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Household Debt and Income Distribution

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> "No other question in economic policy is ever so important as the effect of a measure on the distribution of income" (Galbraith [1958] 1998, 71).

In previous work (Pressman and Scott 2009a; 2009b), we argued that the official US definition of poverty was flawed because it ignored the interest paid on consumer debt to maintain that debt (but not reducing debt principal). These interest payments cannot be used to purchase the minimal goods and services that are necessary for survival during the year. We found that by subtracting interest payments on consumer debt from household income the poverty rate increased by well over 1 percentage point. In this paper we use the Federal Reserve's latest *Survey of Consumer Finances* data to study how interest payments on consumption debt affect income distribution in the United States. We define consumption debt as all consumer debt plus home equity loans used to purchase consumer goods (rather than for investment purposes).

Our argument is relatively simple. Interest payments on past debt reduce the income that households have to spend and maintain a certain standard of living. An income shock (such as a bout of unemployment, the expenses of having a new baby, or a health problem) can lead families to resort to borrowing, which reduces household living standards in the future. Although future income may rise, the economic circumstances of the family will not improve if most of this extra income must pay interest in order to maintain past debt. This problem is ignored in standard measures of income equality, which take no account of the income lost in order to make

interest payments on past consumption debt. They measure differences in personal or disposable income across a large population, but they do not measure differences in living standards, which is what inequality measures are supposed to do.

A contemporary example illustrates this problem. The cost of a college education has increased by more than any other household spending category over the past two decades (Newfield 2008). This increase is taken into account in government measures of inflation; so higher college costs lead to lower real household living standards in reported government data. However, the sharp rise in the cost of a college education also means that students graduate with much more college debt in real terms as well as more debt relative to their income. After graduation, more and more household income must be diverted to repay that college debt. This money is not available for other consumption and so cannot be used to maintain living standards. According to the Project on Student Debt (2010), the class of 2009 had on average $25,000 of college debt. At a 6.8% interest rate (on a 10-year loan), over $1,500 of annual household disposable income must go to pay interest to maintain this debt (the rest of the interest payments, which we do not include in our calculations below, go to reduce the principal) and cannot support current household consumption. (The balances of interest payments going toward the loan decrease over time, but many students extend their debt over a time period longer than ten years, which increases the interest burden.) This debt was incurred to enable them to earn a middle-class income, but interest on that debt may keep them from living a middle-class lifestyle.

In what follows we use the Federal Reserve's *Survey of Consumer Finances* to measure the impact of consumption debt interest payments on income inequality and on the size of the middle class. We estimate income inequality both before and after subtracting interest payments

on consumption debt. We then seek to understand the main reasons these two figures have diverged over time, and conclude with some policy proposals to deal with the problem of increasing consumption debt in the United States.

Measures of Inequality

Income inequality in the US is at a near-record high. The income received by the top 1% in the United States is at its highest level since the 1920s, and the share going to the top 0.1% is at an historic high (Atkinson, Piketty and Saez, 2011). Conversely, median household income has been nearly flat over the past few decades. Income inequality is of great concern for a number of reasons. Considerable empirical research has established that countries with greater income inequality experience a broad array of social and economic problems, even after controlling for income levels. More unequal societies have higher crime rates, lower life expectancy, less charitable giving, higher rates of teen pregnancy, worse school performance, greater incidence of obesity, and slower economic growth (see Wilkinson and Pickett 2010; Stiglitz 2012).

Still there remains considerable controversy about how to measure income inequality. Scholars have failed to agree upon a single best number, mainly because income distribution is a complex notion involving many households in different concentrations at different parts of the distribution over time. As a result, several different measures are used to gauge the extent of income inequality in a country at a particular point in time. Two popular measures of income inequality are the Gini coefficient and the ratio of household income at the 90^{th} percentile to household income at the 10^{th} percentile. Another way to try to capture income inequality is to look at the middle class and measure the fraction of a nation's households that fall into the middle class, and how the size of this group changes over time.

