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**Working Paper**

## Inequality and household finance during the consumer age

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## Working Paper No. 752

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### **Inequality and Household Finance during the Consumer Age**

by

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## **ABSTRACT**

One might expect that rising US income inequality would reduce demand growth and create a drag on the economy because higher-income groups spend a smaller share of income. But during a quarter century of rising inequality, US growth and employment were reasonably strong, by historical standards, until the Great Recession. This paper analyzes this paradox by disaggregating household spending, income, saving, and debt between the bottom 95 percent and top 5 percent of the income distribution. We find that the top 5 percent did indeed spend a smaller share of income, but demand drag did not occur because the spending share of the bottom 95 percent rose, accompanied by a historic increase in borrowing. The unsustainable rise in household leverage concentrated in the bottom 95 percent ultimately spawned the Great Recession. The demand drag of rising inequality could be one explanation for the stagnant recovery in the recession's aftermath.

**Keywords:** Consumption; Saving; Inequality; Aggregate Demand

**JEL Classifications:** D12, D31, E21

The US economy experienced a historic household spending boom leading up to the Great Recession. We labeled this period from the mid-1980s through 2007 as the “Consumer Age” in Cynamon and Fazzari (2008, 2012a). This boom provided much of the demand growth that put US unemployment on a declining trend and fueled global demand through the US trade deficit. Another important trend during this period may seem paradoxical in retrospect: income growth across most of the population stagnated and inequality rose dramatically. How could consumption spending rise so quickly with stagnant income growth over much of the income distribution? To ask the question is to answer it: American households, outside of those in the top of the income distribution, went on an extended borrowing binge. Household debt relative to after-tax income rose to unprecedented levels. And it was the resulting financial fragility that caused both residential construction and broader measures of household spending to plummet, leading to the most severe economic contraction in the US since the Great Depression.

This paper considers how rising inequality, household spending, and consumer debt interacted during the Consumer Age. We disaggregate demand, income, and saving across two broad groups, the bottom 95 percent and top 5 percent of the income distribution, to explore the source of the trends in household finance that fueled stimulative demand growth, but also generated financial fragility. Our analysis is based on measures of household demand and saving rates that integrate the national income and product accounts (NIPA) statistics on personal consumption expenditure with residential construction spending, following the approach developed in Cynamon and Fazzari (2013). Our measure of the saving rate plummeted and indebtedness exploded for the bottom 95 percent, as their income share declined. The indebtedness and saving of the top 5 percent have virtually no trend during the same period. Our calculations show that a return to a mid-1980s saving rate for the bottom 95 percent group, the end of a period in which household leverage seemed stable and sustainable, would have required a withdrawal of demand equal to about 8 percent of GDP by the mid-2000s. Furthermore, the demand accounted for by the cumulative decline in the saving rate for the bottom 95 percent after the mid-1980s was roughly equal to the cumulative shortfall of their income due to rising inequality relative to a period in which the income share of the bottom 95 percent was remarkably stable.

Counterfactual predictions are speculative. But the results here suggest that rising inequality contributed significantly to the financial instability of American households during the Consumer Age. This interpretation adds to a growing research literature that links changes in

the US income distribution to macroeconomic instability, helping to illuminate the sources of the Great Recession.<sup>1</sup> Furthermore, the economy has now lost the demand growth created by the spending and borrowing behaviors of the lower 95 percent prior to 2007. We argue that this fact is an important explanation for the stagnant recovery of the US economy since 2009. In the final section of this paper, we propose some measures of the size of this effect and consider its implications for future US macroeconomic conditions.

## **I. INCOME DISTRIBUTION AND CONSUMPTION BEHAVIOR**

### **A. The Paradox of Rising Inequality and Higher Consumer Spending**

A thread of macroeconomic thinking, going back decades, identifies a basic challenge arising from growing inequality.<sup>2</sup> This approach begins with the assumption that high-income people (usually associated with profit earners) spend a lower share of their income than those of more modest means (typically wage earners). In this case, rising inequality creates a drag on demand that could lead to unemployment and even secular stagnation if demand is not generated from other sources.

