Joint Economic Committee
Republicans
Representative Kevin Brady
Vice Chairman

REPUBLICAN STAFF COMMENTARY

Identifying Economic Inequality

Exploring Different Measures of Inequality

June 18, 2012

Introduction

The misuse or mischaracterization of good economic data can lead to policy outcomes as poor as those made using bad or incomplete data. This is especially true on the issue of economic inequality.

The distribution of wealth and income inequality has been a point of concern since the time of Adam Smith, and the issue has been on the minds of U.S. policymakers since its initial mention in the Senate in 1898.[2] One of the most difficult issues despite the plethora of data on income today is defining income inequality and determining whether it is a consistent, pervasive problematic issue marring the link between productivity and earnings. This is the first in a series of commentaries surveying income inequality and determining its causes.

There are five major problem areas that make changes in income inequality over time difficult to determine:

1) There is a lack of consensus on what definition of income analysts should use to measure inequality;
2) Household demographics have changed over time;
3) Consumption patterns have also changed over time;
4) The use of different price deflators yields significantly different results; and
5) Other policy changes directly and indirectly affect the measurement of income inequality.

> ***The facts of income inequality and mobility are nonpartisan. They are incomplete and subject to revision. But in order to guide policy, facts must be as accurately understood and conveyed as possible.***
>
> **-- Scott Winship, before the Senate Budget Committee[1]**

Policymakers need an understanding of how America stands today in terms of economic inequality before considering any public policy changes to redress economic inequality. Specifically, policymakers should consider what are the facts about income inequality under the traditional definition of money income; how income inequality has changed through time; what is lacking from this analysis; what are other definitions of economic inequality; and what are the underlying causes of economic inequality. This commentary provides policymakers with a snapshot of economic inequality

(Continued on the next page ...)

in the United States in terms of income and other measures of economic well-being including earnings and wealth.

Historical Income Data

Prior to the 1990s, the focus of income distribution was not on the gains of the rich, but on helping those below the poverty line and within the bottom quintile.

Economist Alan Reynolds notes in his book, *Income and Wealth*, that prior to the 1990s, the focus of income distribution was not on the gains of the rich, but on helping those below the poverty line and within the bottom quintile. Reynolds notes that this shift has been problematic because much of the rhetoric has fallaciously implied that the success of entrepreneurs and highly-skilled earners comes at the expense of everyone else.[3]

A review of income data by threshold, income range, and quintile helps determine the breakdown of households' share of income in each category. In Figure 1, the highest quintile notably gained 6 percentage points relative to the other quintiles, which appear to lose a percentage point or two of the share of real aggregate income between 1967 and 2010. However, the aggregate income of 1967 (the beginning of the series) and 2010 is shown on a relative scale in real terms (inflation-adjusted 2010 dollars) to indicate the increase in size of the overall pie over time. On this account, all quintiles saw an increase in absolute aggregate income even though their shares may have changed slightly over 43 years.

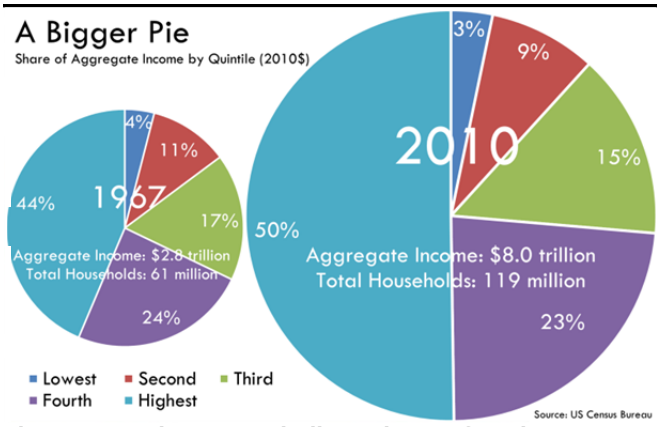

Figure 1 – The top quintile's share of real aggregate income increased since 1967, but the number of households nearly doubled while aggregate income nearly tripled.

All quintiles saw in an increase absolute aggregate income even though their shares may have changed slightly over 43 years. The number of households nearly doubled while aggregate income tripled.