The Gini coefficient is probably the most frequently used inequality measure. Derived from the Lorenz Curve and the line of perfect equality, it measures (somewhat counter-intuitively) where the actual income distribution falls within the range between perfect income equality (Gini = 0), where everyone receives exactly the same income, and perfect income inequality (Gini = 1), where one household gets all the income. The Gini coefficient includes all incomes in its calculation. This is good because it captures changes at the very highest and very lowest ends of the distribution. According to Atkinson, Piketty and Saez (2011), the top 1% of incomes (and top 0.1%) is where income inequality has grown the most over the past thirty years.[1]

The ratio of household income at the 90th percentile compared to household income at the 10th percentile provides one of the simplest measures of inequality. In contrast to the Gini coefficient, this measure eliminates the very top and very bottom portions of the income distribution entirely, and estimates of the gap between those with high incomes and those with low incomes. And, in contrast to the Gini coefficient, it is easy to interpret. For example, a figure of 4 means that families in the top income decile have four times the income of families in the bottom decile.

Finally, for a number of reasons, there is growing concern with the size of the middle class (see Pressman 2007). A large middle class may be necessary for democracy because social unrest increases when incomes and people become polarized. Barro (1999) provides empirical support for this view, showing that countries are more likely to be democratic when more national income goes to middle-class households.

There are also psychological reasons why a large middle class is important. Attaining a middle-class living standard comes with feelings of success and personal accomplishment.

Psychological optimism likely will lead to economic optimism, resulting in more consumption, more investment and more rapid economic growth. Moreover, with more money going to the middle class, this should lead to greater consumption and more growth, since the poor do have money to spend and the wealthy have too much money to spend.

Issues surrounding how to measure the size of the middle class are nearly as controversial as how to measure inequality. The main point of contention is where to draw the boundary lines separating middle-class incomes from high-income and low-income levels. The two ranges suggested most frequently are 75% to 125% and 75% to 150% of median household income (adjusted for household size). Public opinion surveys find that most households consider themselves to be middle class with their own income falling in the range they use to define "middle class" (Pew 2008). This indicates that the latter range is preferable, since it better reflects what people regard as middle-class income levels and since we want our results to reflect this to some extent.

Methods

Data

The data used in this paper is the Federal Reserve Board's *Survey of Consumer Finances*. This cross-sectional data contains detailed financial information (e.g., income, debt and interest rates) on US households. It is collected triennially (since 1983) with sample sizes of roughly 4,000 households, although the 2010 survey sample was increased by over 50%.

Classifications

Traditional income inequality measures take annual household income as the input and make three additional assumptions before doing any computation: (1) family size is irrelevant, (2) in-

kind benefits and other payments are not always counted as income, and (3) income is fixed at time 0.[2] These assumptions are all questionable.

First, an annual income of $24,000 can support a single individual in the US reasonably well. In 2010, it would have provided more than twice the poverty-level income for a single person. But for a family of 5, $24,000 provides everyone with just $4,800 on average. This cannot support the same lifestyle as $24,000 for a single individual; in fact, a family of five in the US would have been counted as poor with this income in 2010.

To deal with this problem we adjusted income for family size using the original Organization for Economic Cooperation and Development's (OECD) equivalence scale (also known as the Oxford scale). This gives a value of 1 for the first member of the household, 0.7 for each additional adult and 0.5 for each child (Atkinson, Rainwater and Smeeding 1995). All income estimates in this paper are adjusted accordingly.

Second, our estimates include all sources of household income. This includes all wages, taxable and tax exempt interest, dividends, pension income, realized capital gains, withdrawals from retirement accounts, social security, alimony and other support payments and in-kind benefits such as food stamps and other government assistance.

Lastly, we argue that with the rise in consumption debt, current income must be discounted by the interest charges on past consumption debt—specifically interest charges that maintain the debt and do not pay off principal. Therefore, income is not fixed at time 0 for households with consumption debt. Instead their incomes are discounted by interest payments on past debt. We took the consumer debts of each household and their corresponding interest rates and calculated the annual interest payments going to maintain those debts (not reducing debt principal). We then subtracted from their income the total interest payments from all

consumption debts. Of all households in the 2010 Survey of Consumer Finances 43.2% had no consumption debt interest payments. This means either they had no consumption debt or very low (or even 0%) interest rates on their debt. It is also possible their debts were old enough that most of the payments (depending on amortization) were going toward paying off the principal on the debt rather than paying interest on the debt.

Two categories of consumption debt are included in our calculations. First, installment debt, which includes motor vehicle loans (not leases), most student loans and home equity loans (used only for consumer goods purchases). Installment loans typically have a fixed interest rate, a structured payment schedule and are not revolving (so the outstanding debt is usually fixed). We excluded all home equity debt that was used for home purchases, home improvements, investments in businesses and investments in general. Likewise we did not include the cost of motor vehicle leases since they are not technically a form of debt financing—and for households they are substitutes under different financial conditions. Also, it is difficult to know the finance charges added to a lease, since few people know these costs—compared to interest rates on loans.