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<sup>1</sup> In a comment on Cynamon and Fazzari (2008), Korty (2008) pointed out the likely role of unequal income growth in rising household debt. In a prescient and wide-ranging paper, Barba and Pivetti (2009) identified the same aggregate trends laid out in this paper and hypothesized about the likely breakdown between lower and higher income segments of the household sector. Kumhof and Ranciere (2010) construct a theoretical model that links inequality, household debt, and financial crises. Palley (2012) and Setterfield (2012) consider the macroeconomic consequences of a persistent deviation of wage growth from productivity growth. Van Treeck and Storn (2012) provide an extensive survey of research on income inequality and the forces that culminated in the Great Recession.

<sup>2</sup> Recent work on this topic and very extensive references to earlier research can be found in Setterfield (2010).

Figure 1 Income share of top 5 percent

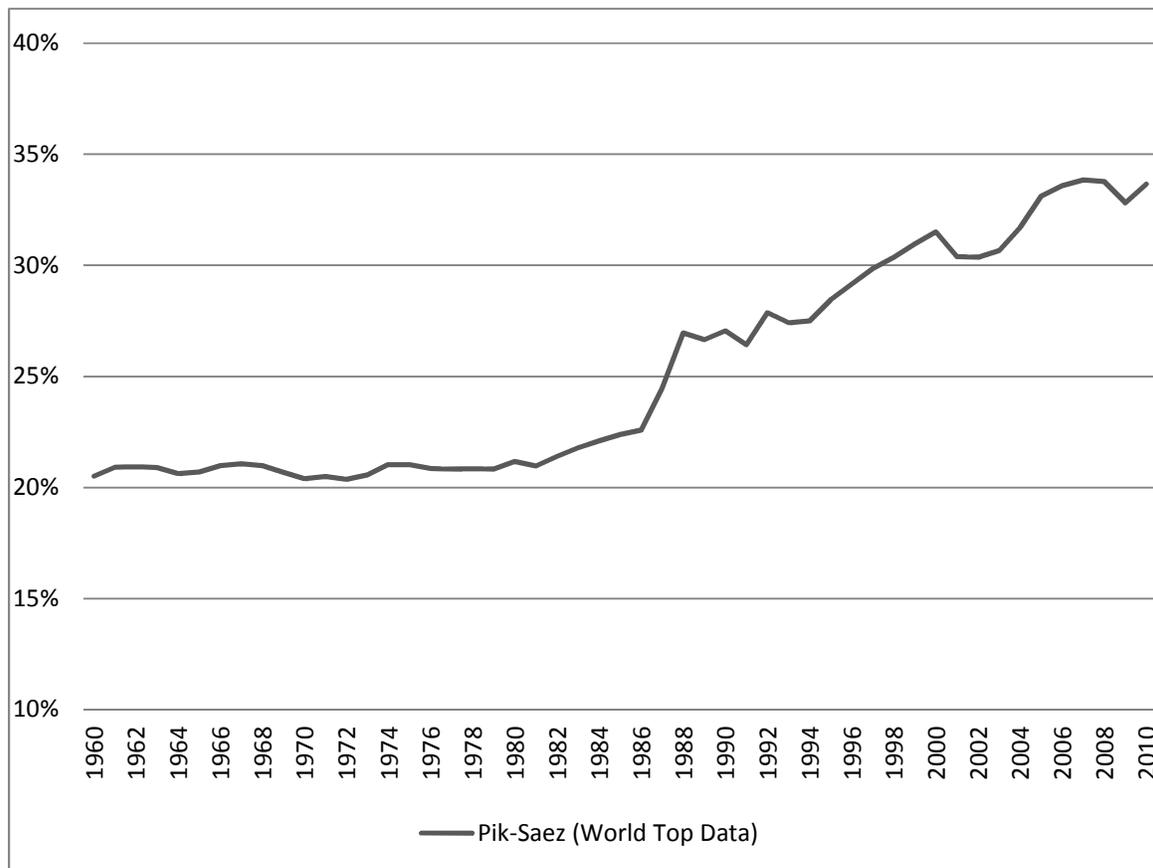


Figure 1 shows the top 5 percent income share from the “World Top Incomes Database.”<sup>3</sup> After being virtually constant for more than 20 years, the (before-tax) income share of the top 5 percent began to rise in the early 1980s. By 2010, this share had risen more than 12 percentage points. Using a large and confidential panel of tax returns from the Internal Revenue Service, DeBacker et al. (2012) also find increasing inequality of household income in the US over the period 1987–2006, both before and after taxes, and they conclude that this shift was predominantly permanent as opposed to transitory.

Despite this substantial shift of the income distribution toward the affluent in recent decades, however, the US economy performed reasonably well. Unemployment fell from high values in the late 1970s and early 1980s. Aggregate economic growth was relatively strong in the US compared with other developed economies. Macroeconomic volatility declined in what came to be known as the Great Moderation. Where did the demand necessary to sustain strong

<sup>3</sup> URL: <http://g-mond.parisschoolofeconomics.eu/topincomes/#Database>, based on concepts due to Piketty and Saez (2007). These figures exclude capital gains income.