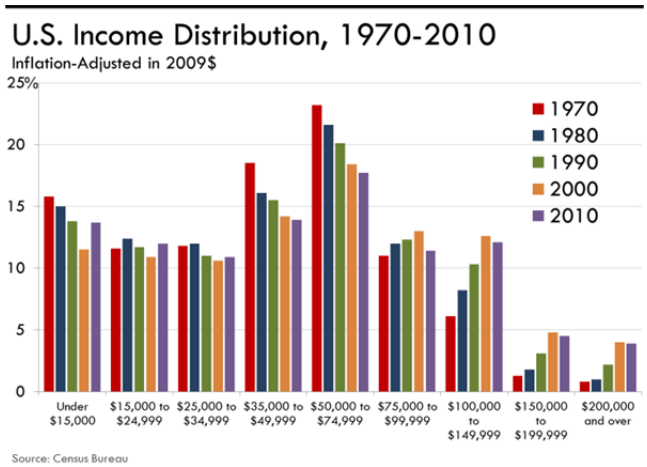

Figure 2 – The number of households earning more than $75,000 in income annually adjusted for inflation has increased significantly from 1970 through 2010.

The number of households earning above $75,000 increased over the past 40 years.

As time has passed, the poor and middle "classes" shrank as they became richer over the decades. Economist Antony Davies notes that the number of households (note: not the *same* households over time) in all of the income groups below $75,000 in annual real income fell or remained the same, while the number of households earning above $75,000 increased over the past 40 years, as shown in Figure 2.[4]

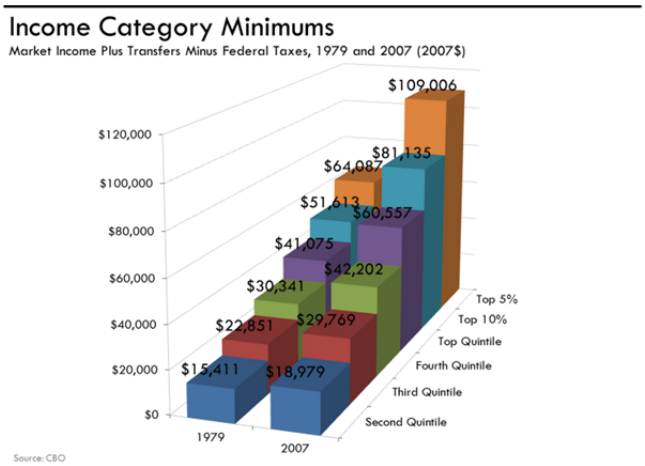

Figure 3 – Compared to 1979, income thresholds measured as market income inclusive of transfers and taxes for each quintile and beyond have experience a sizeable increase.

There are other factors to consider when discussing how shares of income have changed over time. Using data from the Congressional Budget Office (CBO), Figure 3 demonstrates market income plus transfers, minus federal taxes in 1979 and 2007. Since the 1960s and '70s, non-monetized benefits like Medicare and Medicaid have proliferated; tax structures have been altered; the number of hours worked in each income category have changed; certain staple goods and services have fallen in real price relative to income; consumption patterns have altered; the basket of goods that makes up consumer price inflation has improved to include newer technological innovations; education attainment patterns have changed and affected earnings potential; and household demographics have transformed the economic landscape as less people are living under one roof today. Adding further complication to this, to be discussed in a future commentary, is the dynamic element of income mobility; a significant majority of households that were in a particular quintile more than 40 years ago are not in the same quintile in 2010.

Household demographics have transformed the economic landscape as less people are living under one roof today.

What Counts as Income?

Income is traditionally defined as pre-tax, pre-transfer money income excluding capital gains. While a look at income differences in a given year may be particularly useful, the reality is not so simple when describing income changes over time. This initial definition, (1) the "official" measurement as defined by the Census Bureau, excludes 14 alternative measures of income which build up cumulatively to the final alternative measure of income as defined by the Census Bureau:

While a look at income differences in a given year may be particularly useful, the reality is not so simple when describing income changes over time.

(2) the initial definition of money income less government cash transfers;
(3) plus capital gains;
(4) plus imputed health insurance supplements to wage or salary income;
(5) less payroll taxes;
(6) less federal income taxes;
(7) plus earned income credit;
(8) less state income taxes;
(9) plus non-means-tested government cash transfers;
(10) plus the value of Medicare;
(11) plus the value of regular-price school lunches;
(12) plus means-tested government cash transfers (Aid to Families with Dependent Children, Aid to Dependent Children, Temporary

Assistance for Needy Families, Supplemental Security Income, and others like veterans' payments);
(13) plus the value of Medicaid;
(14) plus the value of other means-tested government noncash transfers (food stamps, rent subsidies, free and reduced-price school lunches, for example); and
(15) plus net imputed return on equity in one's own home.[5]

Yet, even if the analysis includes these cumulative factors to equal total after-tax, post-transfer income when considering income changes over time, it is of equal importance to consider not only which definition of income is being used when looking at inequality, but to identify the other factors that have changed over time that influence and are influenced by income and its distribution.

