent. Over the entire period, disposable income inequality increases 12.2 percent, while consumption inequality increases 6.4 percent, about half of the increase in disposable income inequality. Due to the volatility of the Gini indexes, one can obtain different summary results depending on the years chosen as starting or ending points.

A. Comparison to Other Consumption Measures

Other researchers compare the change in income inequality to the change in consumption inequality. A key similarity among these studies is that much of the difference in the trend in inequality occurs in the early 1980s, the time period when the CE Survey was changing significant parts of its survey every year. For example, Heathcote, Perri, and Violante (2010) find that between 1980 and 2006 income inequality increases about twice as much as consumption inequality. However, restricting the data to the change between 1985 and 2005 yields similar increases in inequality. Attanasio, Hurst, and Pistaferri (2012) find a much smaller increase in consumption inequality; however, much of the divergence between the increase in income and consumption inequality occurs in the early 1980s. Meyer and Sullivan (2013) find a similar

⁸ The principle of transfers states that any transfer from rich to poor should decrease inequality.

⁹ The CPS data changed the collection methodology in 1994. To account for these changes, following Atkinson, Piketty, and Saez (2011), the Gini coefficient for 1993 is set equal to that in 1992, and all previous years are adjusted by the same factor.

¹⁰ There is an increase in income inequality in 1996 that may in part be due to changes in top-coding in the CE. It is not yet known whether and how much of the increase in 1996 is due to the change in top-coding. There were changes in the top-coding that should decrease inequality and changes that should increase inequality. Also note that there were analogous changes in top-coding for many components of consumption. When we adjust income inequality for changes in top-coding, a similar change will need to be made to consumption. See Jenkins et al. (2011) for a description of how changes in top-coding affect trends in inequality.

increase in consumption and income inequality between 2000 and 2006 and, like our results, find a decline in consumption inequality after 2006 but an increase in income inequality. These researchers, however, are not comparing consistently defined measures of income and consumption and/or are using two different data sources, with different sampling and nonsampling errors, to measure income and consumption. Using either of these suboptimal methods, previous research may find differing trends in inequality but cannot know whether the differences are real or if they come from inconsistent definitions or from using different samples.

In Figure 2, we replicate the consumption measures for these three studies using the CE Survey and our sample of individuals. In other words, we recreate their measure of consumption in order to show how using different samples and different definitions of consumption affect the conclusions about the trends in income and consumption inequality. Heathcote, Perri, and Violante (2010) and Attanasio, Hurst, and Pistaferri (2012) both create a measure referred to as nondurable consumption, but the definitions differ. For example, Heathcote, Perri, and Violante include education expenses but exclude utilities, while Attanasio, Hurst, and Pistaferri do the exact opposite. Meyer and Sullivan (2013) create a measure of total consumption that is similar to ours but excludes education and medical expenses. A notable difference between Meyer and Sullivan and the other two is that Meyer and Sullivan include rental equivalence for homeowners and rent for renters along with the service flow from vehicles.

Figure 2 shows the trend in the Gini coefficient for our disposable income and consumption measures along with the three other definitions of consumption. Since the Gini indexes for all of the measures are volatile, all trends are normalized to the mean of the Gini indexes for each measure over the entire 25-year period (instead of using an index of 1985 = 100). Figure 2 shows that the trends in income inequality and all measures of consumption inequality are all broadly similar until 2002, when they begin to diverge. The changes for all measures are also similar over the 1985–2006 period, while over the entire 25-year period all consumption measures increase less than income inequality. The Attanasio, Hurst, and Pistaferri (2012) measure of nondurables increases considerably less than

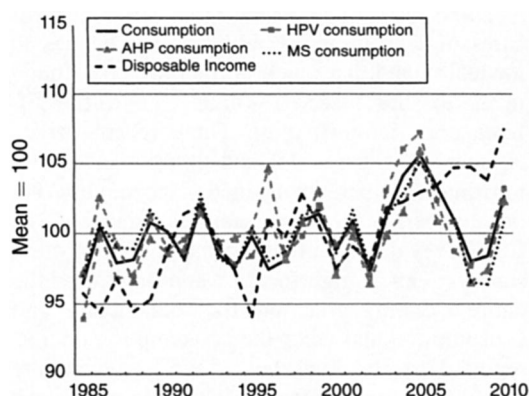


FIGURE 2. COMPARING THE TRENDS IN INEQUALITY USING DIFFERENT CONSUMPTION MEASURES AND DISPOSABLE INCOME WITH THE GINI COEFFICIENT (*Mean* = 100)

Notes: HPV consumption refers to the nondurable consumption measure of Heathcote, Perri, and Violante (2010). AHP consumption refers to the nondurable consumption measure of Attanasio, Hurst, and Pistaferri (2012). MS consumption refers to the consumption measure of Meyer and Sullivan (2013). Each series is normalized to its own mean value, such that the series equals 100 at its mean.