and stable growth come from? Aggregate data identify two secular sources of demand growth in this period. First, American households in the aggregate increased their spending relative to income. This trend is reflected by the widely recognized decline of the household saving rate between the mid-1980s and the beginning of the Great Recession (see, for example, Kopcke, Munnell, and Cook 1991). Second, the US experienced a significant boom in home construction during this period, especially since the early 1990s.

To assess the effect of these factors, we adjust the standard NIPA data on household spending and income to more closely reflect the actual demand for new production emanating from the household sector, as opposed to the service flow of consumption. The motivation and details of this procedure are described in Cynamon and Fazzari (2013).<sup>4</sup> In summary, we remove the part of housing rent from NIPA consumption that does not reflect direct purchase of newly produced goods and services, and we replace the rent component with new residential construction. For owner-occupied housing, the rent adjustment subtracts gross value added (implicit rent minus the cost of intermediate goods attributed to home ownership). This item does not represent a cash payment in any sense. For tenant-occupied housing we also exclude gross value added, less a small adjustment for wage costs paid in the rental housing sector. Of course, tenant rent is a cash payment, but we treat it as a personal transfer rather than the purchase of newly produced output since the rent paid to landlords does not directly purchase new production. In contrast to rent, the construction of new residential structures (both single and multi family) clearly is an important and volatile component of demand. For consistency, we also adjust disposable income and personal transfers, as described in Cynamon and Fazzari (2013). Broadly speaking, these adjustments result in a treatment of housing that is just like any other consumer durable: output and income occur at the time something is produced, not when it is used. Demand occurs when a newly produced item is sold.<sup>5</sup> In what follows, we refer to these new measures as “adjusted” to distinguish them from the standard measures in the NIPA data.

Figure 2 shows our adjusted measure of demand relative to spendable income of the household sector.<sup>6</sup> This information, along with the strong trend toward inequality shown in