Living Standard Time Warp

By conducting a brief survey of the past 50 years with respect to the changes in the type of income received, the size of the median household, and the products widely consumed, the picture of income inequality over time may become clearer.

In 1960, the number of persons per household stood at 3.33. Individuals age 25 or older with a high school diploma was just over 46 percent, and those with college degrees or more comprised below 9 percent.

Take the median household[i] in the 1960s when the number of persons per household stood at 3.33. The ratio of households to vehicles was virtually 1:1. According to Census data, in terms of education, the percent of individuals age 25 or older who graduated high school accounted for just over 46 percent, and those with college degrees or more comprised below 9 percent. Federal government benefits and credits like Medicare, Medicaid, the Earned Income Tax Credit, food stamps, housing subsidies, school-lunch subsidies, and other programs were either nonexistent or in fledgling stages. In terms of technological innovations affecting consumption patterns, the ATM, bar-code scanner, and first version of the internet weren't created until near the end of the decade. The median household earned a traditionally-defined income of $41,000 in inflation-adjusted 2010 dollars, or income of $12,000 roughly per person in the median household.

Through the 1970s, the number of households in the United States increased 26.7 percent even though the population only grew 11.5 percent.

Demographic and socioeconomic changes, along with the proliferation of nonmonetary benefits significantly distorted the comparison of incomes across the following decade. As time progressed, the size of the average household declined from 3.33 persons per household to 2.81 by the late 1970s, and one-parent families increased from 4 percent to 7 percent. The number of families maintained by women nearly doubled from 4.5 to 8.2 million. At this time, rising divorce rates began to affect household size in the 1970s, among other factors like a shift of nonearning retirees from their children's homes to homes of their own, and thus over the decade, the number of households in the United States increased 26.7 percent even though the population only grew 11.5 percent.[6] The average number of own children under 18 years old per family decreased from 2.40 to 1.96.[7] Considering the consumer products widely available, new technology was

[i] The median household, the point at which half of households are earning less and half are earning more, is subject to less fluctuation over time than the mean household measurement, which is most affected by data from highest income households or businesses and is therefore less likely to represent the "typical" household.

more expensive compared to current day; a new tube television from a 1975 Sears catalog costing a nominal $749.95 would have cost the equivalent of $2,807.86 in 2006 for the exact same product; by another consumer perspective, a freezer would require 79 hours of work at the average hourly nominal earnings of a production worker of 1975 to purchase compared to 39.77 hours in 2006.[8] By the end of the decade, the median household earned nearly $50,000 in inflation-adjusted 2010 dollars, or an income of roughly $17,000 per person in the median household.[9]

The following decade experienced continuing higher education attainment rates, falling persons per household ratio, and major tax reform that inherently changed how business income was counted. By the 1980s, the average household size fell to 2.75 persons per household. Major tax reform took place in the form of the *Tax Reform Act of 1986*. The Internal Revenue Service (IRS) notes that data after 1987 is not compatible with that of data before 1987 because of major changes associated with adjusted gross income. After the reform took place, there was a great incentive for publicly-traded corporations to file their income under the individual income tax instead in the form of Subchapter-S corporations, partnerships or limited-liability companies. As a result, income that shows up in the top one percent, 0.1 percent, and 0.01 percent may actually be the income of *businesses* rather than *individuals* even though it is misleadingly recorded as an increase in the highest income categories.[10] By the end of the decade, real median household income in inflation-adjusted 2010 dollars was $51,000, or roughly $19,000 per person in the median household.

After the 1986 tax reform took place, there was a great incentive for publicly-traded corporations to file their income under the individual income tax.

The 1990s, during which the Census Bureau began to take more detailed surveys of material well-being improvements across all levels of income, brought forth a household size decline to 2.63 persons per household. Consumer durables that households owned increased over the decade including an increase in personal computers to 42 percent of households, VCRs increased to 85.2 percent, microwaves increased to 90.7 percent, air conditioning to 77.7 percent, and televisions, stoves and refrigerators were in more than 98 percent of households. Meeting basic needs was much improved with more than 90 percent of households in each of the following categories by 1998 with: no unpaid utility bills, no unmet need for dentist, no unpaid rent or mortgage, no unmet need for doctor, phone was not disconnected, and enough food.[11] At the end of the '90s, real median income in inflation-adjusted 2010 dollars was over $53,000 annually, with over $20,000 per person in the median household.