The second category is revolving unsecured debt: credit cards, medical debt and some student loans. Our estimates also include less traditional forms of consumer debt such as payday loans. It is challenging to calculate the interest payments on this category of consumer debt because the amount of debt can be dynamic—as can be interest rates and fees. We did not include fees or other penalty payments on consumer debt, though some of this gets captured in the total outstanding debt. Table 1 presents average (mean) and median total interest payments on consumption debt.

[insert Table 1 around here]

Mean and median total interest payments on consumption debt (the amount not going to pay off principal) increased significantly in the 1980s and increased again in the 2000s. In 2010 these figures fell as a result of lower credit card debt and fewer home equity loans (although student loans increased). The decrease in credit card debt is likely the result of enacting the Credit Card Accountability Responsibility and Disclosure Act of 2009 (Credit CARD Act), which tightened underwriting standards for credit cards, as well as the economic slump of the late 2000s that forced many households to deleverage.

Unequal and Indebted

Table 2 presents the Gini coefficients and the 90/10 ratios that measure adjusted income inequality. From the table we see that income inequality has worsened since 1983. Looking at each year's Gini coefficient, only in 1983 did inequality not increase after subtracting interest payments from income. And the effect of subtracting interest payments from income increased steadily—particularly during the 2000s. This result is also observed using the $90^{th}/10^{th}$ percentile ratio, except that this measure shows an even larger increase in inequality resulting from lost income from interest payments. This change may be more disconcerting than the change in Gini coefficients because it shows that our current income disparity is not only growing between the highest and lowest earners but among less-high earners and higher-low earners. Moreover, this disparity is much worse when interest payments are deducted from income. What about the group in the middle?

[insert Table 2 around here]

A Weight Pulling Down the Middle Class

Table 3 shows that adjusted median incomes (in 2011 dollars) were flat from 1983 to 2007, and were 8.6% lower in 2010 compared to 1983. The reductions are worse when interest payments are subtracted from income; then we see an 11.7% drop. This has had an effect on the number of families in the middle class, as Table 3 also shows. To define the middle class we took people with between 75% and 150% of median adjusted income. Since 1983 the size of the middle class shrank from 30.7% to 26.7% (4 percentage points or a 13% reduction). And over the same period when interest payments from adjusted income are subtracted the number of middle class families fell by 5 percentage points or 16%. Simply subtracting interest payments on consumer debt from income reduced the size of the middle class by 3.6% in 2010 alone. This decline has two sides—families falling out of the middle class and families who were above the middle class but fell into the middle class after interest payments were subtracted from their incomes (see Table 4). In 2010, interest on consumption debt pushed nearly 5% of families out of the middle class. The overall decline was mitigated to some extent by families with incomes greater than 150% of median adjusted household income, whose interest expenses pushed them down into the middle class.

[insert Table 3 around here]

[insert Table 4 around here]

Discussion and Conclusion

This paper has argued that interest on past consumption debt needs to be taken into account when measuring income inequality. It then undertakes such measurements and finds that the problem of increasing inequality in the United States is even worse than usually reported.

To deal with the problem of debt and inequality, some policy action is necessary to aid families in difficult economic circumstances so they do not have to resort to debt in order to survive. Child allowances and paid parental leave can provide financial assistance to families just starting out so that birth and child care do not result in long-run debt burdens. Enhancing the United States' unemployment and disability insurance programs would help households that experience unexpected loss of income from incurring excess debt. Increased aid to colleges and college students, plus some college loan debt forgiveness, are necessary to relieve the growing debt burden on people with student loans. Repealing recent changes to personal bankruptcy legislation (see White 2007) would provide heavily indebted families an additional safety valve to discharge some high interest unsecured debt and stabilize their finances during times of financial trouble. These are all areas where much future policy work is needed.

Notes

1. There are two main shortcomings of the Gini coefficient. First, it is particularly sensitive to changes in the densest part of the income distribution (usually the middle part of the distribution). Another problem is that the numbers themselves are difficult to understand intuitively. What exactly does .469 (the Gini for the US in 2009) mean? How much has income inequality increased between 2002 and 2009 as the Gini increased from .466?