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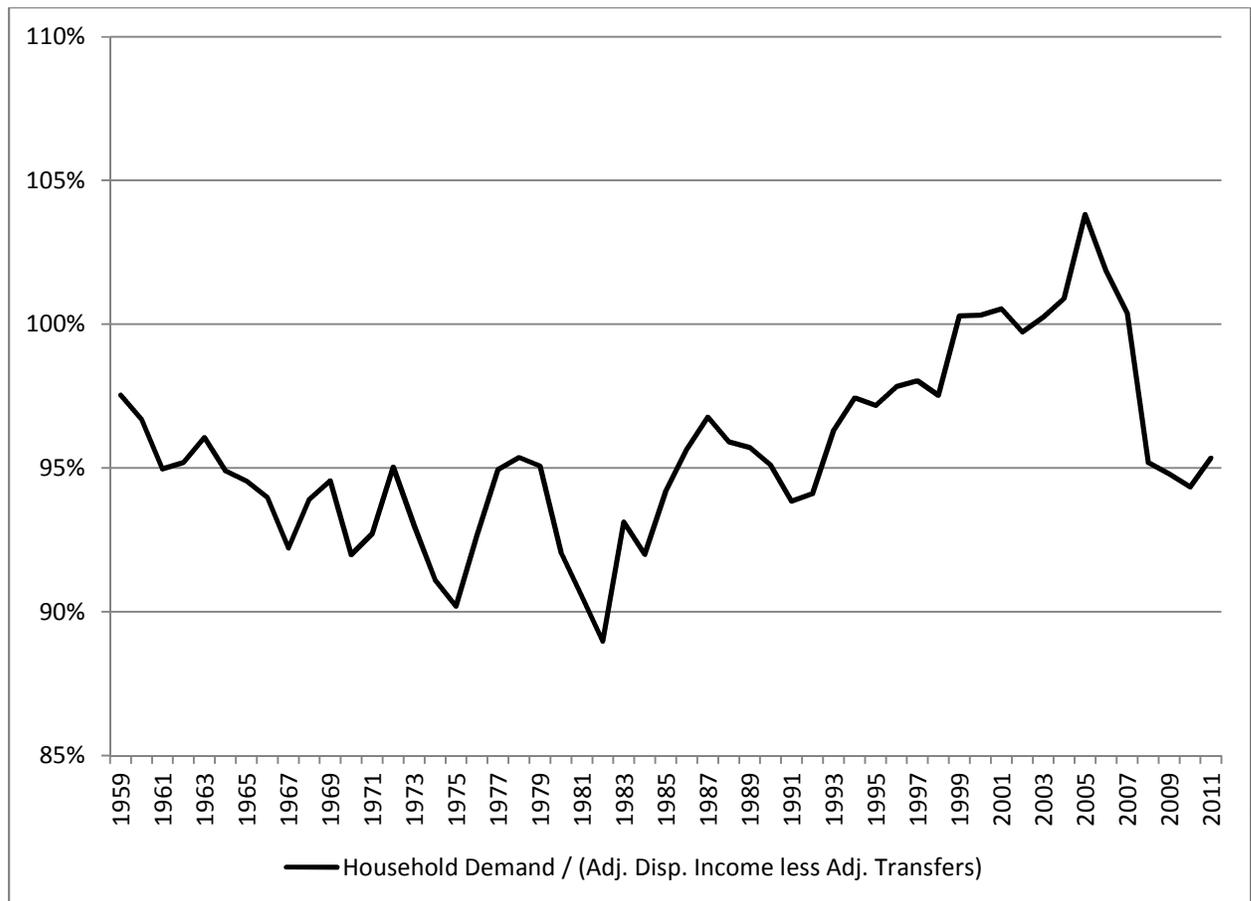
<sup>4</sup> See, also, Mason and Jayadev (2012) who make similar adjustments for related purposes.

<sup>5</sup> In principle, this concept suggests that when measuring demand, we distinguish between new housing *sold* and new housing *produced*. In the absence of aggregate data on the unsold inventory of newly produced housing, however, we assume that housing production adds directly to demand.

<sup>6</sup> Spendable income is NIPA disposable income minus the NIPA definition of personal transfer payments. This measure is the NIPA equivalent of the adjusted disposable income concept from Cynamon and Fazzari (2013).

Figure 1, presents a paradox that is a central theme of this paper. Rising inequality should theoretically reduce overall consumer demand relative to income if affluent households spend a smaller part of their growing share of aggregate income (see Brown 2004 and Barba and Pivetti 2009, for example). But the period of rising inequality corresponds almost exactly with a historic *increase* in American household demand relative to spendable income. To better understand these patterns in the data, we need to disaggregate demand, income, and saving behavior across income groups.