In the 2000s, post-secondary educational attainment rates continued to increase and boost household earnings, persons per household continued to shrink while vehicles per household increased, the real prices of basic goods continued to fall, noncash benefits continued to increase in addition to money income, and well-being of even the poorest experienced large gains relative to what was attainable for the middle or even richest deciles of decades past. The average household size fell further to 2.59 people per household, just below 2010's 2.58. Median income and consumption have increased by more than 50 percent in real terms between 1980 and 2009. Even those in the bottom decile have experienced vast improvement over the past 30 years; accounting for taxes, noncash benefits, and adjusting bias in standard price indices, income grew by 44 percent and consumption increased by 54 percent.[12] By 2002, 95.3 percent in the lowest decile had a

Median income and consumption have increased by more than 50 percent in real terms

refrigerator, 54 percent owned a washer, 92.4 percent owned a television, 21 percent owned a computer, 91.1 percent owned a stove, and 48 percent owned a vehicle.[13] Persons per vehicle have more than halved between 1960 and 2000 to 1.58, and vehicles per household have come closer to a 2:1 cars-to-household ratio. From 1960 to 2010, the population increased by 73 percent, but the number of households increased by 124 percent. As of 2010, the latest data available, real median income stood below the 1990s figure at $49,000, or nearly $19,000 per person in the median household. Had the persons per household ratio remained the same as in the 1960s, the income per person in the median household would have remained below $15,000 in inflation-adjusted 2010 dollars.

From 1960 to 2010, the population increased by 73 percent, but the number of households increased by 124 percent.

Changing Household Demographics

As aforementioned, using households as a measurement can be misleading as the number of people per household has declined, and as such, there are fewer earners per household that income is spread over. While the Census Bureau has a plethora of data on household demographics, the median household income growth that the Bureau measures does not take into account data on demographics when measuring how household income growth patterns and income inequality have changed over time.

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The Federal Reserve of Minneapolis has completed a considerable amount of research on income inequality. In a recent article, economist Terry Fitzgerald also pointed out that the median household looks much different than the median household of 1976, thus any historical comparisons have to consider a more comprehensive picture to determine the income gains made in America over the past several decades. Fitzgerald finds that the Census fails to account for several factors that make mere measurement of inflation-adjusted median household income over time misleading.

Fitzgerald argues that the personal consumption expenditure (PCE) price index, which is the deflator used by the Federal Reserve and most private macroeconomists, is more accurate than the consumer price index used by the Census Bureau.[ii] Using (1) the PCE deflator; (2) adjustments for household types; and (3) additional sources of money income normally excluded when measuring household income, Fitzgerald determines that median household income grew an additional 8 percentage points, raising the median increase to 26 percent compared to the Census Bureau estimate of 18 percent between 1976 and 2006. Further, each basic household type (by category as follows: married, female householder with no spouse present, male householder with no spouse present, and other) has significantly higher median income growth than the formerly-mentioned total household median income growth of 26 percent, ranging from 44 percent to 62 percent for most household types between 1976 and 2006.[14]

[ii] The two measurements most commonly used to measure changes in income are the personal consumption expenditure (PCE) index and the consumer price index (CPI). PCE reflects the price of expenditures made by and on behalf of households, measuring changes from quarter to quarter. CPI reflects the out-of-pocket expenditures made by consumers based on a fixed composition updated every two years. The nominal PCE index is comprehensive in that it is comprised of not only the CPI, but also the producer price index, input-cost indexes, and others.

If the three major household types were broken down into more detailed subtypes, there would be a clearer perspective of the broad gains experienced over the past 30 years: all households with children under 18 years old, young householders (15 to 29 years of age) without children, working age householders (aged 30-59) without children, and retirement age householders without children. In this case, median household income gains ranged between 36 percent and 54 percent for all the aforementioned household types. The article confirms that the outsized gains experienced by the wealthiest did not mean that middle incomes stagnated over the past 30 years.[15]

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As economist Alan Reynolds explained in *Income and Wealth* of household demographics,

> *The top fifth of households has nearly six times as many full-time workers as the bottom fifth. Wages rise faster than inflation in the long run while transfer payments do not, so gaps between two-earner households at the top and no-earner households at the bottom grow wider over time. Substantial differences in incomes are largely explained by the numbers of workers per household, their age, and education. Sensational claims that 80-99 percent of Americans have experienced no increase in real income since 1973 are contradicted by data from the Census Bureau and Congressional Budget Office.*[16]

