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Recent Trends in the Distribution of Income:  
Labor, Wealth and More Complete  
Measures of Well Being

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## **Recent trends in the Distribution of Income: Labor, Wealth and More Complete Measures of Well Being**

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## Abstract

The impact of the great recession on inequality is unclear. Because the crises in the housing and stock markets and mass job loss affect incomes from across the entire distribution, the overall impact on inequality is difficult to determine. Early speculation using a variety of narrow measures of earnings, income and consumption yield contradictory results. In this paper, we develop new estimates of income inequality based on ‘more complete income’ (MCI), which augments standard income measures with those that are accrued from the ownership of wealth. We use the 1989-2007 Surveys of Consumer Finances, and also construct MCI measures for 2009 based on projections of assets, income, and earnings.

We investigate the level and trend in MCI inequality and compare it to other estimates of overall and ‘high incomes’ in the literature. Compared to standard measures of income, MCI suggests higher levels of inequality and slightly larger increases in inequality over time. Several MCI-based inequality measures peaked in 2007 at their highest levels in twenty years. The combined impact of the “great recession” on the housing, stock, and labor markets after 2007 has reduced some measures of income inequality at the top of the MCI distribution. Despite declining from the 2007 peak, however, inequality remains as high as levels experienced earlier in the decade, and much higher than most points over the last twenty years. In the middle of the income distribution, the declines in income from wealth after 2007 were the result of diminished value of residential real estate; at the top of the distribution declines in the value of business assets had the greatest impact.

We also assess the level and trend in the functional distribution of income between capital and labor, and find a rising share of income accruing to real capital or wealth from 1989 to 2007. The recent economic crisis has diminished the capital share back to levels from 2004. Contrary to the findings of other researchers, we find that the labor share of income among high-income groups declined between 1992 and 2007.

## **I. Introduction**

This paper is an attempt to capture the effects of secular and cyclical forces on the inequality of income across Americans who are suffering through the “Great Recession” of December 2007 and still ongoing (NBER, 2010). A full accounting of inequality in this period will have to wait years, as impacts of the recession and its aftermath are still unfolding, and the necessary data will not be available until 2011. The most current micro-data that can be used to analyze income distribution are from calendar year (CY) 2008 (Current Population Survey [CPS] income or poverty), or CY 2007 (Survey of Consumer Finances [SCF] wealth).

Based on currently available data, however, we do know quite a lot about some of the economic hardships resulting from the recession. Between December 2007 and March 2010, the US lost 8.6 million jobs, and unemployment rose from 4.9 to 9.7 percent. The incidence of job loss has been particularly severe among young workers, and those with lower levels of education. Total employment declined by less than five percent, but among teens it has fallen 20 percent and among those with high school degrees or less it has declined 7 percent (Engemann and Wall, 2009). Forecasts based on available employment and food stamp data indicate that poverty will likely rise in 2009 and 2010 (Monea and Sawhill, 2009).

Expected changes in the distribution of income in 2009, and beyond, though, are not as clear. Past recessions (excepting the Great Depression of the 1930s) tended to hurt people at the bottom of the distribution to a greater extent than people at the top (Atkinson, 2009). These effects are and were tempered by the safety net, and are driven by the loss of labor market earnings, which recovers when employment recovers. However, a major aspect of the current recession has been the drop in property income values, financial assets, and home prices, as well as employment losses. Because all parts of the income distribution have suffered losses of income and wealth, the impacts on the overall distribution are more difficult to determine.

Preliminary analysis and speculation over shifts in the distribution suggests a range of potential outcomes. There is some evidence that the collapse in the stock housing markets have produced declining CEO pay, lower dividends, and reduced Wall Street bonuses, which could cause the income gap to shrink “at the expense of the wealthy” (Davis and Frank, 2009; Leonhardt and Fabrikant, 2009). Looking to data on consumption, some researchers have found evidence of declining inequality between 2006 and 2009 (Meyer and Sullivan, 2010; Heathcote et al. 2010a, 2010b, and; Parker and Vissing, 2009). Much of that decline is attributable to a notable drop in consumption at the top of the distribution, partially reversed in 2009 as the Obama ARRA plan boosted durables spending and the stock market recovery took hold (Parker and Vissing, 2009; Petev, Pistaferri, and Saporta, 2010). Overall consumption still fell in 2008 and 2009 combined, but the change in inequality is less certain once we look at the 2009 and early 2010 data.

Early indicators from some standard income inequality measures from the Census Bureau, however, suggest that high income shares, as well as Gini and Theil indices, rose between 2007 and 2008 (Census, 2009). The major losses in income, in proportional terms, were experienced by the 80<sup>th</sup> and 10<sup>th</sup> percentiles, with relatively smaller losses for the 90<sup>th</sup> percentile (Smeeding and Thompson, 2010). These findings are fully consistent with those of Krueger et al. (2010) and Heathcote et al. (2010a, 2010b), who also find earnings and disposable income inequality rising secularly in rich countries and also in recessions, including this recession (Heathcote et al., 2010b) and especially for bottom income units. Because of top-coding in the Current-Population Survey, though, these data can tell us little about what is going on at the very top of the distribution.

Data with broad measures of income and that also contain detailed information for households at the very top of the distribution, are not yet available to give an updated

understanding of inequality. The Congressional Budget Office “tax burden” series, for example, are only available up through 2007 (CBO, 2009). Similarly, the Survey of Consumer Finances as well as the IRS tax data used in analysis of high incomes are only available through 2007 (Smeeding and Thompson, 2010; Piketty and Saez, 2006). But, as Burkhauser, et al (2009) show - using non-top coded Census Income data - most of the change in income inequality over the past decade has been amongst the rich. However, even these data exclude the vast majority of capital income—the issue to which we now turn.

In the remainder of this paper, we will: first, briefly review some of the different approaches to analyzing trends in income distribution; second; describe our method for calculating a “more complete” measure of income (MCI), third, compare levels and trends – for recent years and across the last couple of decades – for inequality using MCI and other standard income measures, fourth, describe the impact of using MCI on the trends in capital vs. labor shares, and finally, discuss some potentially policy implications of these trends.

The MCI income concept – based on Haig-Simons income estimated using Survey of Consumer Finance data – results in higher income across the distribution, but especially at the top end. We also find a greater trend toward income concentration at the top of the distribution using MCI than do other analysts. A number of standard measures of inequality using MCI peaked in 2007, after rising relatively steadily since 1989, including the Gini index, the 99/50 ratio, and the income shares of top 1 percent and next 4 percent. Nearly all of the increase in inequality is the result of large gains at the very top of the distribution, with little evidence of rising inequality at the bottom of the distribution. The great recession has halted, temporarily at least, the trend toward greater inequality. Any declines, however, have so far been modest, leaving inequality as high as any point before the 2007 peak.

We also assess the level and trend in the functional distribution of income between capital and labor. We find that properly measured, the labor share is closer to 55 percent of total income than the 75 percent that is sometimes claimed. The results using MCI suggest that, contrary to the findings of Piketty and Saez (2003, 2006), the capital share of income at the top of the income distribution has risen in recent decades (as also found cross nationally by Glynn, 2009). By 2007, income from capital accounted for more than half of MCI among the top few percentiles of the income distribution.

## **II. Approaches to Understanding Inequality and the Distribution of Income**

For some time there has been widespread concern about growing inequality in the distribution of household income in the United States. The US Census Bureau shows the Gini index of household income rose from .40 to .47 between 1967 and 2008, and that the ratio of incomes of households at the 90<sup>th</sup> and 10<sup>th</sup> percentiles of the income distribution rose from 9.2 to 11.4 over the same period. And while there is a general consensus among researchers that income inequality has increased in the United States and much of the rest of the world (Brandolini and Smeeding, 2009), there is less agreement over how much it has increased, or whether income is even the most important factor in understanding inequality, let alone the causes of the increase.

Labor economists have shown that inequality in hourly wages increased considerably over the same period (Autor et al, 2008). With earnings representing the single largest portion of household income, some argue that trends in earnings inequality are the key factor behind inequality in the US income distribution.<sup>1</sup> A number of recent provocative studies highlight the role of extremely high earnings among “superstars,” CEOs, athletes, rock stars, and celebrities

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<sup>1</sup> See Autor, Katz, and Kearney, 2006; Katz, 2006; Lemieux et al., 2007; Lemieux, 2006; Cowen, 2007.

(Kaplan and Rauh (2010); Walker (2005), and Gordon and Dew-Becker (2005)), but these papers are only able to identify about 25-30 percent of even the highest income earners.

And, labor income in the form of wages had declined to 50.2 percent of national income by the third quarter of 2006 – a 50-year low as a share of national income (Aron-Dine and Shapiro, 2006; Bureau of Economic Analysis, 2010; Goldfarb and Leonard, 2005). Even after adding together labor income (even including supplements or employee benefits) and corporate profits, which peaked at 13.7 percent of total national income in the third quarter of 2006 after rising for three decades, there is still more than a fifth of the nation's economic pie missing. Other uncounted components of National Income such as net interest, proprietor's income and rental incomes are largely missing from micro data based income distribution calculations (see Table 1).

Meyer and Sullivan (2010) argue that levels of income inequality are not as great as suggested by the Census Bureau, and that the emphasis on income itself is misplaced. With appropriate adjustments for household size, taxes, and transfers, Meyer and Sullivan (2010) show that the 90/10 ratio was 5.3 in 2008, up from 4.1 in 1979. More important, they argue, is that consumption is a better proxy for well-being or even permanent income than the income measures used in most of the inequality research (Also see Slesnick (1994, 2001.)) Consumption inequality has showed no trends toward greater inequality in recent decades, and has – as mentioned above – declined in the last few years.

Consumption is a strong predictor of different measures of hardship (Meyer and Sullivan, 2003), but it is deficient in some important respects as a measure of well-being. As Dickens' famous line suggests, it might be better to treat the debt-financed consumption of many low-income households whose consumption far exceeds their income as a measure of hardship rather than well-being:



“Annual income twenty pounds, annual expenditure nineteen six, result happiness. Annual income twenty pounds, annual expenditure twenty pound ought and six, result misery.”

- *David Copperfield*

And by focusing on the 90<sup>th</sup> percentile of the distribution, much of the consumption-oriented research misses what is going on at the very top of distribution.

Several analysts have suggested that most, if not all, of the gains in incomes from rapidly expansion of productivity in the 1990 and early 2000s accrued to the richest 1-5 percent of Americans (Gordon and Dew-Becker, 2005; Piketty and Saez, 2003; 2006).<sup>2</sup> This result is supported by the analysis of top-coded Census Income data by Burkhauser, et al (2009). The long-term analysis by Atkinson, Piketty, and Saez (2009) shows that since the early 1970s income growth among the top five percent (particularly the top one percent) has far outpaced the rest of the nation.

Even in micro data that accurately reflect affluent households (Piketty and Saez, 2006; CBO, 2009), however, the annual income measures only include the flow realized from wealth (capital) in any one year.<sup>3</sup> In addition, the higher one goes in the income or earnings distribution, the more likely one is to find high rates of turnover in top *incomes* from year to year. Indeed, advocates of high American income mobility point out that the top 1 percent of income earners have 70 percent turnover rates year-to-year (Cox and Alm, 1999).

This problem is exacerbated by the fact that powerful income recipients can choose the form and timeframe in which their compensation is paid, e.g., for tax reasons (Auten and Carroll, 1999; Gruber and Saez, 2002). For instance, the two founders of Google, in a widely reported press story, took \$1 each in earnings in 2005. Of course, each one also exercised much less

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<sup>2</sup> Only a few recent analysts doubt there has been a widespread increase in inequality that can be generally attributed to the growth of high incomes (Reynolds, 2007; Tatom, 2007; but see critiqued in Burtless, 2007).

<sup>3</sup> Unearned income from transfers, public and private, also accrues but account for under 10 percent of incomes.

highly taxed stock options, which left them with \$1.0 billion or more in ‘asset incomes’ in that year (Ackerman, 2006). Whether for reasons of tax and estate planning, or simple accumulation, the large majority of the gains from wealth, are not realized annually.<sup>4</sup>

The question we address in this paper is how to add this income to household distributional micro-data, and determine to whom did this property or capital income accrue? The key to pulling these disparate sources and trends in economic well being together is a more full accounting of annual income from wealth, whether realized or not. Indeed, we believe that much of what has been interpreted as “consumption from wealth” is not drawing down wealth stocks at all, but comes from spending out of accretions to wealth (see Love and Smith, 2007, for older households; and Sierminska and Takhtamanova, 2006, for an international comparison). Similarly, the declines in US savings rates over many years leading up to the recession were largely composed of spending from accumulated assets, especially owned homes and other appreciating assets. While the run-up in home values and dividends received through 2007 fueled consumer spending (e.g. Baker, et al, 2006), steep declines in housing values since have diminished consumption due to a decrease in wealth stocks (Glick and Lansing, 2010) and the savings rate has risen. Clearly, wealth increasingly matters for consumption as well as for income.

The idea of accounting for income from wealth as well as income from earnings and other sources is not new (see Weisbrod and Hansen, 1968; Taussig, 1973), and has been used recently by Wolff and Zacharias (2006; 2006b) and Haveman, et al., (2006) in some fashion, to

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<sup>4</sup> The sporadic realization of growing incomes from wealth in both the personal and corporate sector, has led to serious miss-estimates of both individual and corporate income tax revenues at the federal and state level for the past decade, and especially in recent years (e.g., Schwabish, 2006, CBO, 2006a; 2006b; 2006b; Orszag 2007).

study inequality trends in the 1980s and 1990s.<sup>5</sup> Nevertheless, it is clearly time for a reappraisal given recent seismic changes in overall labor and capital income flows.

## II. Income Theory and Methodology

There are many definitions of personal (macro) and household (micro) income from both a “sources” and “uses” perspective. According to the most popular theoretical measure of income, the Haig-Simons (H-S) income definition, income (I) is equal to consumption (C) and the change in net worth ( $\Delta NW$ ) realized over the income accounting period. So defined, H-S income is a measure of potential consumption or the amount one could consume without changing one’s total net worth (one’s stock of assets or debts). Thus according to a “uses “of income definition:

$$(1) \quad I = C + \Delta NW$$

From the functional or “sources” side of income, we can arrive at the same measure by adding together income from earnings (E, including self-employment income), income from capital (KI, including capital gains plus other income from wealth), plus net transfers (NT, which includes those received minus those paid, whether private or public in nature), resulting in the following definition:

$$(2) \quad I = E + KI + NT$$

If we ignore NT for now, and divide self-employment income, into income from labor and capital, we are left with the macroeconomists’ functional distribution of income.

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<sup>5</sup> Wolff and Zacharias (2006, 2007) and Haveman, et al. (2006; 2007) use an annuity-based measure of inequality that assumes that all persons, including high income-high wealth persons consume all wealth before they die. Such measures imply the need for assumptions on discount rates, life expectancy and other variables, and they therefore assume no bequest or inter-vivos transfer behaviors and they ignore the observed behavior of the rich (e.g. see Goolsbee, 2007; Carroll, 2000). We prefer a less challenging and more straightforward estimate of income from wealth using current and long run rates of return on existing assets. This seems closer to Haig Simons income in terms of capacity to consume, without the extra baggage entailed with the annuity estimates which necessarily suggest higher incomes for much older persons, by design

The key element that is included above but largely missing in most estimates of both micro and macro estimates of income distribution is the distribution of income from capital. Despite long-standing interest in labor and capital “factor shares,” macroeconomists (e.g., Goldfarb and Leonard, 2005; Guscina, 2006) and microeconomists who study distribution are both seemingly content with using data where only a small fraction of income from capital is measured. Interest, rent and dividends received are reported in most micro data based income definitions such as the one used by the Census Bureau. Capital gains and losses (KG, including those from realized stock options) and royalties, are counted in other income definitions such as that used by the CBO (2009) and by Federal Reserve Bank in the SCF income distribution measure.<sup>6</sup>

However, the large majority of capital income (KI) accrues to persons but is never realized (and is therefore not counted in any given year). This includes imputed rental flows for owner occupied housing; business savings in the form of corporate and non-corporate retained earnings; and unrealized capital gains. Much of this income stays with the firm that utilizes capital and is not realized by the owners of these assets (except as it is reflected the value of their enterprise, either self owned or as shares of corporate stock).