Source: Consumer Expenditure Surveys, 1985–2010.

income inequality, while the Meyer and Sullivan (2013) and Heathcote, Perri, and Violante (2010) consumption measures increased by about the same amount as our consumption inequality measure. These findings demonstrate the importance of using consistent definitions of income and consumption and not restricting the sample by age or place of residence.

III. Conclusions

We present evidence on the level and trend in inequality over the last 25 years in the United States using disposable income and consumption for the same sample of individuals from the CE Survey. Using a sample that includes all individuals, not just those that live in urban areas or those that are of working age, we find that income and consumption inequality increase at approximately the same rate between 1985 and 2006 but diverge during the period of the Great Recession (between 2006 and 2010). This increase between 1985 and 2006 is similar for a variety of consumption measures, and the decrease during the recession is similar to that found in Meyer and Sullivan (2013).

These results demonstrate that different measures of consumption yield similar changes in inequality and that much of the difference found in the existing research is likely due to the difference in samples used. Three recent papers argue that the increase in consumption inequality mirrored the increase in income inequality, but those papers make significant adjustments to the CE Survey data or impute consumption in other surveys. Our straightforward approach uses the entire CE Survey sample for both income and consumption and takes the consumption data as reported by the households. While we impute income for those households that do not report valid values for all of their components of income, the observed increase in income inequality in the CE matches the level and trend found in the CPS, the standard dataset used to measure earnings and income inequality. Examining income and consumption together using the same sample provides an important contribution to the literature on the economic well-being of individuals. That the trends in the two measures between 1985 and 2006 are broadly similar provides even more confidence in the conclusion that the inequality of well-being increased over this time period.

REFERENCES

- Aguiar, Mark A., and Mark Bils. 2011. "Has Consumption Inequality Mirrored Income Inequality?" National Bureau of Economic Research Working Paper 16807.
- Atkinson, Anthony B., Thomas Piketty, and Emmanuel Saez. 2011. "Top Incomes in the Long Run of History." *Journal of Economic Literature* 49 (1):3–71.
- Attanasio, Orazio, Erik Hurst, and Luigi Pistaferri. 2012. The Evolution of Income, Consumption, and Leisure Inequality in The US, 1980–2010." National Bureau of Economic Research Working Paper 17982.
- Attanasio, Orazio P., Erich Battistin, and Andrew Leicester. 2006. "From Micro to Macro, from Poor to Rich: Consumption and Income in the UK and the US." Unpublished.
- Bee, Adam, Bruce Meyer, and James Sullivan. Forthcoming. "The Validity of Consumption Data: Are Consumer Expenditure Interview and Diary Surveys Informative?" In *Improving the Measurement of Consumer Expenditures*, edited by Christopher Carroll, Thomas Crossley, and John Sabelhaus. Chicago: University of Chicago Press.
- Council of Economic Advisors. 2012. *Economic Report of the President, 2012*. Washington, DC: GPO.
- Cutler, David M., and Lawrence F. Katz. 1991. "Macroeconomic Performance and the Disadvantaged." *Brookings Papers on Economic Activity* (2):1–61.
- Feenberg, Daniel, and Elisabeth Coutts. 1993. "An Introduction to the TAXSIM Model." *Journal of Policy Analysis and Management* 12 (1):189–94.
- Fisher, Jonathan D. 2006. "Income Imputation and the Analysis of Consumer Expenditure Data." *Monthly Labor Review* 129 (11):11–18.
- Fisher, Jonathan, David Johnson, and Timothy Smeeding. 2012. "Inequality of Income and Consumption: Measuring the Trends in Inequality from 1985–2010 for the Same Individuals," Paper presented at the 32nd General Conference of IARIW.
- Haig, Robert M. 1921. "The Concept of Income—Economic and Legal Aspects." In *The Federal Income Tax*, edited by Robert Murray Haig, 1–28. New York: Columbia University Press.
- Heathcote, Jonathan, Fabrizio Perri, and Giovanni L. Violante. 2010. "Unequal We Stand: An Empirical Analysis of Economic Inequality in the United States, 1967–2006." *Review of Economic Dynamics* 13 (1):15–51.
- Jenkins, Stephen P., Richard V. Burkhauser, Shuaizhang Feng, and Jeff Larrimore. 2011. "Measuring Inequality Using Censored Data: A Multiple-Imputation Approach to Estimation and Inference." *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 174 (1):63–81.
- Meyer, Bruce, and James Sullivan. 2013. "Consumption and Income Inequality and the Great Recession." *American Economic Review* 103 (3): 178–88.
- Simons, Henry. 1938. *Personal Income Taxation: the Definition of Income as a Problem of Fiscal Policy*. Chicago: University of Chicago Press.
- Slesnick, Daniel T. 2001. *Consumption and Social Welfare: Living Standards and their Distribution in the United States*. New York: Cambridge University Press.
- Smeeding, Timothy M., and Jeffrey P. Thompson. 2011. "Recent Trends in Income Inequality: Labor, Wealth and More Complete Measures of Income." *Research in Labor Economics* (32): 1–50.