Figure 2 Household demand to spendable income



### B. Disaggregated Estimates of Household Demand

We examine the differences in demand between the bottom 95 percent and the top 5 percent of the US household income distribution. We choose this split for two reasons. First, we can use some existing disaggregated data, as discussed below, at a 95 percent–5 percent split. Second, a detailed analysis of changing leverage rates across income groups (see the discussion around

Figure 5 below) reveals that debt-to-income ratios rise at about the same rate for a wide variety of household groupings between the 20<sup>th</sup> and 95<sup>th</sup> percentiles of the income distribution. This result suggests somewhat uniform financial behavior for the bottom 95 percent.

Unfortunately, high-quality disaggregated data on household income and spending over time are difficult to obtain. Two sources released by the Federal Reserve Board provide some useful information, however. The Survey of Consumer Finances (SCF) tracks individual household balance sheets and income every three years. The SCF is limited by the fact that it does not collect data from the same households across surveys. It also does not contain measures of household spending. The Fed's Flow of Funds Accounts (FFA) data source tracks aggregate household balance sheet measures quarterly. But the FFA is not disaggregated by income group and also does not contain direct measures of household spending. In a creative exercise, Maki and Palumbo (2001) estimate the difference in saving rates across income groups. They begin with the change in aggregate household assets and liabilities from FFA data and disaggregate these changes across income groups using the SCF. With disaggregated data on income and the changes in household balance sheets, one can infer the amount that different groups of households spent and saved. Mark Zandi, of Moody's Economy.com, has computed disaggregated saving rates based on the Maki and Palumbo approach from the fourth quarter of 1989 through 2010. We use the difference in the saving rates between the top 5 percent and the bottom 95 percent from Zandi's calculations to disaggregate the NIPA saving rate.<sup>7</sup> We use these saving rates and NIPA personal outlay data to estimate the NIPA consumption measure for each income group and we then apply the household demand adjustment discussed in the previous subsection to each group.

The resulting estimates of the demand rate, equal to adjusted spending divided by adjusted spendable income, are presented in Figure 3. The actual rates are shown as dotted lines. The demand rate is quite volatile for the top 5 percent. But the data in the figure confirm the hypothesis that the affluent spent a smaller share of their income than everyone else over the years leading up to the Great Recession. The average demand rate for the top 5 percent from 1989 through 2007 was 93.0 percent compared with a remarkably high 99.9 percent for the bottom 95 percent. This finding corroborates a study by Dynan, Skinner, and Zeldes (2004) that

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<sup>7</sup> We are indebted to Mark Zandi for providing these data. This information disaggregates household saving as measured by the FFA data. We adjust the estimated top 5 percent and bottom 95 percent saving rates from the Zandi data so that they aggregate to the NIPA measure. Further details of these computations appear in Appendix A.

documents a strong positive relationship between personal saving rates and lifetime income across the income distribution during the 1980s. The solid lines in Figure 3 emphasize the trend of the demand rates for the two groups of households. Based on visual inspection, the trend for the top 5 percent was slightly downward if not flat, while the demand rate trend of the bottom 95 percent, in contrast, was strongly upward.