Thus, we define ‘more complete income’ (or MCI) as follows. We retain earnings and net transfers (E, NT), and maintain that portion of capital income (KI) received as capital gains and royalties (KG). But we then subtract *reported* interest, rent and dividends (IRD) while adding back in an *imputed* return to all forms of net worth, or “imputed capital income” (IKI). Thus, we

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<sup>6</sup> Indeed Pryor (2007) attests to the importance of interest rent and dividends in resizing economic inequality using the PSID.

impute interest rent and dividends to owners of assets and forego the amounts actually reported by respondents.<sup>7</sup> This produces:

$$(3) \text{ MCI} = E + \text{NT} + (\text{KG} - \text{IRD} + \text{IKI})$$

Indeed this more complete definition of capital income (KI, below) comes close to measuring the concept of ‘ΔNW’ that intrigued both Haig and Simons:

$$(4) \text{ KI} = \text{KG} - \text{IRD} + \text{IKI}$$

MCI is an incomplete concept of income as we are unable to measure such items as employer benefits, pension fund accruals not counted as personal wealth such as defined benefit pension plans (though pension flows for elders are counted as transfers received), or unrealized stock options and other promised contractual benefits (‘golden parachutes’) which are not yet exercised or received.<sup>8</sup>

### **Developing More Complete Income (MCI) estimates with the SCF**

We calculate MCI using the Survey of Consumer Finances, a nationally representative, triennial survey that includes an over-sample of wealthy households that are underrepresented in most standard surveys. The SCF contains high quality, detailed information on household assets as well as income.<sup>9</sup> There are 16 broad asset classes, including stocks, bonds, mutual funds,

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<sup>7</sup> Reported interest, rent and dividends in the CPS is barely more than half the aggregate amount which other data suggests ought to be reported (CBO, 2006b; US Census Bureau, 2005). The decision to keep realized capital gains in the base income distribution estimates may seem like double counting. But, gains realized in year  $X$ , emerge as assets in year  $X + 1$  to the extent they are not consumed. These assets earn a return that should also be counted in income in year  $X$ . In any case, this decision to include or exclude realized capital gains has a negligible effect on the results presented here.

<sup>8</sup> Assets in defined benefit pensions are problematic both because of the potential not to be collected and because of back loading in benefit determination. We are less worried about the distributional consequences because most such pensions accrue to the top end of the income distribution and therefore do not affect lower incomes. Our analyses also ignore non-cash public sector benefits such as those provided by health, education, and the taxes used to pay for them (see Garfinkel, et al, 2006, on the latter). While these benefits are especially important for low income persons, they pale in comparison to the levels of imputed income from assets for the large majority of households, especially middle and high income units. Hence, while MCI helps us better understand the impact and importance of residual wealth and the way it affects public and private finances and inequality, it does not represent a complete accounting of all flows of income from all sources.

<sup>9</sup> The sample size for the surveys conducted in 2006, 2003 and 2001 was approximately 4,500 households, a slight increase over that in previous years.

home-equity, residential real estate, and business assets, as well six broad classes of debt. The data include an income definition (SCF income) that is broader than the standard Census money income definition. SCF income includes wages, self-employment and business income, taxable and tax-exempt interest, dividends, realized capital gains, food stamps and other support programs provided by the government, pension income and withdrawals from retirement accounts, Social Security income, alimony, and other support payments, and miscellaneous sources of income.<sup>10</sup>

Income net wealth (“**income less capital**”) is calculated by subtracting realized income from capital from the SCF income definition. Hence, reported interest, rents and dividends are excluded in the given income year. Further, capital gains and royalties are also excluded in counting income “less capital” to avoid double counting, as we will be imputing returns to these assets to the extent that gains and royalties in one year have been invested in other assets by the next. To the extent that these gains and royalties are consumed and not re-invested, we will underestimate capital incomes in this process.

After removing income from capital from SCF income, flows to assets are imputed for the full range of assets measured in the SCF data. In calculating the implicit return on various assets, we employ two techniques: first we apply “short term” (3 year) average rates of return to 22 specific asset/debt types in each of our 8 income years; and then also “long run” 30 year average returns over the entire period.<sup>11</sup> These long run rates allow us to separate more

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<sup>10</sup> Household weights contained in the SCF data are used in all of the calculations.

<sup>11</sup> Other analysts have described the limitations of standard measures of income for welfare and inequality analysis, and proposed solutions by supplementing income with wealth, as much as a half-century ago. Weisbrod and Hansen (1968) and Taussig (1973) added the annuity value of net-worth to current income to develop measures they respectively called “income-net worth” and “comprehensive income.” In more recent work, Wolff and Zacharias (2006) and Goolsbee, (2007) use the annuity approach for non-housing wealth and impute rental income for homeowners. There are a number of additional differences between the approach used in this paper and the one used by Wolff and Zacharias (WZ). WZ use SCF for 1983-2001, we use data for 1989-2007. WZ do not conduct any after-tax analysis. For their inequality measures, WZ rely primarily on the Gini index and income shares of different percentile groupings (top 10%, top 1%, etc.) We use Ginis as well, but rely primarily on ratios of key percentiles of

permanent long run returns from more volatile short run changes, and to assess more smooth trends in income from assets. They also allow us to test the sensitivity of our results to various assumed rates of return.

Separate rates of return were calculated for stocks, bonds, and housing assets, based, respectively, on the Dow Jones Industrial Average, 10-year US Treasury notes, and the House Price Index of the Federal Housing Finance Agency (FHFA). In addition, flows to assets are calculated gross of the inflation rate (CPI-U), while some flows are based on the average of two different types of return (the average of the return to stocks and bonds, for example). The actual rates used to impute these flows are included in **Appendix Tables 1 and 2**. The complete details on the construction of MCI, including how taxes are calculated for the various components of MCI so that we can create pre-tax as well as after-tax inequality measures, are provided in the **Technical Appendix**.<sup>12</sup>

The following additive series of combined capital income flows are added to income, net of reported interest rent and dividends, in the order specified below:

- **“plus finance”** adds imputed flows to directly held stocks, stock mutual funds, combination mutual funds, bonds, other bond mutual funds, savings bonds, government bond mutual funds, and tax free bond mutual funds, as well as “other managed assets,” such as trusts and annuities to **“income less capital”**;
- **“plus retire”** adds flows to “quasi-liquid retirement accounts,” such as IRA/Keoghs and account-type pensions to **“plus finance”**;
- **“plus home”** adds flows to owner-occupied home equity to **“plus retire”**;
- **“plus oth invest”** adds flows to investment real estate equity, transaction accounts, certificates of deposit (CDs) and the cash value of whole life insurance to **“plus home”**;
- **“plus business”** adds flows to other business assets and vehicles—only vehicles worth more than \$50,000—to **“plus oth invest”**;

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the income distribution (99/50, 95/50, 99/90, etc.) because we find that the biggest impact from using the more complete income approach is found at the very highest income levels and does not have as great of an impact in the Gini. In contrast to prior annuity approaches, WZ assign different rates of return to the different asset types that they annuitize. These rates are long-run returns covering 1960-2000, and generally based on federal Flow of Funds data.

<sup>12</sup> We take no account of the amounts of income, which might have been shifted from a heavily taxed form, earnings, to another less heavily taxed form, capital gains or dividends, for instance (Lemieux, et. al., 2007).

- **MCI** subtracts flows to non real estate debt, including credit card debt, installment loans, and other debt from “**plus business**”—after replacing observations, where “plus business” value incomes were below SCF income with the SCF income value.

Separate estimates for each of these income concepts are created using both long-run (30-year) averages and short-run (3-year) time specific rates. The long-run rates are based on the average annual return between 1977 and 2007, with the same long run rate applied to each year of SCF data—1989, 1992, 1995, 1998, 2001, 2004, 2007, and projections of the data into 2009.

We also explore an alternative treatment of the vehicle assets, computing a service flow to vehicle ownership, following Slesnick (1994).<sup>13</sup> We consider how modifying treatment of this asset which is particularly important for middle and low-income households influences levels and trends in inequality.

### **Projecting SCF into 2009**

The next round of the SCF (the eventual SCF 2010) will reflect economic conditions in 2009, but will not be available until early 2011. Since the economy entered into a deep recession after 2007, heavily impacting earnings as well as stock markets and housing values, the portrait of inequality in the most recently available data cannot be expected to reflect current conditions. In order to present estimates of inequality that reflect the impacts of the “great recession,” we have projected the data from 2007 SCF data into 2009. These projections are based on income data from the BEA National Income and Product Accounts, asset data from the Federal Reserve Board Flow of Funds data, and earnings data from the Current Population Survey.

The income and asset categories used to calculate MCI are adjusted according to the percent change observed in these same categories between the last two quarters of 2007 and 2009. The changes by income and asset category, and the detailed source of each are displayed in Appendix Table 2A. Changes over this period for the stock market reflect not just the decline in

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<sup>13</sup> See also ERS (2010).



the total market capitalization that started at the end of 2007, but some of the rebound in market value since the first quarter of 2009. Changes in annual earnings are allowed to vary by education and industry class, reflecting – at least in part – how the labor markets of different demographic groups have been impacted by the “great recession,” as described by Engemann and Wall (2009).<sup>14</sup> The earnings measures in the SCF are adjusted based changes in total weekly earnings between the first eleven months of 2007 and 2009. The change in earnings is calculated for twenty separate industry-education cells, and reflects the combined impact of changes in employment, hours, and wages (Table 2B).<sup>15</sup> Not adjusted for inflation, total earnings declined for nearly all groups of workers with less than a college degree. Total earnings of workers with a high school diploma or more education rose between 2007 and 2009, but at a rate less than inflation. Total earnings increased for workers with a college degree in all six industry groups, but less than inflation in three of those.

Fewer sets of results are calculated for the 2009 projected incomes. Partly this is a result of not being able to apply short-run rates to data that are themselves projected using changes in assets and income categories that are themselves functions of short-run rates of return. But, it is also the case since some of the tables and figures in the paper are driven by the demographic composition of the population, which is not modified in the projection to 2009.

### **III. Results**

We begin by tracing how the addition of unrealized capital income changes the distribution of income, in both tables and figures. Then we look at after-tax income and finally examine levels and trends in various income percentiles and the share of final income that is

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<sup>14</sup> We also know that the distribution of housing wealth is not equally distributed across the population, but exhibits considerable regional variation (Carson and Dastrup, 2009). Because of the sample size and absence of sub-national geographic identifiers, we are only able to project an average change in housing wealth across the entire country.

<sup>15</sup> Changes in weeks worked between 2007 and 2009, because of temporary layoffs or furloughs, will not be reflected in our measure of earnings changes.

either from wealth (capital) or labor. We also briefly explore the demographic profile of high-MCI households.

### **From SCF Income to MCI**

We begin with Table 2 and Figure 1 where we apply the long run rates of return to various asset types and chart the way in which this process changes mean and median income in 2006-2007, as well as the 99<sup>th</sup>, 95<sup>th</sup>, 90<sup>th</sup> and 10<sup>th</sup> percentiles (and the Gini inequality measure). The numbers in Table 1 suggest that capital income makes a great deal of difference to correctly measured income in the United States. Of course, subtracting some capital income from SCF gross income (“less capital”) reduces the mean and median, but as we successively add wealth-related income components, both measures change dramatically. Moving from SCF income to MCI, mean income rises by 31 percent and the median by 16 percent. The biggest changes come from stocks; imputed rent on owned homes; and business assets. Owned homes (“plus home”) affects large changes in both mean and median as housing is the quintessential ‘middle class asset’ and is the only capital income flow which significantly boost the median. Stocks and bonds (“plus finance”) and business assets (“plus business”) have larger affects on the mean due to the skewed distribution of returns accruing mostly to high MCI units. Indeed, the 99<sup>th</sup>, 95<sup>th</sup> and 90<sup>th</sup> percentiles rise by 49, 41 and 32 percent respectively in 2007 dollars from SCF to MCI. In contrast, the 10<sup>th</sup> percentile increases only by 17 percent across these same measures. When we take into account, the changes in the medians, the relative inequality measures, the 99/50, 95/50 and 90/50 ratios still rise by 28, 21 and 13 percent respectively. The 10/50 ratio is the same in SCF income and MCI. The correction of negatives and the subtraction of debts, reflected in the difference between ‘plus business’ and MCI, seem to have little effect on the overall results.

In numerical terms, households at the 10th percentile of MCI have incomes of \$14,397 (Table 2) and net assets of \$23,112 (Appendix Table 4). Income from wealth increases SCF

income by only \$2,057 at the 10<sup>th</sup> percentile. This is in contrast with MCI and net worth values of \$185,892 and \$864,138 at the 90<sup>th</sup> percentile, where capital income is \$45,005 in 2007. At the median MCI level of \$55,014, a household has a net worth of \$152,491 and a gain of \$7,709. However, at the 99<sup>th</sup> percentile of MCI, where MCI is \$1,031,528, net worth is over \$6.5 million and SCF incomes in 2007 are increased by \$338,000 in moving to MCI. Table 3 does the same with short run rates of return, with very similar results because short-run returns in 2006-07 are very close to the long-run rates.

The dramatic nature and extent of these changes are easier seen in Figure 1. The mean and median values on the right side show steady increases, especially for “plus home” at the median where the appreciation of owned homes leads to a jump from one plateau to another. In contrast, the mean income rises steadily with big jumps as noted above and smaller changes at other definitional points. The 95<sup>th</sup> and 90<sup>th</sup> percentiles also rise relative to the median. The increases are most dramatic at the very top of the distribution where the bars show that the 99/50 ratio starts below 15 for SCF income and rises to almost 19 for MCI, with the jump mostly due to business assets and “other investments.” Hence gains from income from wealth accrue largely to the very top of the income distribution, even after we re-rank incomes with each successive component of wealth (or finally, debt), and compare incomes to the median household.<sup>16</sup>

Table 3\_09 shows the impacts of moving to MCI in the 2009 projected income – using long-run rates. The SCF incomes are very similar to levels from 2007, slightly lower at the mean and median and at the 99<sup>th</sup>, 95<sup>th</sup> and 90<sup>th</sup> percentiles, but slightly higher at the 10<sup>th</sup> percentile.

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<sup>16</sup> The MCI rich are similar to, but not the same as the ‘high income’ units studied by others. For instance, while 79 percent of the same households are counted in the top one percent for both SCF income and MCI, 84 percent of the same units are in the top 10 percent. These percents have fallen over the past 18 years as well. In 1989, the overlap was 83 percent in the top centile and 89 percent in the top decile. Hence the top end of the MCI is increasingly divergent from the top end of the ‘high income’ sample. As the value of assets continues to appreciate in the longer run, and as the fraction of income from capital grows relative to labor, we expect that the top centiles in each distribution will increasingly diverge.

MCI incomes, however, are considerably lower for most groups in 2009. Moving from SCF income to MCI raises the mean and median by 27 and 15 percent, respectively, compared to 31 percent and 16 percent in 2007. Adding in the imputed flows to equity in owner-occupied residential real estate (“plus home”) has very little impact on income at either the mean or the median, reflecting the huge national losses in housing values. Moving to MCI raised the 99<sup>th</sup> percentile by 43 percent in 2009, but 49 percent in 2007.

## **Taxes**

The after-tax changes, using 2007 SCF data, are summarized in Table 4. We employ the NBER TAXSIM model to estimate taxes, given existing, and advantaged, rates for taxable property income.<sup>17</sup> Indeed, while including taxes considerably reduces the incomes of high-income households (MCI declines about \$120,000 for the 99<sup>th</sup> percentile after including taxes), the percentage gains from adding wealth are even greater in after tax terms at the highest income levels. The 99<sup>th</sup> percentile of after tax income rises by 75 percent compared to a 49 percent change for the before tax incomes (Table 3). These results also confirm that after-tax inequality is lower than pre-tax inequality, with the 99/50 ratio for MCI (short-term rates) falling from 18.8 to 16.4 after including taxes. The Gini index of MCI falls from .608 to .579 after taxes.<sup>18</sup>

## **Trends in Income Inequality for Key Income Definitions**

So far, we have discovered that at any point in time, accounting for income from wealth drastically increases both the level of income and the inequality of income. To see how the trend has evolved over the last 20 years, we calculate similar before tax figures for 1988-89, 1991-92, 1994-95, 1997-98, 2000-01, and 2003-04.<sup>19</sup> We prefer the longer run rates when calculating

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<sup>17</sup> For a discussion of the TAXSIM model see Feenberg and Coutts (1993).