In 2010 alone, there were significantly more income earners per household in the top income quintile of households, at 1.97, than earners per household in the bottom quintile of households, at 0.43. Additionally, married-couple households represented a larger share of the top quintile, at just over 78 percent, relative to single-parent families or singles. The top quintile had the largest share of full-time workers, over 77 percent, while 68 percent of those in the bottom quintile did not work. Family members in the top income quintile were five times more likely to have a college degree and 12 times more likely to have finished high school than those in the bottom quintile.[17]

Consumption Patterns

Another measurement of economic inequality is differences in consumption patterns between the top and bottom income groups. Spending is an important measurement because it helps determine standard of living and reveals purchasing power in ways that cash income alone cannot. Individual spending patterns for those in the top quintile in 1985 was 2.5 times greater than that of individuals in the bottom quintile; in 2010, that ratio slightly declined to 2.4, suggesting that consumption inequality has decreased slightly. Furthermore, as senior fellow Diana Furchtgott-Roth of the Manhattan Institute points out, between 1985 and 2010, the lowest quintile saw expenditures per capita increase by 6.5 percent while the top quintile saw a 1.5 percent per capita increase over the same period. According to the Consumer Expenditure Survey, a household in the lowest quintile spent an average $12,325 per person in 2010, while a household in the highest quintile spent an average $29,022 per person.[18]

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Differences between Earnings, Income and Wealth

The Federal Reserve Bank of Minneapolis has additionally examined data beyond income and consumption patterns to measure changes in inequality over time, which can still be limiting to the more comprehensive picture of economic inequality. An updated article from the Federal Reserve Bank of Minneapolis' *Quarterly Review* in February 2011 found that in any year many low-income households hold ample amounts of wealth (e.g., a retiree with a lifetime's worth of savings that draws very little income from it every year), many high-income households have very little wealth (e.g., a recent Harvard MBA graduate with high earnings concurrent with massive school loans), and many wealthy households have very little or negative income (e.g., a small business owner with a lot of illiquid assets that's had a bad year because sales are down significantly), as shown in Table 1. The recent paper breaks down types of inequality into three different measurements as earnings, income, and wealth. Earnings are defined as payment to all types of labor. Income is earnings plus capital income and transfers from government. Wealth is accordingly the value of all assets.[19]

Table 1. Distribution by Quintile

Earnings Partition	(Averages, 2007$)						
	Bottom 1%	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Top 1%**
Earnings	($9,100)	($500)	$13,400	$37,200	$66,400	$202,500	$1,191,000
Income	$71,800	$30,400	$26,500	$44,300	$74,000	$242,600	$1,553,000
Wealth	$1,026,000	$359,000	$199,600	$200,400	$328,200	$1,690,000	$12,197,000

Income Partition	(Averages, 2007$)						
	Bottom 1%	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Top 1%**
Earnings	$0	$4,200	$18,200	$36,400	$64,600	$195,600	$1,111,000
Income	($7,600)	$11,700	$28,200	$47,100	$76,600	$254,400	$1,753,000
Wealth	$490,000	$102,800	$139,400	$211,300	$377,300	$1,946,000	$14,407,000

Wealth Partition	(Averages, 2007$)						
	Bottom 1%	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Top 1%**
Earnings	$35,500	$22,100	$34,400	$47,400	$62,000	$153,200	$764,300
Income	$38,400	$27,500	$40,500	$56,500	$74,200	$219,200	$1,323,000
Wealth	($79,000)	($5,300)	$29,700	$123,600	$312,300	$2,316,000	$18,653,000

Source: Federal Reserve Bank of Minneapolis, *Quarterly Review*

Notably, wealth as a measurement of well-being is a worthy measure to consider because it sums an individual's total financial worth. A recent study from University of California's Emmanuel Saez, who also produced a separate study reviewing income inequality based on pre-tax, pre-transfer income, found that the wealth distribution in the United States is more equal now than in the beginning of the 20th century.[20]

Wealth distribution in the United States is more equal now than in the beginning of the 20th century.

Limitations of Current Inequality Statistics

Though most studies adjust real income growth with the consumer price index (CPI), it can be argued that the basket of goods that those in the bottom income quintile consume is different, and likely at prices that have fallen relative to the basket of goods that those in upper quintiles are consuming. This leads to an upward bias in the CPI, which can be remedied

by using different inflation rates to account for the differences in consumption patterns between quintiles.