2. A fourth assumption is that all geographical locations in the United States have the same cost of living, so aggregate income inequality is homogeneous. Unfortunately, the Survey of Consumer Finances does not include geographical information, so we could not make this adjustment.

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Table 1. Mean and Median Household Consumption Debt Interest Payments (in 2011 dollars), 1983 to 2010

	Whole Sample		People with Interest Payments	
SCF Surveys	Mean total interest payments	Median total interest payments	Mean total interest payments	Median total interest payments
2010	$1,571	$253	$2,571	$1,238
2007	$1,686	$331	$2,580	$1,302
2004	$1,343	$310	$2,134	$1,143
2001	$1,268	$197	$2,039	$1,067
1998	$1,310	$189	$2,169	$1,143
1995	$995	$186	$1,612	$920
1992	$972	$197	$1,541	$829
1989	$1,286	$198	$2,053	$967
1983	$400	$0	$680	$330

Sources: Federal Reserve Board Survey of Consumer Finances, weighted data (2012)

Table 2. Changes in Gini Coefficients and Ratios of the 90th percentile/10th percentile of Incomes Adjusted for Family Size and Adjusted Income Minus Interest Payments on Consumer Debt

SCF Surveys	Gini	Gini--minus interest payments	Gini percent change	90th/10th adjusted income percentile	90th/10th percentile--minus interest payments	Ratio percent change
2010	0.579	0.585	1.02%	8.8	9.3	5.4%
2007	0.58	0.585	0.85%	9.1	9.4	3.2%
2004	0.572	0.576	0.71%	9.5	9.7	2.1%
2001	0.618	0.622	0.60%	9.4	9.6	1.8%
1998	0.586	0.591	0.80%	9.5	10	5.0%
1995	0.56	0.564	0.70%	9.4	9.6	2.1%
1992	0.584	0.587	0.50%	8.8	9.1	3.3%
1989	0.575	0.578	0.50%	9.9	10	1.0%
1983	0.459	0.459	0.09%[a]	8	8.1	1.2%

Source: Federal Reserve Board Survey of Consumer Finances, weighted data (2012). [a] There was a small difference between the two Gini coefficients in 1983 (0.45878 on adjusted income and 0.4592 on adjusted income minus interest payments), but rounding makes them appear equal.

Table 3. Change in Adjusted Median Income and Change in the Size of the Middle Class (-25%/+150% of Median Adjusted Income)

SCF Surveys	Adjusted Real Median income	Adjusted Real Median Income--minus interest payments	Percent Change in Adjusted Real Median Income	Percent Middle Class	Percent Middle Class--Minus Interest Payments	Percent Change in Middle Class

2010	$27,710	$26,748	-3.5%	26.7%	25.7%	-3.6%
2007	$31,293	$30,373	-2.9%	23.6%	23.4%	-0.8%
2004	$31,383	$30,221	-3.7%	25.2%	25.0%	-0.8%
2001	$30,882	$30,269	-2.0%	25.2%	25.1%	-1.0%
1998	$27,898	$27,002	-3.2%	24.9%	24.6%	-1.4%
1995	$26,521	$25,985	-2.0%	26.0%	25.9%	-0.2%
1992	$25,733	$25,394	-1.3%	23.1%	22.9%	-0.6%
1989	$27,042	$26,498	-2.0%	25.0%	24.8%	-0.6%
1983	$30,303	$30,216	-0.3%	30.8%	30.9%	0.3%

Source: Federal Reserve Board Survey of Consumer Finances, weighted data (2012)

Table 4. Change in the Number of Families Who Fall Down into (and out of) the Middle Class after Interest Payments on Consumption Debt are Subtracted from their Adjusted Median Incomes (in 2011 Dollars)

SCF Surveys	Percent Change in Number of Families Above Middle Class after Subtracting Interest Payments	Percent Change in Number of Families Below Middle Class after Subtracting Interest Payments
2010	-1.3%	4.9%
2007	-2.1%	3.0%
2004	-2.0%	3.1%
2001	-1.8%	2.9%
1998	-1.9%	3.3%
1995	-1.4%	1.7%
1992	-1.3%	2.8%
1989	-1.5%	2.2%
1983	-0.8%	0.5%

Source: Federal Reserve Board Survey of Consumer Finances, weighted data (2012).