<sup>18</sup> We do not calculate the effects of ‘privileged’ types of taxable income (capital gains, dividends, and housing sales) on the composition of pre-tax income.

<sup>19</sup> Figures illustrating equivalent trends for after-tax income were included in previous draft, and are available from the authors.

trends, but figures and tables using short-run rates are available from the authors. Results for these earlier years show much the same pattern as we saw above in 2006-2007 with few changes.<sup>20</sup> The six graphs in Figure 2 summarize the trend in key income definitions and component comparisons, using long run rates, over that period. First, MCI is at the top of every set of lines (except the 10/50 ratio where moving from SCF to MCI has little impact).

While SCF and MCI follow similar patterns at the top of the distribution, the gap between MCI and SCF income is especially apparent for the 99/50 and 95/50 ratios and for the pattern of mean incomes. Thus, the trend in inequality is stronger with a more complete (vs. a less complete) income measure. At the bottom, we see that mean and median incomes both rise over the period for each income definition, with stagnant periods during previous recessions (early 1990s and 2001), but outright declines in the current “great recession.” over the period. The 90-50 ratios show little trend, suggesting most gains over the period are concentrated at the top of the distribution. The dips in the 99/50 ratio in 2003 and again in 2009 reflect the collapse of the stock (and housing in 2009) market in those periods.

Adding imputed flows for financial wealth (“plus finance”) to income “less capital” leaves the 99/50 ratio very similar to SCF income. Adding housing wealth (“plus home”) produces little change in the 99/50 and 95/50 ratios, but accounts for the bulk of the change at the median (Panel F) and a large portion of the change in the mean (Panel E). The bulk of the gap between SCF income and MCI in the 99/50 ratio is a result of one of the final elements of MCI, imputed flows to business wealth. The relevance of business wealth shows up in the means (Panel E) and the 99/50 ratio (Panel A), but not the other trend statistics.<sup>21</sup>

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<sup>20</sup> Data for years before 2007 are contained both in an earlier version of the paper, available at: [http://www.irp.wisc.edu/aboutirp/people/affiliates/Smeeding/14-INCOME-FROM-WEALTH\\_6\\_21\\_07.pdf](http://www.irp.wisc.edu/aboutirp/people/affiliates/Smeeding/14-INCOME-FROM-WEALTH_6_21_07.pdf), as well as an additional series of data tables: <http://www.irp.wisc.edu/aboutirp/people/affiliates/Smeeding/14b-Appendix-tables-available-from-authors-Jun-7-2007.pdf>.

<sup>21</sup> Equivalent figures using short run rates show essentially the same patterns.

In general, the trends presented in Figure 2 suggest the effects of adding income from wealth follow a similar pattern of rising inequality as seen in the SCF income as well as other measures of income inequality over this period (e.g. Smeeding, 2005; CBO 2009). While inequality is higher in any given year for MCI income than SCF income, the 95/50 and 90/50 ratios follow the same upward trend as the SCF income (Panels B, C). For the very top of the distribution, however, the inclusion of income from wealth results in a more dramatic rise in inequality (Panel A). The 99/50 ratio rises 57 percent between 1988-89 and 2006-07 in the SCF income measure, but it increases 64 percent for MCI. Therefore, while Wolff and Zacharias (2006a; 2006b) show that an augmented measure of wealth results in about the same rise in inequality as traditional measures of money income, our approach suggests that for the highest income households a more complete measure of income reveals a steeper growth in inequality.

Projections to 2009 suggest that the run-up in inequality between 1989 and 2007 has been halted in the “great recession.” The 99/50 ratio declined from 18.8 in 2007 to 17.5 in 2009 using MCI and by a smaller amount using SCF income. Other MCI-based measures of inequality (Appendix Table 3) also declined over this period; the Gini index dropped from .608 to .600. Most of these measures, however, also show that inequality remains at high levels.

### **Percentile Growth in Incomes**

Figure 3 (Panels A and B) summarizes the 1989 to 2007 growth rates for SCF income and MCI across the entire distribution. The growth in MCI is greater than SCF income for all households above the 40<sup>th</sup> percentile of the income distribution. Over most of the income distribution, the importance of moving to MCI appears to be roughly constant with the gap in growth rates fluctuating between 10 and 20 percentage points (Panel B). At the top of the distribution, however, the gap in growth rates increases dramatically. For the top three percent of the income distribution growth in MCI is more than 30 percent higher than SCF. For the 99<sup>th</sup>

percentile MCI growth was 35 percentage points faster than SCF income. Hence, the inclusion of income from wealth results in a rising inequality trend, when the measure of inequality contrasts the highest-income households with any other grouping.

### **Trends in the Income Share of Top-Income Households**

There are several sets of estimated income trends amongst the rich to which we can compare our results. In Figure 4, we compare MCI shares of total income using long run rates to those found in three other studies: the Wolff-Zacharias (WZ, 2006a; 2006b) annuity value measures of income net worth; the CBO (2009) income after taxes and benefits including capital gains series; and those compiled in the ‘top income’ papers of Piketty and Saez (PS, 2003; 2007). We have plotted the shares, and have calculated the trends and the slopes of each line.

First we note that the top one percent shares using MCI are roughly in line with those of PS and WZ (Panel A). And, while Reynolds (2007) and Tatom (2007) have criticized the PS numbers because more of high income is not reported for tax reasons, our MCI measure avoids this problem, as we include unrealized and therefore untaxed income from wealth, and our shares are at least as high if not higher. For the top one percent, all lines rise over the period, suggesting an increase in share for either the 1989-2007 or 1989—2001 periods. For the 1989-2001 period MCI and PS had the steepest slopes for growth in the income share of the top one percent, well above the rates of increase in either the CBO or WZ figures. Between 1989 and 2007, though, the MCI slope was close to, but slightly smaller than, the CBO slope, and considerably smaller than the PS slope. To varying degrees, all of the series show a rising share at the very top.

For the next tier of top-income households – the 95<sup>th</sup> to 99<sup>th</sup> percentiles of the distribution (Panel B) – the PS and CBO series show relatively low growth over the period (1989-2001 or 1989-2007). Using MCI, however, the income share of this group rises considerably, as does the

WZ series for 1989-2001. All of the series show slightly declining income shares for the next tier of top-income households – the 90<sup>th</sup> to 95<sup>th</sup> percentiles of the distribution (Panel C).

Based on the projections for 2009, MCI shows that the top income shares have declined slightly since 2007; the income share of the top one percent fell from 22.3 to 21.9 percent between 2007 and 2009, while the share of the next-highest four percent declined from 18.5 to 18.0 percent. The crisis in the financial sector and the decline in business assets appears to have made a small dent in the income share of the highest-income households, but the shares remain higher than every year before 2007.

### **Impact of Vehicle Service Flow**

The levels and trends in MCI shown in tables 1, 2, and 3 and figures 1, 2, 3, and 4 do not impute any flow of income to vehicle assets below \$50,000 in value. For low and middle-income households, however, vehicles are an important asset, and are typically valued well below \$50,000. In 2007, median vehicle value was \$13,000. Nearly 90 percent of households had vehicle assets, and the value at the 90<sup>th</sup> percentile was under \$41,000. Changing the treatment of vehicles in MCI, calculating an annual service flow to vehicle ownership following the approach of Slesnick (1994), suggests somewhat higher levels of MCI, particularly for low-income households.<sup>22</sup> Including vehicle service flow, MCI for at the 99<sup>th</sup> percentile was \$943,740 in 2009, one percent higher than the baseline approach in Table 3\_09. MCI at the 10<sup>th</sup> percentile, though, was \$15,538 with vehicle service flow, 5.2 percent higher than baseline MCI. Including vehicle service flows also modestly changes measures in the level of inequality, but has no appreciable impact on inequality trends. The Gini index of MCI in 2007, for example, falls from

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<sup>22</sup> The SCF includes a set of detailed questions about household vehicles, but in the public-use version of the data only includes the value of the vehicle. SCF staff calculate vehicle value based on the age, make, model, and condition of the vehicle. To calculate the vehicle service flow, we multiply the vehicle value by the rate of depreciation plus the rate of depreciation. Also following Slesnick (1994, 2001), we assume a rate of depreciation or 10 percent.



.600 to .593 after including vehicle service flow. The trend in the Gini index, though, is not affected (Figure 5, panel A). Adding vehicle service flow to MCI results in similar small changes in other inequality measures, including the income share of top five percent on households and the 99/50 income ratio, but leaves the overall trends unchanged (Figure 5, panels B, C).

### **Labor vs. Capital Income**

A more complete accounting for income from wealth as well as from labor produces large changes in the functional income distribution. At the top of Figure 6 in Panel A, we see the SCF traditional micro-data based pattern of household income components. Earned income is 63-70 percent of gross incomes over the period we study. Indeed most authors (e.g., Cowen, 2007; Tatom, 2007) assume that labor income is always about 65-70 percent of total income. Conventional reported income from interest, rent, dividends and sometimes capital gains is between 10 and 15 percent of SCF income. “Other” (largely public transfer) net income is 9-15 percent of gross income, while income from capital and Self Employment Business Income (SEBI) are both no more than 10 percent. This is the standard picture with almost all household income micro datasets, but the pattern is considerably different when we consider the MCI distribution (Panel B).

Now, because we assess all capital income in MCI, capital income is both higher than in panel A, and is also growing from 1988-89 to 2006-07. The capital share of income in MCI rises from 30 to 40 percent over this period, with a recession induced dip in 1991-92 and plateau in 2003-04, before falling back to 37 percent in the “great recession.” Over the same period, the labor share of income falls to 52 percent in 2006-07 percent, before bouncing back to 55 percent

in 2009. “Other” (net transfer) income changes very little.<sup>23</sup> Using short-run rates (not shown) results in very noisy results that fail to show any trend between 1989 and 2007.

These trends, especially using long-run rates, suggest the role of income from wealth is growing stronger in the US, while labor income is falling in importance. Simply put income from wealth rises and income from labor falls once we take a more complete view of Haig-Simons income.

### **Labor Shares at the Top of the Distribution**

Similar to Wolff and Zacharias (2006a; 2006b) we find that our expanded measure of income using the SCF fails to support Piketty and Saez’s (2003, 2006) finding of the rising importance of income from labor. Using federal tax return data, Piketty and Saez document a rising labor share of total money income for high-income households. Using the expanded income definition of MCI, we find that income from wealth represents the largest share of MCI at the top of the distribution and that the wealth share is rising.<sup>24</sup>

Figure 7 shows the share composition of MCI over the entire distribution. For the lowest MCI households labor and capital combined represent less than one third of total MCI in 2007, but for the highest MCI households capital income alone constitutes more than half of MCI (Panel A). The trend comparisons (Panel B) suggest that capital income represents the largest portion of MCI for the top few percentiles, and the capital share increased between 1989 and 2007 for the top five percentiles. For the top one percent of the MCI distribution, the capital share rose from 39 percent of MCI in 1989 to 53 percent by 2007.

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<sup>23</sup> The estimates of labor share exclude the non-pension portion of total non-wage compensation. Adding in employer subsidies for health care, the one large and ignored element of compensation might reduce the trend slightly, but it would not change the qualitative conclusion that the long term capital share is rising

<sup>24</sup> Lemieux, et al. (2007) describe how performance-based or incentive based pay has increasingly driven the income share of the top centime, but these same annual performance pay increases are no doubt also driving accumulated wealth at the tip of the MCI distribution in recent years, but with a one year or longer lag.

The labor share of MCI, conversely, has declined at the top of the distribution. Figure 8 shows the labor share of income for top-income households using both SCF Income (Panel A) and MCI (Panel B.) Using SCF income, the labor share of income the top one percent has risen, though not steadily, since 1989. Using MCI, the labor share declined between 1989 and 2007 for the top one percent as well as the next four percent, before rising in the “great recession.”

### **Who are the Rich?**

The demographic profile of households by MCI class (Table 5) shows that, relative to other households, high MCI households are older, better educated, more likely to be white and married, more likely to be self-employed or in a partnership, and are disproportionately grouped in managerial and professional occupations. These facts seem to fit with a definition of what we loosely describe as “entrepreneurs.” Nearly 92 percent of households in the top one percent were headed by non-Hispanic whites and 92 percent were married, compared to nearly 69 percent and 55 percent, respectively, for the bottom 90 percent of households.<sup>25</sup> Age alone is not a terribly good predictor of high wealth as nearly 42 percent of the group in the top 1 percent have children under age 18, little different from the bottom 90 percent of households.

The educational and occupational differences between high MCI households and the general population are quite striking. Nearly 9 of 10 (87 percent) household heads in the top 1 percent of MCI had at least a college degree compared to 30 percent among the bottom 90 percent. Nearly half (47 percent) of working households in the top 1 percent of MCI had at least some post-graduate education.<sup>26</sup> Hence accumulation of human capital is indirectly linked to income from wealth. More than 88 percent of household heads in the top 1 percent of the MCI distribution were in the managerial and professional occupation class, and 45 percent were self-

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<sup>25</sup> These relationships include legally married couples and other couples that are “partners.”

<sup>26</sup> Results in expanded tables available from the authors.

employed or a partner in a firm, compared to just 34 percent and 8 percent respectively for the bottom 90 percent of the distribution. Moreover, nearly half (46 percent) of working households in the top 1 percent were self-employed/partner in a managerial and professional occupation.

We conclude that high MCI households are a varied lot in certain respects, but they do appear similar to most definitions of ‘entrepreneurs’ based on education, occupational profession and industry. They are not especially aged and almost half of high MCI families still have children under age 18. Human capital is important to high MCI, but it has to be combined with creative risk-taking, in partnerships, self held businesses, high-level responsibilities and the ability to take advantage of economic opportunities that arise.

A more thorough treatment of demographics, including means, medians, and distributional breakdowns by age, family composition, and ethnicity for SCF income and MCI, as well as a consideration of the influence of population ageing on inequality is included in previous drafts.<sup>27</sup>

#### **IV. Discussion/Conclusion**

The story we are telling is one of shifting sources of incomes, especially at the top, from labor to capital income. It is not the same story as in the popular “high income” papers. High-income families are not always high earners, as Piketty and Saez (2003; 2006) argue; rather it is that these high earners in earlier years consume relatively small fractions of these extremely large incomes and thus increasingly build up assets and accumulate high-unmeasured incomes from these assets. MCI brings out these patterns in some detail.

Not unlike the Medici period in Italy, this “Richistan” (Frank, 2007) pattern is definitely at work in the early 21<sup>st</sup> century where flat earnings below the 80<sup>th</sup> percentile and falling median

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<sup>27</sup> Available at: [http://www.irp.wisc.edu/aboutirp/people/affiliates/Smeeding/14-INCOME-FROM-WEALTH\\_6\\_21\\_07.pdf](http://www.irp.wisc.edu/aboutirp/people/affiliates/Smeeding/14-INCOME-FROM-WEALTH_6_21_07.pdf).

incomes for the non-elderly have drawn repeated questions about where the nation's productivity gains have gone. (Gordon and Dew-Becker, 2005; Mishel et al, 2005; Lemieux, et al., 2007; Aron-Dine and Shapiro, 2006). The answer is that they went to, and remain in, higher value assets, including higher value corporate assets, proprietor's incomes, net interest and profits (which drive up stock and bond market returns and the value of business equity).

Institutional and economic change has created a greater emphasis on worldwide 'free market' capitalism, high returns to the entrepreneurs—the inventors and creative users of capital (Acemogolou, 2002). These changes have been combined with tax advantages for both capital income and high incomes, and have led to the worsening of the social and political position of labor more generally (Levy and Temin, 2007). All of these factors have contributed to the shift to higher capital vs. labor income. Ever greater global trade and further technological change should only intensify these changes (Blinder, 2007; Freeman, 2007). While some claim labor incomes will rise more in the future than will capital incomes due to world population aging (Krueger and Ludwig, 2006), others see high and rising returns to asset holdings for those with productive assets such as pension savings (Poterba, et al., 2007a; 2007b; Love and Smith, 2007). Indeed while human capital and technology are "racing" for higher income shares (Goldin and Katz, 2006), technology and the entrepreneurs who own and deploy such capital are currently winning the race, and are increasingly likely to receive higher rewards in a world of mobile capital and workers (see also Freeman, 2007).