As highlighted in recent analysis from the House Budget Committee, Christian Broda of the University of Chicago found that those in the lowest earnings decile have seen a 30 percent real wage gain from 1979 to 2005 when using a corrected price index that accounts for the significant decreases in relative prices for most basic goods that lower income households disproportionately consume.[21] Other studies have shown that even this is an underestimation, suggesting that CPI overstated inflation by 1.6 percentage points per year between 1972 and 1981 by one estimate, and even by as much as 3.0 percentage points per year between 1972 and 1981, followed by a 1.0 percentage point bias per year between 1981 and 1991 in another study.[22] Another measurement known as the "Boskin Deflator," accounting for improvements to product quality in inflation measures, demonstrates that real median income has increased by 43 percent from 1976 through 2006; by the same measure, real median income per capita rose by 60 percent.[23]

Those in the lowest earnings decile have seen a 30 percent real wage gain from 1979 to 2005 when using a corrected price index.

In another paper describing the necessity of property adjustments to income distribution, using internal Current Population Survey (CPS) data, economist Richard Burkhauser details that most evidence derived from the data demonstrates that income inequality since 1993 has either remained unadjusted for top-coding in the public-use CPS or is from IRS data that have consistency problems as well. Top-coding is a practice in which the Census Bureau reports all incomes above a certain threshold as equal to that threshold in public-use CPS data rather than providing exact recorded values from the internal data. Burkhauser finds that when adjusting for top-coding properly, the bottom 99 percent of the income distribution experienced only a small increase in income inequality, and the growth in income inequality since 1993 has been slower than that of previous decades.[24]

In his latest study in the *National Tax Journal*, Burkhauser also notes that earlier studies like that of Thomas Piketty and Emmanuel Saez are incomplete because their findings focus on pre-tax, pre-transfer income per tax unit, demonstrating a mere 3.2 percent growth from 1979-2007. By comparison, when adjusting for size of household, post-tax, post-transfer, and health insurance, Burkhauser finds an increase of 36.7 percent over the same time period with a range from 20.6 percent growth specific to the bottom quintile to a 63 percent growth specific to the top 5 percent.[25]

When adjusting for size of household, post-tax, post-transfer, and health insurance, Burkhauser finds an increase of 36.7 percent in median household income over the 1979-2007 period.

Influencing Factors from Public Policies

In a recent study from the CBO examining the changes in income inequality from 1979 to 2007, it was noted that households in the lowest income quintile received 54 percent of total government transfers, but that share fell to 36 percent in 2007 because the distribution of government transfers has shifted away from lower income households. This occurred largely because of the rapid growth in Medicare, which is a non-means-tested, age-related program; at the same time, means-tested transfers declined relative to market income leading up to 2007. Overall spending on transfer programs relative to overall income growth remained constant over the period studied. Furthermore, although federal income taxes became somewhat

more progressive, the report noted that payroll taxes slightly declined in progressivity.[26]

Without changes to the tax structure in 1986, 1997, and 2003, more businesses would have remained C-corporations and taxed as corporations rather than taxed at the individual rate.

Another influencing factor includes the changes to the tax structure in 1986, 1997, and 2003. According to the findings of former Senator Phil Gramm and former OMB Deputy Director Steve McMillan, the income of the top 1 percent would have been nearly a third lower in 2007, and the income growth of the top 1 percent since 1979 would have only been 2.5 times as large as income growth of all taxpayers instead of 3.6 times as large. In addition, more businesses would have remained C-corporations and taxed as corporations rather than taxed at the individual rate. They further suggest that fewer capital gains would have been declared and fewer dividends would have been paid. In all, economic growth would have proceeded at a lower rate, the aggregate amount of income would have been smaller, but the distribution of income would have been flatter.[27]

Conclusion

Most of the commonly cited statistics and studies about changes in income inequality over time are based on money income. These statistics and studies are problematic in measuring the change in income inequality over time, because they exclude the important details that have major effects on economic inequality. These details include the comprehensive definition of income, distortions from household demographic changes, the type of price deflator used and the bias to which these deflators are susceptible, and alternative measures of economic well-being such as how much is consumed at all income levels.

Income, even properly defined, is not the only useful measurement of economic inequality; wealth is an equally important consideration as different stages in life can yield anomalies in income relative to wealth. As Scott Winship testified, the details on income equality are not only complicated, but "incomplete and subject to revision."

Upcoming

The following commentaries will take a look at economic inequality within the context of income mobility concerning absolute mobility, relative mobility, intergenerational mobility, mobility within one's lifetime, and international comparisons.

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