And, the US is not alone in this situation, as OECD figures reported by Porter (2006), Glynn, (2009) and Guscina (2006) suggest that the labor share of total income has fallen in most rich OECD nations over the 1990-2004 period. Indeed the labor share in Germany and Japan fell by even more than in the United States over this period, while at the same time; the German trend has been increasingly for market incomes to accrue to the highest income households

(Bach, Corneo and Steiner, 2007). In addition, concentration of wealth is on the rise in Europe as well as in the United States (Atkinson, 2006).

## Technical Appendix: Constructing MCI and Adding Taxes

Income net wealth (“**income less capital**”) is calculated by subtracting realized income from capital from the SCF income definition.<sup>28</sup> Hence, reported interest, rents and dividends are excluded in the given income year. Further, capital gains and royalties are also excluded in counting income “less capital” to avoid double counting, as we will be imputing returns to these assets to the extent that these 2006 gains and royalties have been invested in other assets by 2007. To the extent that these gains and royalties are consumed and not re-invested, we will underestimate capital incomes in this process.

In allocating the functional share of income between labor and capital, and further in accounting for capital income flows, we partition self employment income as follows: in the cases where self-employment and business income (SEBI) exceeds income from wages, thirty percent of SEBI is considered a return to capital and is also subtracted from SCF income to complete “less capital.” In cases where SEBI is less than income from wages, we treat all SEBI as income from labor. This practice is the same as that employed by others who also split SEBI into labor and capital components (e.g., see Canberra Report, 2001).

After removing income from capital from SCF income, flows to assets are imputed for the full range of assets measured in the SCF data. Separate rates of return were applied for stocks, bonds, and housing assets. Specific rates applied to the assets are based on historic returns data described in greater detail below. The return to stocks is based on the Dow Jones Industrial Average. The return to bonds is based on 10-year US Treasury notes. The return to residential real estate is based on Office of Federal Housing Enterprise Oversight (OFHEO) House Price Index. In addition, flows to assets are calculated gross of the inflation rate (CPI-U), while some flows are based on the average of two different types of return (the average of the return to stocks and bonds, for example). The details are contained in Appendix Table A-1.

The following additive series of combined capital income flows are added to income, net of reported interest rent and dividends, in the order specified below:

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<sup>28</sup> Three different versions of the SCF data for each year are used. The household income variable and many of the broader asset and income definitions as well as key demographic details are available in the “Extract of the Full Public Data Set” (in Stata) version of the SCF. This version of the data contains the variables used in Federal Reserve *Bulletin* article. Detailed asset classes not included in the extract file were accessed through the “Full Public Data Set” (in Stata). Key variables from the full data set were merged into the extract file. Finally, the full public access version of the data was accessed a second time in SAS. This was done because the SCF tax programs are coded in SAS. Use of the SCF tax programs and NBER’s TAXSIM is discussed in more detail below. (All of these versions are available at the SCF web site: [www.federalreserve.gov/Pubs/oss/oss2/scfindex.html](http://www.federalreserve.gov/Pubs/oss/oss2/scfindex.html).)

- “**plus finance**” adds imputed flows to directly held stocks, stock mutual funds, combination mutual funds, bonds, other bond mutual funds, savings bonds, government bond mutual funds, and tax free bond mutual funds, as well as “other managed assets,” such as trusts and annuities to “**income less capital**”;
- “**plus retire**” adds flows to “quasi-liquid retirement accounts,” such as IRA/Keoghs and account-type pensions to “**plus finance**”;
- “**plus home**” adds flows to owner-occupied home equity to “**plus retire**”;
- “**plus oth invest**” adds flows to investment real estate equity, transaction accounts, certificates of deposit (CDs) and the cash value of whole life insurance to “**plus home**”;
- “**plus business**” adds flows to other business assets and vehicles—only vehicles worth more than \$50,000—to “**plus oth invest**”;
- **MCI** subtracts flows to non real estate debt, including credit card debt, installment loans, and other debt from “**plus business**”—after replacing observations, where “plus business” value incomes were below SCF income with the SCF income value.<sup>29</sup>

Separate estimates for each of these income concepts are created using both long-run (30-year) averages and short-run (3-year) time specific rates. The long-run rates are based on the average annual return between 1977 and 2007, with the same long run rate applied to each year of SCF data—1989, 1992, 1995, 1998, 2001, 2004, 2007, and projections of the data into 2009.<sup>30</sup> Short-run returns are averages of the three years leading up to the survey year. The short-run return for income year 1989, for example, is based on the annual average return between 1987 and 1989. Income is from the completed calendar year prior to the survey. Assets are valued at the time of the survey, completed in the second half of the year. Imputed flows for 1989, for example, are based on wealth stocks reported between June and December of 1990<sup>31</sup>.

The long run nominal rates of return for stocks, bonds, housing and inflation are 7, 5, 6 and 3 percent, respectively and are smaller than the 1977-2007 and 1989-2007 averages for this period. We believe that the long run rates are modest and we know that they reflect estimates used by others. For instance, the 4 percent real return for stocks (7 percent minus 3 percent inflation adjustment) is the same as that used by the Social Security Advisory Board to score the net effects of investing Social Security funds in the private equities market. Finally, we assume a

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<sup>29</sup> This adjustment was made on account of households with negative incomes even after imputation of flows to all assets. These households had large trust and royalty income, but experienced negative capital gains income that left them with relatively low (or zero) SCF income. When the trust and royalty income was subtracted from SCF income, the result was deeply negative income that dwarfed the imputed flow to their assets. This occurred in less than three percent of households in the 2003 data. The adjustment has little or no effect on the overall results.

<sup>30</sup> The actual long-run rates applied reduced the return to bonds and stocks by roughly 3.0 percentage points to adjust for annual rates of inflation. See Appendix Table 1 for details.

<sup>31</sup> Appendix Tables 1 and 2 include details for the long run and short-run rates of return applied to each income concept between 1989 and 2007. The year to year short run rates vary by period and asset type (see Appendix Table 2).



long run non-housing debt rate of 9 percent. Housing debt is factored in when determining net imputed rent on owned and other housing equity.

### **Incorporating Taxes**

In addition to the MCI concepts described above, three additional after-tax income concepts are calculated for each year up through 2007. Taxes for all three are federal income taxes calculated using the National Bureau of Economic Research (NBER) TAXSIM program. All of the required input for TAXSIM is generated based on programs developed by Fed economist Kevin Moore, and is available on the NBER web site.<sup>32</sup>

The first after-tax concept is simply reported SCF income less taxes, a version of disposable personal income (dpi). The second concept is income net wealth *and* net taxes. Income net wealth is defined as described above (“less capital”) and the related taxes are calculated with TAXSIM by eliminating dividend and “other property” income, including interest, from the input file.<sup>33</sup> The final after-tax concept is based on MCI. In this case, the sum of the imputed flow to assets included in MCI is categorized as dividend income and the taxes calculated by TAXSIM.<sup>34</sup> The resulting federal taxes are subtracted from MCI to create “MCI less tax.”

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<sup>32</sup> The TAXSIM is available online at: <http://www.nber.org/~taxsim/>.

<sup>33</sup> These are fields 9 and 10 of the TAXSIM input file.

<sup>34</sup> In addition these results are also calculated with the imputed flows in MCI classified as “other property income” in TAXSIM. The impacts of this difference are minimal, and only present for 2004 and after.

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**Table 1. Relation of Gross Domestic Product, Gross National Product, and National Income - Including Those Accounted for in this Paper (shaded)**

[Billions of dollars; quarters seasonally adjusted at annual rates]

	2006-III	Share	2009-IV	Share
National income	\$12,093		\$12,466	
Compensation of employees	\$7,484	61.9%	\$7,773	62.4%
Wage and salary accruals	\$6,075	50.2%	\$6,266	50.3%
Supplements to wages and salaries	\$1,409	11.6%	\$1,507	12.1%
Proprietors' income with inventory valuation and capital consumption adjustments	\$1,131	9.4%	\$1,060	8.5%
Rental income of persons with capital consumption adjustment	\$140	1.2%	\$287	2.3%
Corporate profits with inventory valuation and capital consumption adjustments	\$1,655	13.7%	\$1,468	11.8%
Net interest and miscellaneous payments	\$662	5.5%	\$783	6.3%
Taxes on production and imports less subsidies	\$992	8.2%	\$1,034	8.3%
Business current transfer payments	\$84	0.7%	\$128	1.0%
Current surplus of government enterprises	-\$5	0.0%	-\$7	-0.1%

Source: BEA NIPA Table 1.12, Available at [www.bea.gov](http://www.bea.gov).

1. We account for supplements to wages and salaries only in so far as they appear as part of defined contribution pension plans. Health care and other employer subsidies are not counted.



**Table 2. SCF (2006-07) - Full Income Definition Summary Statistics - Original Rankings and Short-run Rates of Return**

	SCF income	less capital	plus finance	plus retire	plus home	plus oth invest	plus business	MCI	change	
									SCF to MCI	as % of SCF
mean	84,144	73,058	79,475	85,181	94,645	100,908	111,131	112,384	28,240	34%
median (P50)	47,305	43,808	46,214	47,602	53,070	55,196	56,858	55,917	8,612	18%
P90	140,887	128,546	135,625	149,259	167,868	179,678	189,333	189,740	48,854	35%
P95	206,702	185,106	200,865	218,977	245,110	265,998	294,841	295,743	89,041	43%
P10	12,340	11,369	12,340	12,340	14,234	14,402	14,503	14,398	2,058	17%
P99	693,121	516,327	613,923	679,215	754,758	842,751	1,040,259	1,062,867	369,746	53%
90/10	11.4	11.3	11.0	12.1	11.8	12.5	13.1	13.2	1.8	15%
90/50	3.0	2.9	2.9	3.1	3.2	3.3	3.3	3.4	0.4	14%
10/50	0.26	0.26	0.27	0.26	0.27	0.26	0.26	0.26	0.00	-1%
95/50	4.4	4.2	4.3	4.6	4.6	4.8	5.2	5.3	0.9	21%
99/50	14.7	11.8	13.3	14.3	14.2	15.3	18.3	19.0	4.4	30%
99/90	4.9	4.0	4.5	4.6	4.5	4.7	5.5	5.6	0.7	14%
gini	0.572	0.540	0.560	0.570	0.563	0.573	0.601	0.610	0.04	7%

Notes:

SCF income	Fed default gross household income definition, includes wages, self-employment and business income, taxable and tax-exempt interest, dividends, realized capital gains, food stamps and other support programs provided by the government, pension income and withdrawals from retirement accounts, Social Security income, alimony and other support payments, and miscellaneous sources of income.
less capital	SCF income less income from wealth (interest, dividends, rent, royalties, and income from trusts and non-taxable investments, including bonds, as well as some self-employment income).
plus finance	+ imputed flows to stocks, bonds, annuities, and trusts
plus retire	+ imputed flows to quasi-liquid retirement accounts (401(k), IRA, etc.)
plus home	+ imputed flow to primary residence
plus oth invest	+ imputed flow to other residences and investment real-estate, transaction accounts, CDs and whole life insurance
plus business	+ imputed flow to other assets and businesses + imputed flow to vehicle wealth
MCI	- imputed interest flow for remaining debt (after adjusting for negative incomes)

**Table 3. SCF (2006-07) - Full Income Definition Summary Statistics - Original Rankings and Long-run Rates of Return**

	SCF income	less capital	plus finance	plus retire	plus home	plus oth invest	plus business	MCI	change	
									SCF to MCI	as % of SCF
mean	84,144	73,058	79,292	84,763	92,876	98,868	108,677	110,147	26,003	31%
median (P50)	47,305	43,808	46,157	47,444	51,997	54,488	55,768	55,014	7,709	16%
P90	140,887	128,546	135,571	148,855	163,986	175,709	184,423	185,892	45,005	32%
P95	206,702	185,106	200,588	218,850	241,284	259,486	287,293	290,835	84,133	41%
P10	12,340	11,369	12,340	12,340	13,839	14,397	14,407	14,397	2,057	17%
P99	693,121	516,327	611,309	669,215	728,744	822,229	1,011,830	1,031,528	338,407	49%
90/10	11.4	11.3	11.0	12.1	11.8	12.2	12.8	12.9	1.5	13%
90/50	3.0	2.9	2.9	3.1	3.2	3.2	3.3	3.4	0.4	13%
10/50	0.26	0.26	0.27	0.26	0.27	0.26	0.26	0.26	0.00	0%
95/50	4.4	4.2	4.3	4.6	4.6	4.8	5.2	5.3	0.9	21%
99/50	14.7	11.8	13.2	14.1	14.0	15.1	18.1	18.8	4.1	28%
99/90	4.9	4.0	4.5	4.5	4.4	4.7	5.5	5.5	0.6	13%
gini	0.572	0.539	0.559	0.569	0.562	0.572	0.599	0.608	0.04	6%

Notes:

SCF income	Fed default gross household income definition, includes wages, self-employment and business income, taxable and tax-exempt interest, dividends, realized capital gains, food stamps and other support programs provided by the government, pension income and withdrawals from retirement accounts, Social Security income, alimony and other support payments, and miscellaneous sources of income.
less capital	SCF income less income from wealth (interest, dividends, rent, royalties, and income from trusts and non-taxable investments, including bonds, as well as some self-employment income).
plus finance	+ imputed flows to stocks, bonds, annuities, and trusts
plus retire	+ imputed flows to quasi-liquid retirement accounts (401(k), IRA, etc.)
plus home	+ imputed flow to primary residence
plus oth invest	+ imputed flow to other residences and investment real-estate, transaction accounts, CDs and whole life insurance
plus business	+ imputed flow to other assets and businesses + imputed flow to vehicle wealth
MCI	- imputed interest flow for remaining debt (after adjusting for negative incomes)

**Table 3\_09. SCF (2009 Projection) - Full Income Definition Summary Statistics - Original Rankings and Long-run Rates of Return**

	SCF income	less capital	plus finance	plus retire	plus home	plus oth invest	plus business	MCI	change	
									SCF to MCI	as % of SCF
mean	82,298	71,322	78,891	83,597	88,381	94,396	102,221	104,303	22,005	27%
median (P50)	46,293	43,275	45,027	46,564	49,709	52,499	53,980	53,366	7,072	15%
P90	138,860	129,558	136,123	146,651	157,373	167,196	173,378	175,040	36,179	26%
P95	206,047	181,699	195,087	214,132	224,616	249,409	268,612	272,497	66,451	32%
P10	13,484	12,898	13,042	13,042	14,228	14,592	14,884	14,768	1,284	10%
P99	652,315	489,283	629,802	681,997	708,786	778,926	893,783	934,017	281,702	43%
90/10	10.3	10.0	10.4	11.2	11.1	11.5	11.6	11.9	1.6	15%
90/50	3.0	3.0	3.0	3.1	3.2	3.2	3.2	3.3	0.3	9%
10/50	0.29	0.30	0.29	0.28	0.29	0.28	0.28	0.28	-0.01	-5%
95/50	4.5	4.2	4.3	4.6	4.5	4.8	5.0	5.1	0.7	15%
99/50	14.1	11.3	14.0	14.6	14.3	14.8	16.6	17.5	3.4	24%
99/90	4.7	3.8	4.6	4.7	4.5	4.7	5.2	5.3	0.6	14%
gini	0.561	0.527	0.555	0.565	0.560	0.568	0.590	0.600	0.04	7%

Notes:

SCF income	Fed default gross household income definition, includes wages, self-employment and business income, taxable and tax-exempt interest, dividends, realized capital gains, food stamps and other support programs provided by the government, pension income and withdrawals from retirement accounts, Social Security income, alimony and other support payments, and miscellaneous sources of income.
less capital	SCF income less income from wealth (interest, dividends, rent, royalties, and income from trusts and non-taxable investments, including bonds, as well as some self-employment income).
plus finance	+ imputed flows to stocks, bonds, annuities, and trusts
plus retire	+ imputed flows to quasi-liquid retirement accounts (401(k), IRA, etc.)
plus home	+ imputed flow to primary residence
plus oth invest	+ imputed flow to other residences and investment real-estate, transaction accounts, CDs and whole life insurance
plus business	+ imputed flow to other assets and businesses + imputed flow to vehicle wealth
MCI	- imputed interest flow for remaining debt (after adjusting for negative incomes)

Table 4. After-Tax Concepts (2006-07)

Panel A. Short-run Rates of Return

	<u>after-tax concepts</u>		<u>change</u>	
	<u>MCI</u>		<u>DPI to MCI</u>	<u>as % of</u>
	<u>dpi*</u>	<u>lesstax</u>	<u>lesstax</u>	<u>DPI</u>
<b>mean</b>	72,089	105,674	33,584	47%
<b>median (P50)</b>	44,409	56,626	12,217	28%
<b>P90</b>	120,798	176,554	55,756	46%
<b>P95</b>	172,232	277,522	105,290	61%
<b>P10</b>	12,372	16,179	3,807	31%
<b>P99</b>	520,282	925,758	405,475	78%
<b>90/10</b>	9.8	10.9	1.1	12%
<b>90/50</b>	2.7	3.1	0.4	15%
<b>10/50</b>	0.28	0.29	0.0	3%
<b>95/50</b>	3.9	4.9	1.0	26%
<b>99/50</b>	11.7	16.3	4.6	40%
<b>99/90</b>	4.3	5.2	0.9	22%
<b>gini</b>	0.532	0.5806	0.049	9%

Panel B. Long-run Rates of Return

	<u>after-tax concepts</u>		<u>change</u>	
	<u>MCI</u>		<u>DPI to MCI</u>	<u>as % of</u>
	<u>dpi*</u>	<u>lesstax</u>	<u>lesstax</u>	<u>DPI</u>
<b>mean</b>	72,089	103,260	31,171	43%
<b>median (P50)</b>	44,409	55,511	11,102	25%
<b>P90</b>	120,798	171,887	51,089	42%
<b>P95</b>	172,232	271,000	98,768	57%
<b>P10</b>	12,372	15,962	3,590	29%
<b>P99</b>	520,282	910,311	390,029	75%
<b>90/10</b>	9.8	10.8	1.0	10%
<b>90/50</b>	2.7	3.1	0.4	14%
<b>10/50</b>	0.28	0.29	0.0	3%
<b>95/50</b>	3.9	4.9	1.0	26%
<b>99/50</b>	11.7	16.4	4.7	40%
<b>99/90</b>	4.3	5.3	1.0	23%
<b>gini</b>	0.532	0.579	0.047	9%

Notes:

dpi income less federal taxes - calculated with TAXSIM

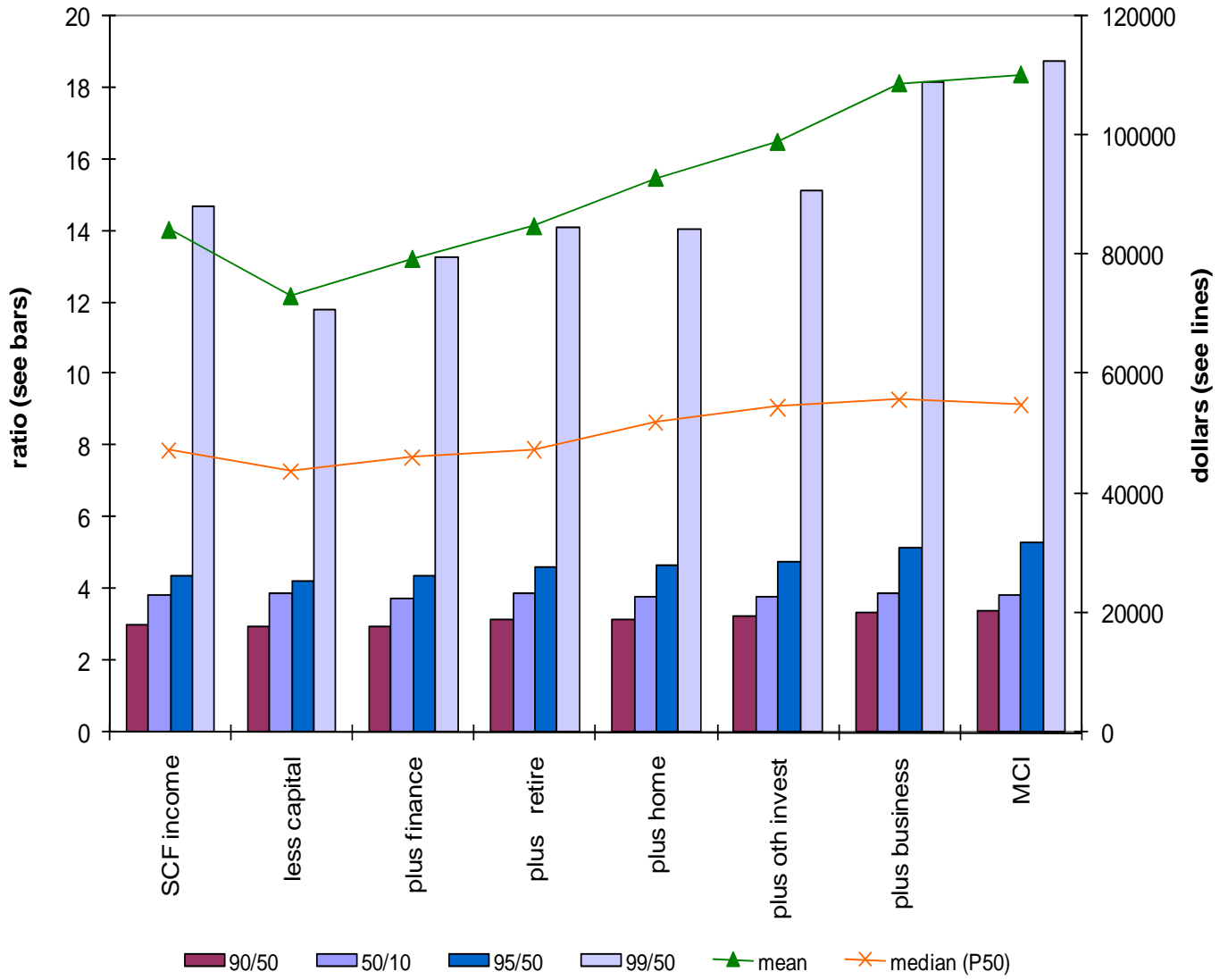
MCI lesstax MCI less federal taxes - calculated with TAXSIM

\*since dpi does not include any imputed flows to wealth, results are the same for short and long term rates of return

**Table 5. Demographic Profile of Households by MCI Levels - 2007 SCF**

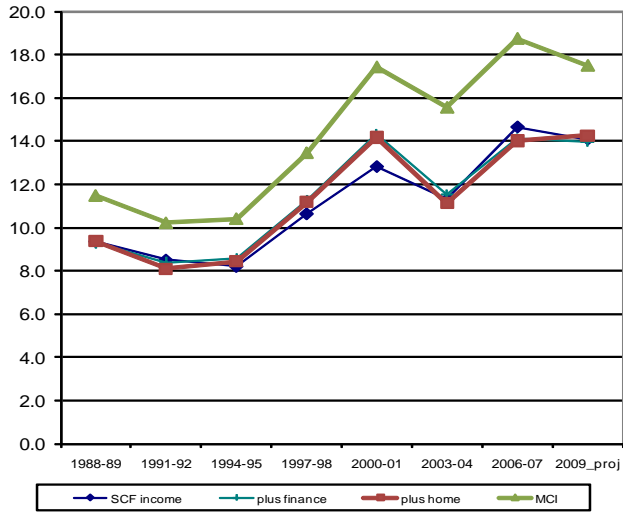
(characteristics of household head)	Top 10%	Top 5%	Top 1%	All	Bottom 90%
Average age	53.4	55.3	56.6	50.0	49.6
<b>Education Status</b>					
Average years of education	15.5	15.8	16.1	13.3	13.0
Share with at least college degree	76.7%	80.2%	87.3%	35.3%	30.2%
<b>Household Status</b>					
Share of households headed by married couple or partners	86.9%	86.5%	91.7%	58.8%	55.3%
Share with any kids	46.8%	44.1%	41.5%	43.9%	43.6%
Average # kids (of those with kids)	1.90	1.91	2.04	1.9	1.9
<b>Race</b>					
Share non-Hispanic White	86.9%	89.7%	92.0%	70.7%	68.7%
Share Black	2.7%	1.7%	1.8%	12.6%	13.8%
Share Hispanic	2.4%	1.7%	1.5%	9.4%	10.3%
Share "other"	8.0%	6.9%	4.7%	7.3%	7.2%
<b>Working Status</b>					
Employed by someone else	53.3%	42.4%	37.7%	59.9%	60.7%
Self-employed or Partner	29.6%	41.3%	45.2%	10.5%	8.1%
Retired/Disabled/Student	15.8%	15.2%	16.2%	25.0%	26.1%
Otherwise not in labor force	1.3%	1.1%	0.9%	4.6%	5.1%
<b>Industry</b>					
Agriculture	1.4%	1.4%	0.4%	3.0%	3.2%
Mining & Construction	7.7%	7.1%	12.3%	12.5%	13.2%
Manufacturing & publishing	10.5%	12.0%	9.5%	13.8%	14.3%
Trade, restaurants & bars	11.0%	10.4%	8.6%	15.2%	15.9%
Data, financial, business, repair & security svcs.	16.1%	19.2%	26.1%	12.0%	11.5%
Utility & transport, professional, scientific, technical, travel, cleaning, administrative, health, education, & personal svcs.	46.5%	44.8%	41.5%	36.3%	34.8%
Public admin. & armed svcs.	6.8%	5.1%	1.6%	7.1%	7.1%
<b>Occupations</b>					
Executives, managers, scientists, architects, engineers, lawyers, teachers, counselors & social workers, health care practioners, techs. & support, entertainment, sports & media	75.7%	83.4%	88.4%	39.1%	33.6%
Technicians, sales, office & computer operators	13.1%	9.7%	9.5%	19.5%	20.3%
Protective svcs., food prep, cleaning & bldg svcs., personal care, armed svcs.	4.5%	3.1%	0.0%	11.5%	12.5%
Construction & skilled labor & crafts	4.0%	1.9%	1.0%	18.2%	20.3%
Unskilled labor	2.2%	1.3%	1.1%	10.5%	11.8%
Farm, fishing, forestry, animal training & care	0.5%	0.6%	0.0%	1.3%	1.5%

Figure 1. Full-income 2006-07 SCF - Long-run returns

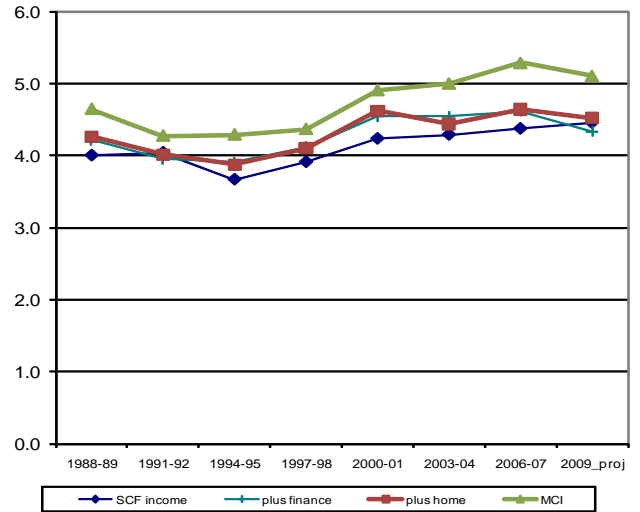


**Figure 2. Trend Statistics for Key Income Concepts (long run rates)**

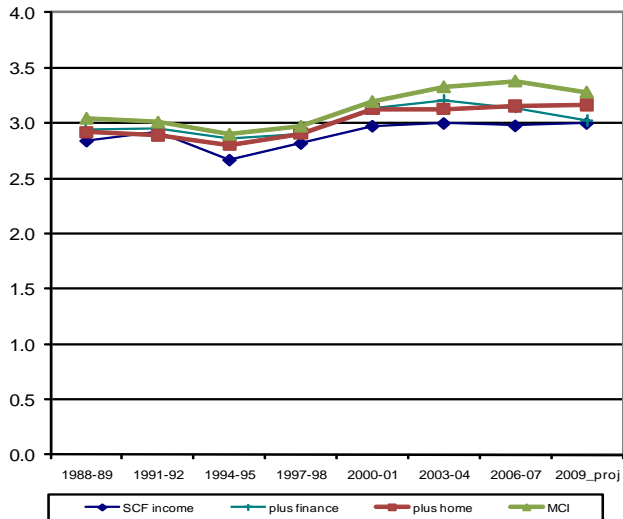
**Panel A. 99/50 ratios**



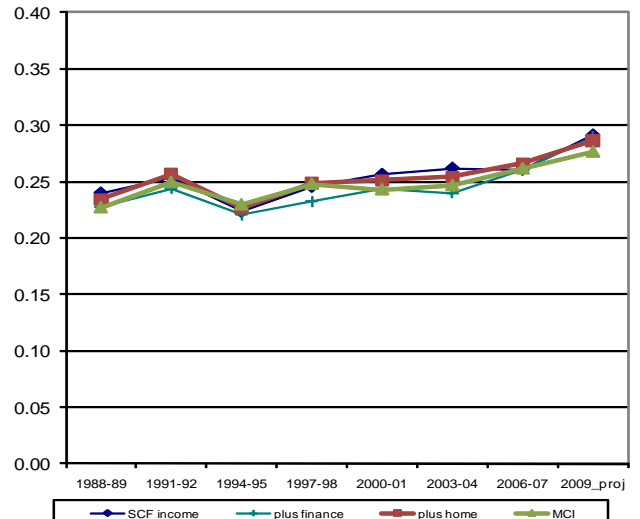
**Panel B. 95/50 ratios**



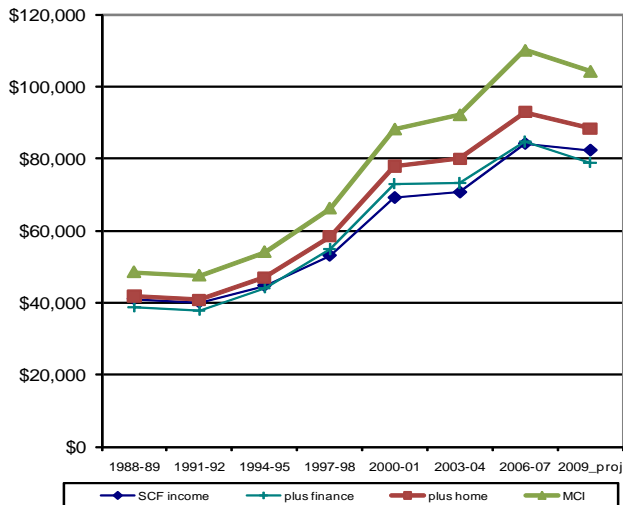
**Panel C. 90/50 ratios**



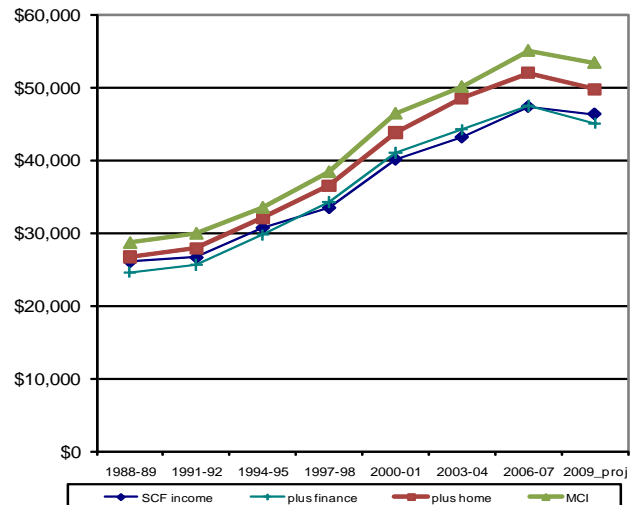
**Panel D. 10/50 ratios**



**Panel E. Means**

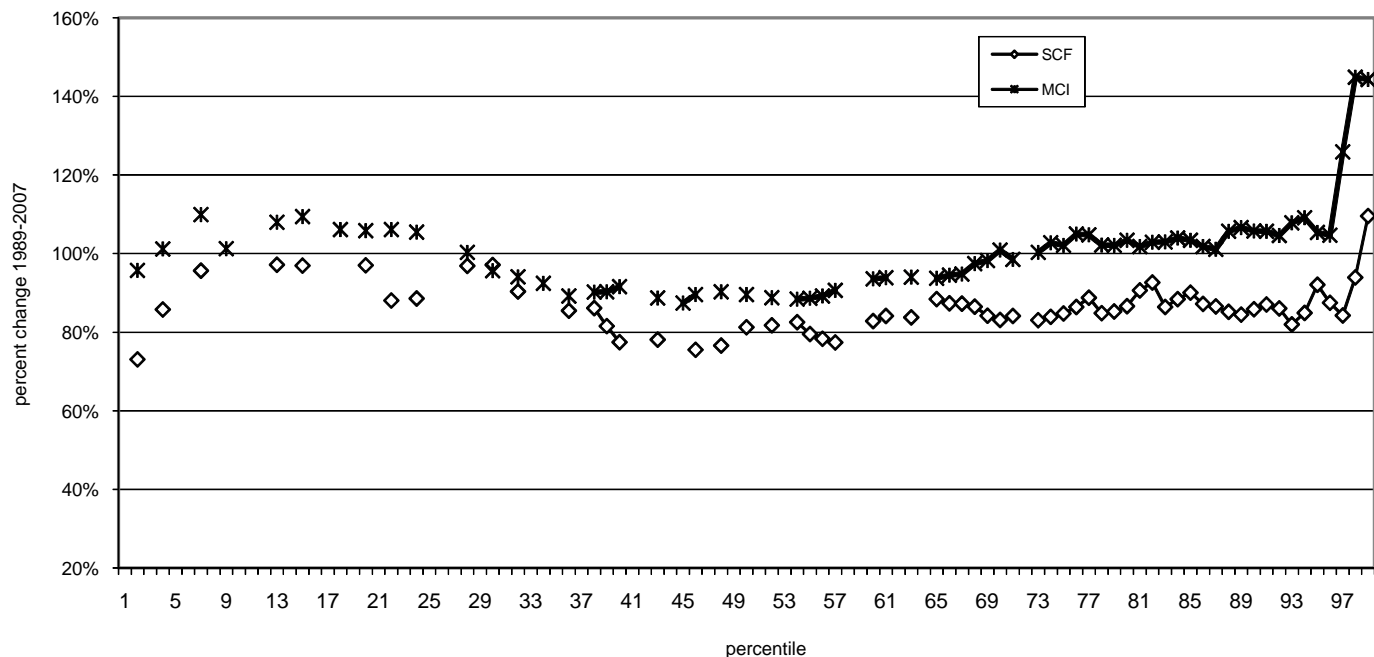


**Panel F. Medians**

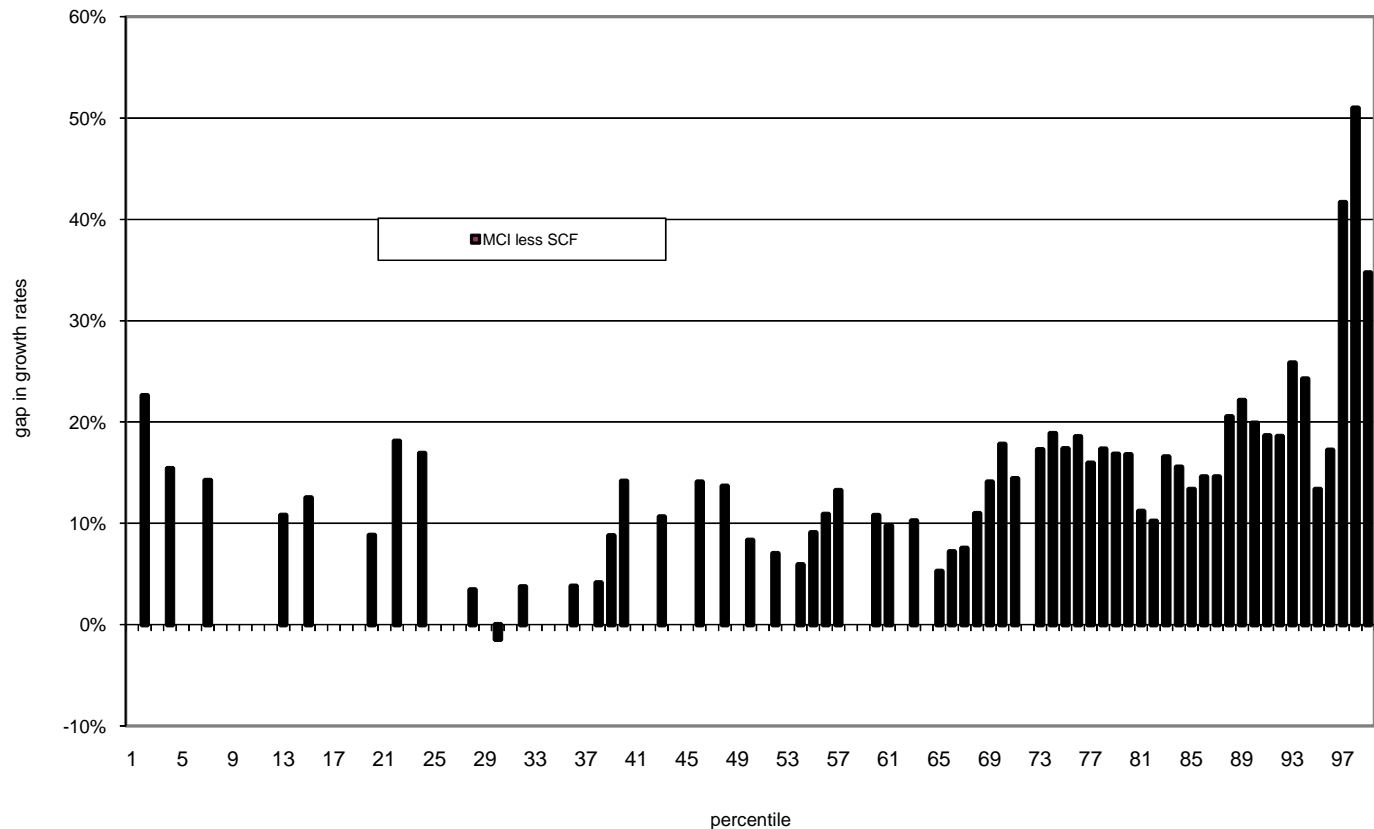


**Figure 3. MCI and SCF Growth Compared**

**Panel A. Growth between 1989 and 2007 by percentile of SCF and MCI distribution (long-run rates)**



**Panel B. Difference in MCI and SCF Growth Rates by percentile**

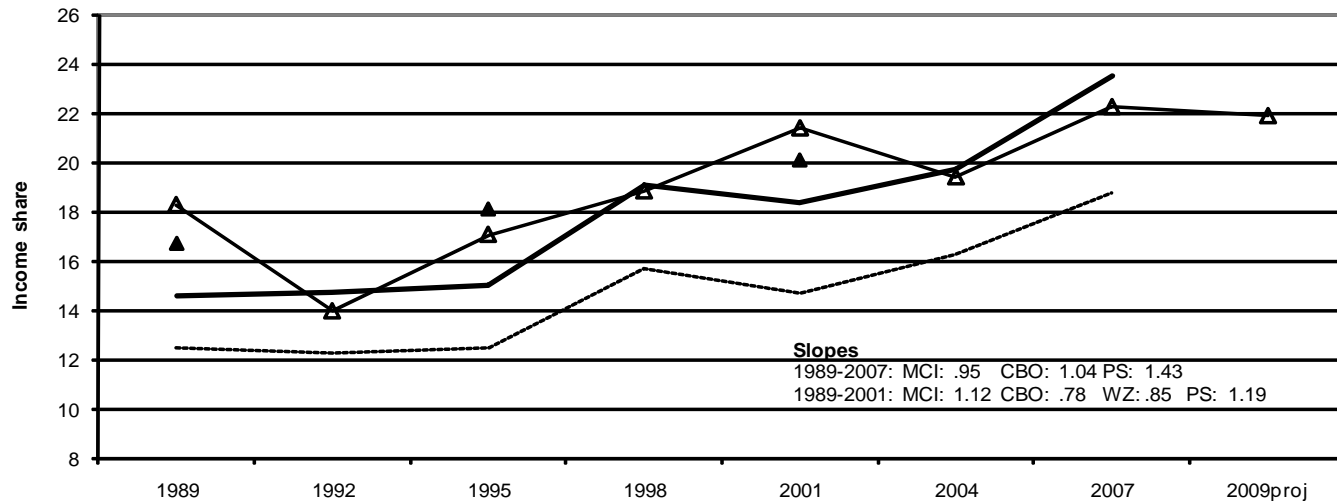




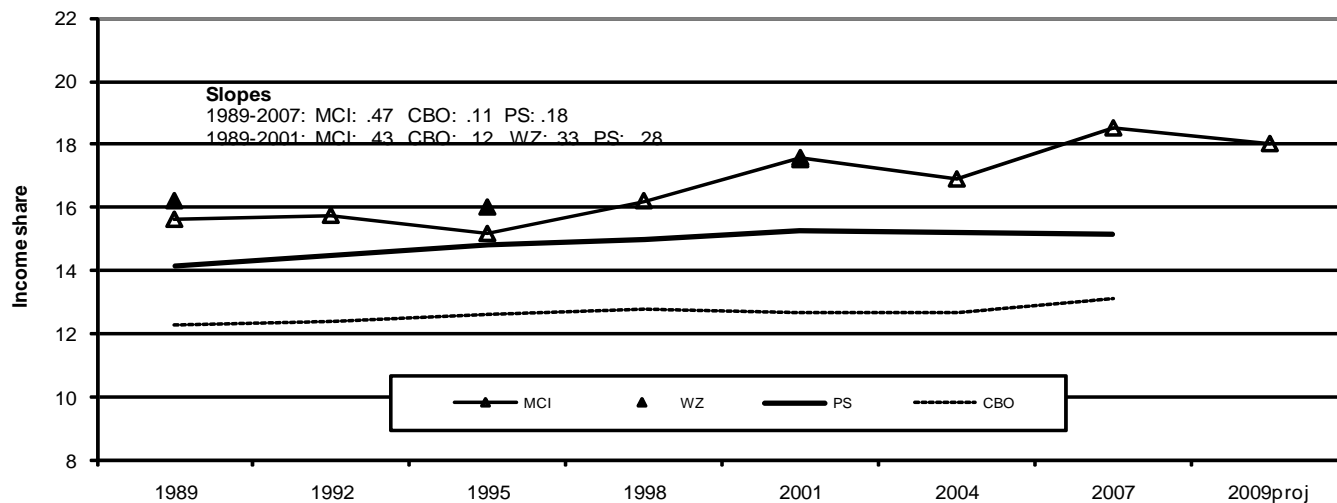
**Figure 4. Comparing Income Shares of Top Fractiles (1989-2009)**

(with slopes)

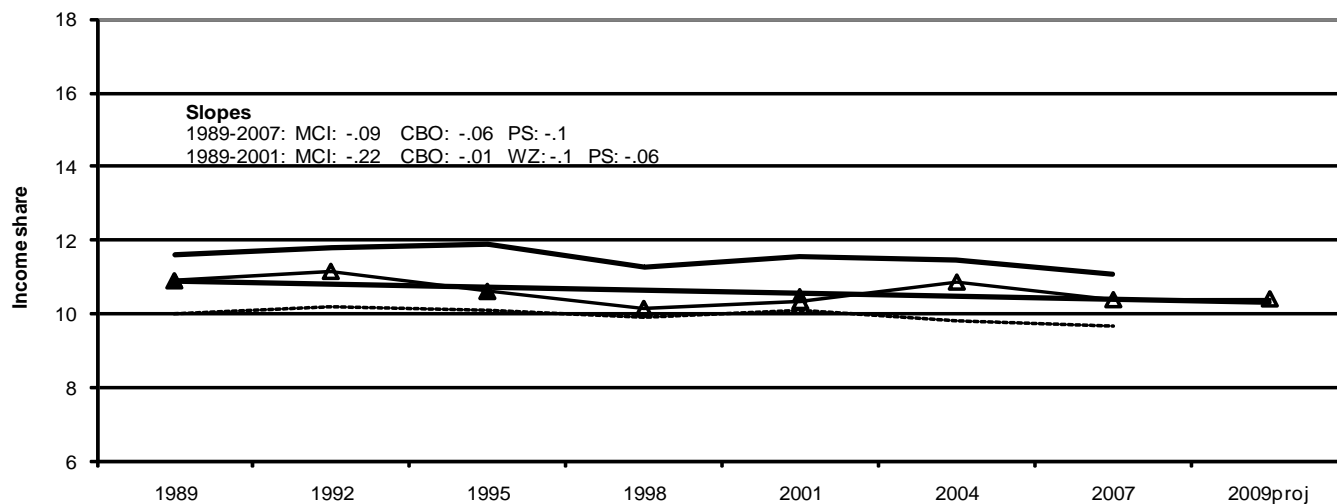
**Panel A. Top one percent**



**Panel B. 95 to 99 ptile**



**Panel C. 90 to 95 ptile**



**NOTES:**

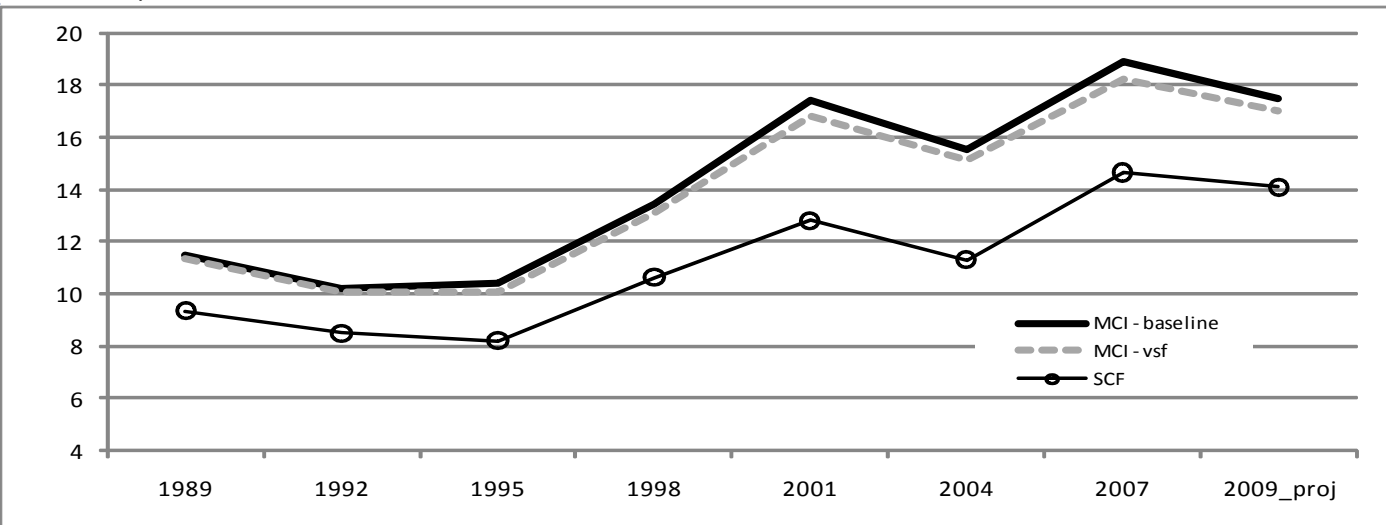
1. MCI is based on long-run rates of return.
2. CBO uses a measure of "comprehensive income" that includes realized capital gains.
3. WZ is "wealth-adjusted" income from Wolff and Zacharias, May 2006.
4. PS2 is from Piketty and Saez, 2003. It includes capital gains.

**Figure 5. The Impact of Including Vehicle Service Flow on Inequality Trends**

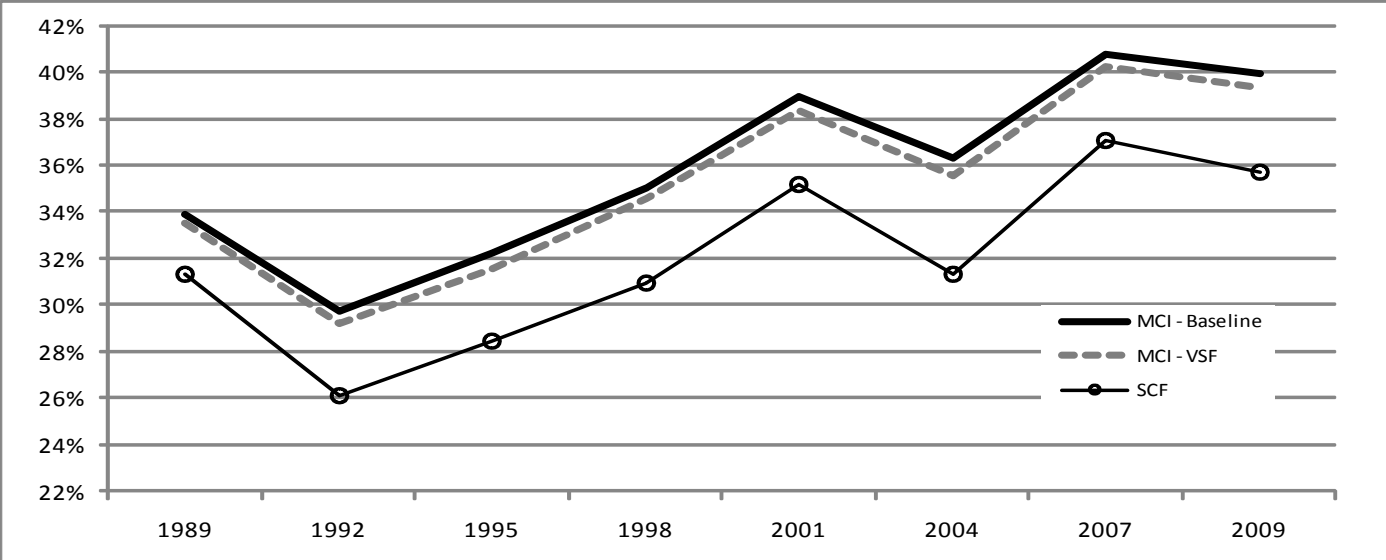
**Panel A. Gini Indices**



**Panel B. 99/50 Ratios**

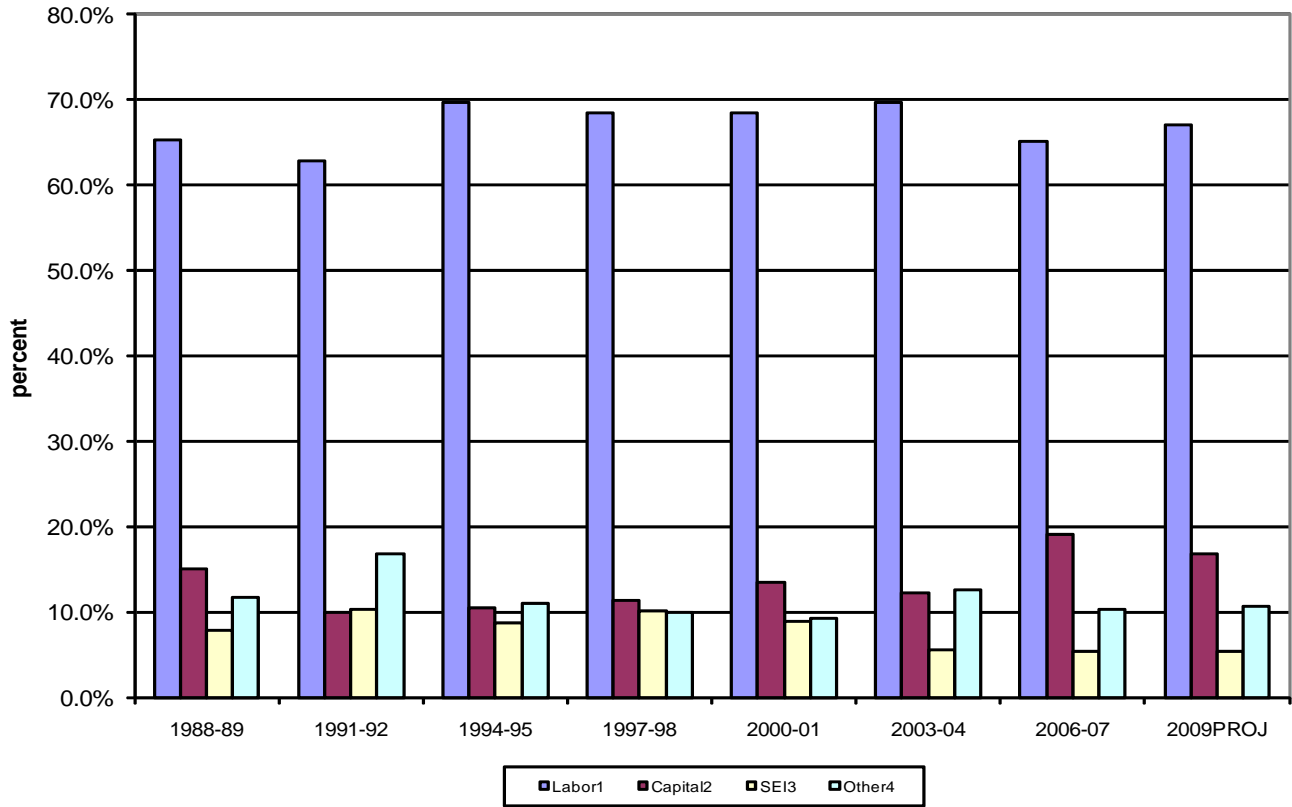


**Panel C. Income Share of Top 5%**

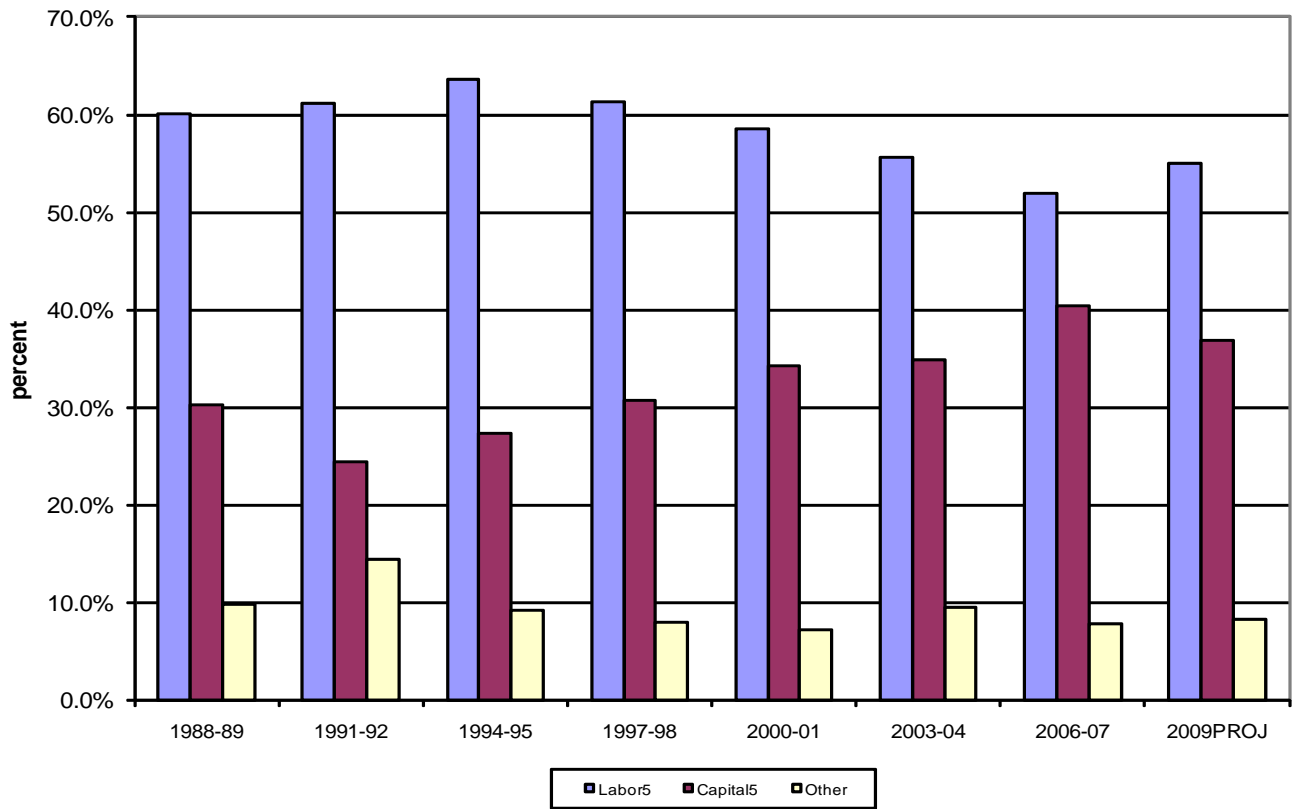


**Figure 6. Labor and Capital Shares - SCF and MCI Gross Income**

**Panel A. SCF Gross Income**



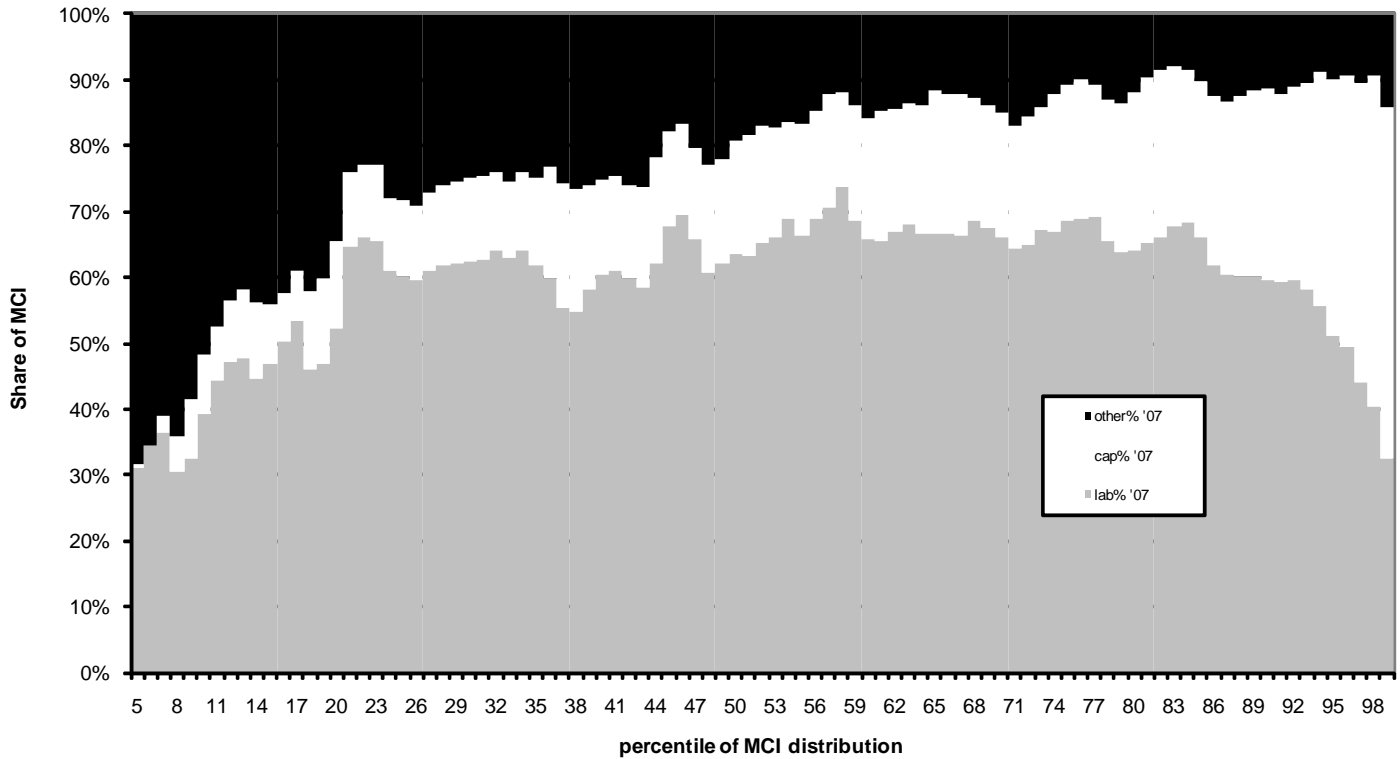
**Figure 2. Labor and Capital Shares (MCI Long-run Rates)**



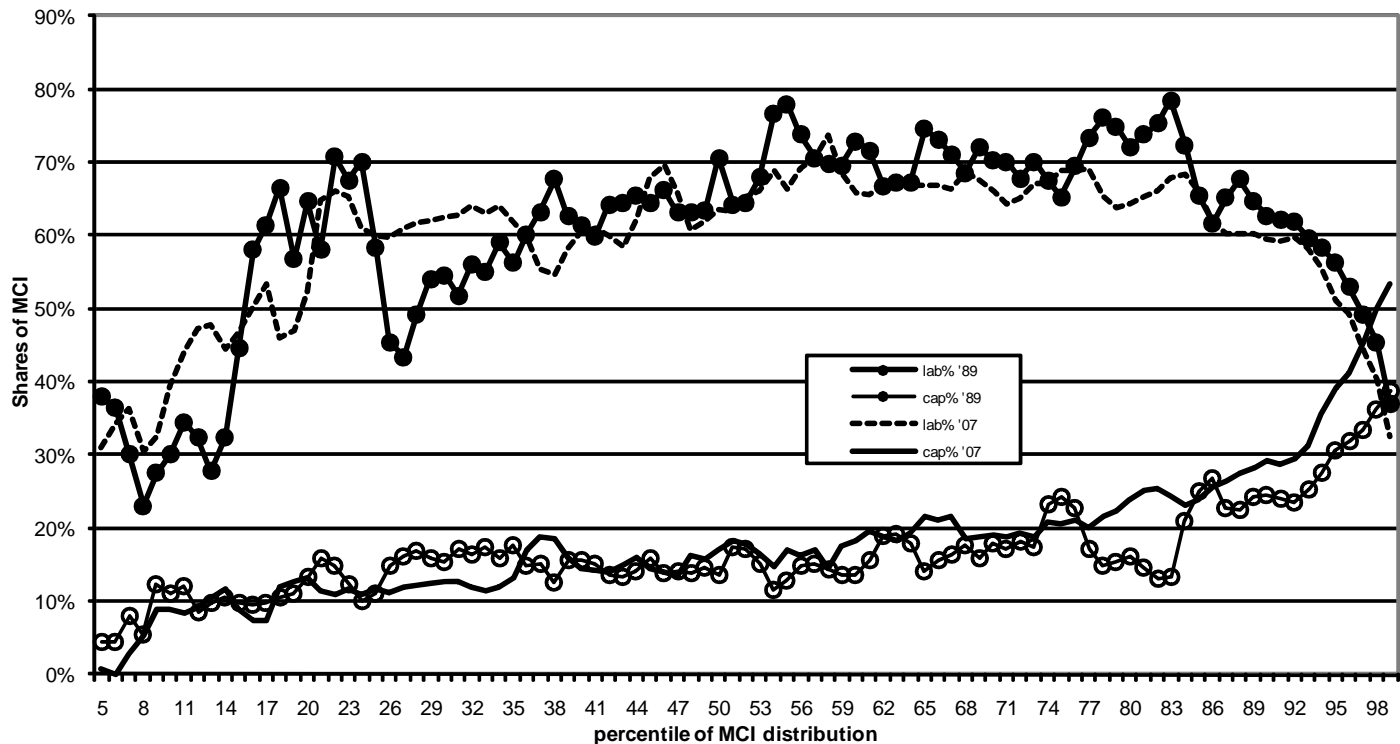
**Figure 7. Labor and Capital Shares of MCI by percentiles of MCI distribution**

Smoothed 3 percentile averages using long-run rates

**Panel A. Labor, Capital, and Other Share of MCI by percentile - 2007**

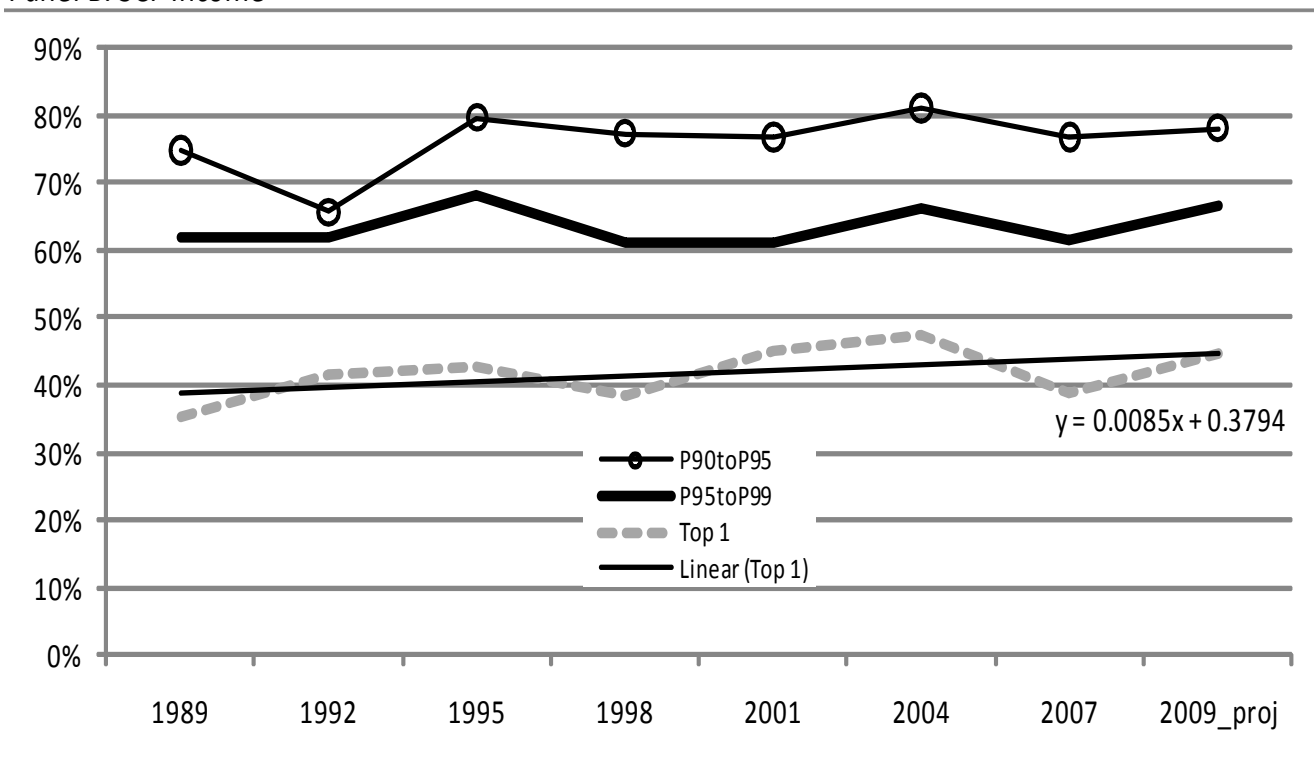


**Panel B. Labor and Capital Shares of MCI by percentile - 1989 and 2007**

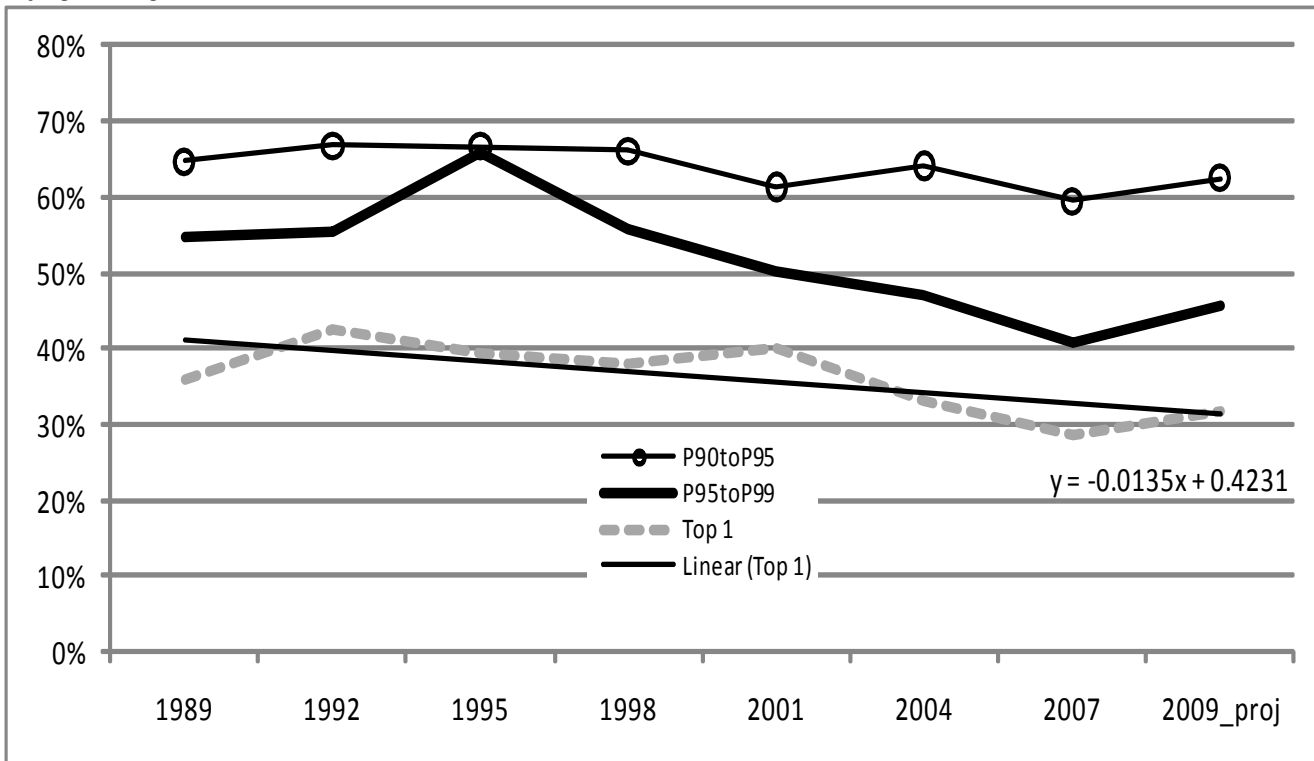


**Figure 8. Labor Share of Income for High-Income Groups, by Income Concept**

**Panel B. SCF Income**



**Panel B. MCI**



Appendix Table 1. Rates of Return Applied to Different Portions of Full-Income

Type of Income	def	return categories	Long-Run rates	1977-07	1987-89	1990-92	1993-95	1996-98	1999-01	2002-04	2005-07	notes
<b>SCF income</b>	Fed gross income											
<b>less capital</b>	SCF income less income from wealth (rent, interest, dividends, trusts&annuities)											
<b>plus finance</b>	+ imputed flows to stocks and bonds + imputed flows to annuities and trusts	SI	0.07	0.095	0.147	0.070	0.152	0.210	0.044	0.036	0.073	* Average of SI and BI is for "combination" mutual funds, CPI is for tax-free bonds
		SIBI*	0.06	0.085	0.116	0.074	0.108	0.135	0.050	0.039	0.059	
		BI	0.05	0.076	0.086	0.078	0.065	0.060	0.055	0.043	0.045	
		CPI	0.03	0.042	0.043	0.040	0.026	0.021	0.025	0.026	0.035	
<b>plus retire</b>	+ imputed flows to quasi-liquid retirement accounts	SI	0.07	0.095	0.147	0.070	0.152	0.210	0.044	0.036	0.073	
<b>plus home</b>	+ imputed flow to primary residence	HI	0.06	0.059	0.060	0.023	0.025	0.041	0.064	0.074	0.070	
<b>plus oth invest</b>	+ imputed flow to other residences and investment real-estate + imputed flow to transaction accounts + imputed flow to CDs and whole life insurance	SI	0.07	0.095	0.147	0.070	0.152	0.210	0.044	0.036	0.073	*Whole life insurance is given BI rate, CDs are given average of BI and CPI
		CPI+1	0.04	0.052	0.053	0.050	0.036	0.031	0.035	0.036	0.045	
		BI	0.05	0.076	0.086	0.078	0.065	0.060	0.055	0.043	0.045	
		BICPI*	0.04	0.059	0.064	0.059	0.046	0.041	0.040	0.034	0.040	
<b>plus business</b>	+ imputed flow to other assets and businesses + imputed flow to vehicle wealth	SI	0.07	0.095	0.147	0.070	0.152	0.210	0.044	0.036	0.073	
<b>MCI</b>	- imputed interest flow for remaining debts (after replacing finc5 with SCF income when finc5<SCF income)	CPI + 6	0.09	0.102	0.103	0.100	0.086	0.081	0.085	0.086	0.095	

**Appendix Table 2. Short Run (three-year average) and Long Run (1988-2007) Rates of Return**

	<b>Housing index (HI)</b>	<b>Stock Indices (SI)</b>	<b>Bond indices (BI)</b>	<b>Inflation (CPI)</b>
<b>A. "Short Run"</b>				
<b>1989</b>	6.0%	14.7%	8.6%	4.3%
<b>1992</b>	2.3%	7.0%	7.8%	4.0%
<b>1995</b>	2.5%	15.2%	6.5%	2.6%
<b>1998</b>	4.1%	21.0%	6.0%	2.1%
<b>2001</b>	6.4%	4.4%	5.5%	2.5%
<b>2004</b>	7.4%	3.6%	4.3%	2.6%
<b>2007</b>	7.0%	7.3%	4.5%	3.5%
<b>B. "Long-run"*</b>	6.0%	7.0%	5.0%	3.0%

\*Rates used for 1988-89 to 2006-07

**Appendix Table 2a. Adjustments made to SCF Income and Asset Categories for 2009 Projection**

Income	Matching Source. Table (Row Number)	Source Detail	Percent Change 2007 Q3/4 to 2009 Q3/4 change
Interest	NIPA. 2.1 (14)		-5.8%
Dividends	NIPA. 2.1 (15)		-28.6%
Non-taxable Investment Income	NIPA. 2.1 (14)	*SCF detail refers to bonds*	-5.8%
Other business/investment/rent/trust	NIPA. 1.12 (9, 39)	Combined rental and proprietor	5.7%
Earnings	Analysis of CPS ORG, Jan. to Nov.		varies by industry, education
Proprietors income	NIPA. 2.1(9)		-4.4%
Capital gains	CBO Jan. 2009 Budget Outlook	Anticipated tax revenue decline of 40%	-40.0%
Public Transfers (excluding Soc. Sec.)	NIPA. 2.1(17 less 18)		36.2%
Retirement Income (including Soc. Sec.)	NIPA. 2.1(18)		15.3%
<b>Assets</b>			
CDs	FOF. B.100(12)	time and savings deposits	4.9%
Stocks	FOF. B.100(24)	corporate equities	-21.6%
Stock mutual funds	FOF. B.100(25)	mutual fund shares	-12.6%
Bonds	FOF. B.100(18)	treasury securities	404.2%
Other bond mutual funds	FOF. B.100(21)	corporate and foreign bonds	21.9%
Savings bonds	FOF. B.100(17)	savings bonds	-2.5%
Govt. Bond Mutual Funds	FOF. B.100(19)	agency and GSE-backed securities	-83.7%
Tax-free bond mutual funds	FOF. B.100(20)	municipal securities	9.2%
Combination and other mutual funds	FOF. B.100(25)	mutual fund shares	-12.6%
Other (trusts, annuities, etc.)	FOF. B.100(30)	miscellaneous	10.8%
Home equity	FOF. B.100(49)	owner's equity in household real estate	-41.0%
Quasi-liquid retirement	Urban Institute Analysis of FOF	<a href="http://www.urban.org/retirement_policy/url.cfm?ID=41197">www.urban.org/retirement_policy/url.cfm?ID=41197</a>	-14.0%
Transaction accounts	FOF. B.100(11)	(checkable deposits)	140.1%
Life Insurance	FOF. B.100(27)	life insurance reserves asset	3.8%
Nonresidential real estate	FOF. B.100(49)	owner's equity in household real estate	-41.0%
Other residential real estate	FOF. B.100(4)	modify in same way as residential real estate	-21.4%
Debt for other residential property	FOF. B.100(33)	home mortgages	-1.3%
Other financial assets	FOF. B.100(30)	miscellaneous assets	10.8%
Other nonfinancial assets	FOF. B.100(7) and (30) combined	consumer durables or miscellaneous assets	9.8%
Business with active or nonactive hh interest	FOF. B.100(29)	equity in non-corporate bus.	-23.6%
Vehicles	FOF. B.100(7)	consumer durables or miscellaneous assets	9.6%
Total debt	FOF. B.100(31)	total liabilities	-1.4%
Mortgages and home equity loans	FOF. B.100(33)	home mortgages	-1.3%
Home equity lines of credit	FOF. B.100(33)	home mortgages	-1.3%



**Appendix Table 2b. Change in Earnings between 2007 and 2009, by Education and Industry**

	Dropout	HS Only	Some College, No Degree	Bachelor's Degree or More
Agriculture, Fish, Forest, Construction	-23.9%	-13.1%	-10.1%	4.9%
Manufacturing, Information, Publishing	-21.4%	-12.7%	-9.3%	1.2%
Trade, Leisure, Restaurants	-9.1%	-3.4%	-1.1%	2.2%
Utilities, Professional, Educational, Health Services	-10.0%	2.0%	7.1%	6.9%
Data, Finance, Other Services	-6.1%	-0.8%	-2.5%	2.7%
Public Administration	-22.0%	3.4%	3.8%	9.4%

Note: Earnings change figures estimated from Current Population Survey, Outgoing Rotation Group data, for January through November of 2007 and 2009. The education and industry groupings are based on the categories in the public SCF data. Earnings change is the difference between the cumulative weekly earnings for each industry/education cell in 2007 and 2009. Differencing total earnings reflects changes in employment, weekly hours worked, and wages.

**Appendix Table 3. Basic Trends from SCF - Comparisons over time - Long run rates**

**Panel A. MCI<sup>1</sup>**

	1988-89	1991-92	1994-95	1997-98	2000-01	2003-04	2006-07	2009_proj
<b>99/10 ratio</b>	50.5	40.9	45.3	54.2	71.7	63.0	71.6	63.2
<b>99/50 ratio</b>	11.5	10.2	10.4	13.5	17.4	15.6	18.8	17.5
<b>10/50 ratio</b>	0.23	0.25	0.23	0.25	0.24	0.25	0.26	0.28
<b>gini</b>	0.560	0.526	0.540	0.561	0.595	0.579	0.608	0.600

**Panel B. % change bet SCF net some capital income to MCI<sup>2</sup>**

	1988-89	1991-92	1994-95	1997-98	2000-01	2003-04	2006-07	2009_proj
<b>mean</b>	33.9%	35.8%	35.5%	38.0%	40.0%	45.2%	50.8%	40.9%
<b>median</b>	20.0%	21.9%	17.2%	19.6%	22.4%	21.9%	25.6%	20.8%
<b>99th ptile</b>	65.2%	58.1%	68.9%	77.0%	90.4%	104.2%	99.8%	78.3%
<b>99/10 ratio</b>	32.7%	29.9%	37.1%	41.2%	63.6%	69.7%	57.8%	59.1%
<b>99/50 ratio</b>	37.6%	29.7%	44.1%	48.0%	55.6%	67.5%	59.1%	47.6%
<b>10/50 ratio</b>	3.6%	-0.2%	4.9%	4.6%	-5.1%	-1.3%	0.8%	-7.2%

For details on the definitions and rates used in developing Full Income see Tables 3 and 4.

Notes:

<sup>1</sup> MCI (more complete income) subtracts capital income (except realized capital gains) from Gross Income and adds back flows to assets and debt.

<sup>2</sup> SCF net some capital income takes Gross Income and subtracts interest, rent, dividends, and annuity and trust income, but retains realized capital gains.

**Appendix Table 4. Values of networth by alternative rankings - 2007**

	by networth	by SCF income	by MCI	Addendum: MCI by percentile (short-run rates)
p10	11	68,039	23,112	25,664
p50	117,033	168,848	152,491	135,278
p90	870,988	876,835	864,138	761,991
p95	1,686,125	1,491,843	1,645,577	1,488,262
p99	6,252,244	5,607,287	6,509,146	6,443,411