Figure 3 Demand rates for bottom 95 percent and top 5 percent

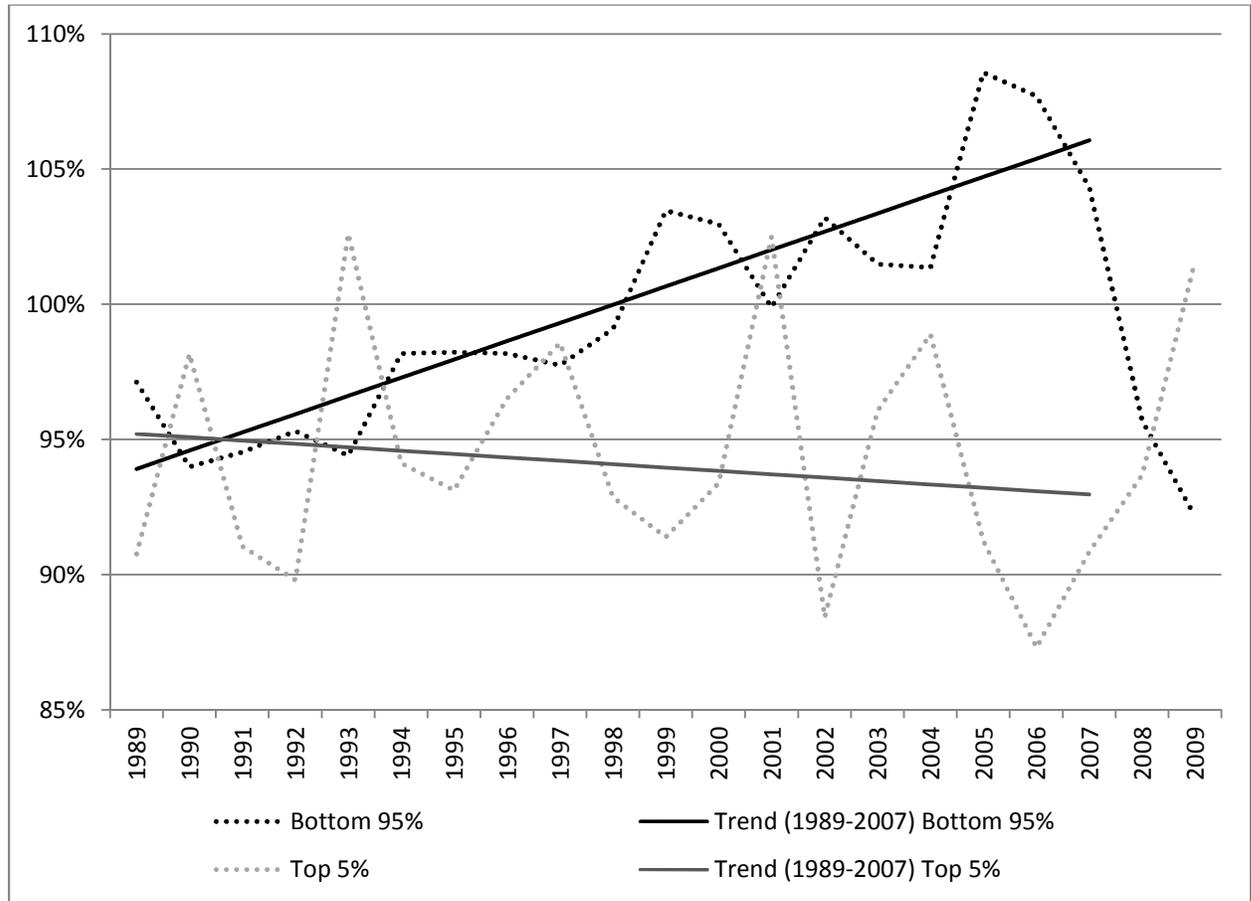


Figure 3 helps resolve the paradox identified in the previous subsection. The top 5 percent do indeed appear to spend a smaller share of their income than everyone else. But during the Consumer Age period, the spending share of the bottom 95 percent rose dramatically, exceeding 100 percent for almost a decade prior to the Great Recession. Therefore, the demand drag that one would predict as the result of rising inequality did not occur—at least it did not occur until after 2007.

### **C. How Can We Make Sense of the Behavior of the 95 Percent?**

We believe that an approach capable of making sense of consumer decision making must address the complexity of household spending and financing decisions. As Cynamon and Fazzari (2008, 2012a) explain, households often need to make consumption and saving decisions that require only small adjustments in plans when the outside world delivers small deviations from prior expectation, but that the preferences that underpin those plans are generally mediated by more fundamental—perhaps largely implicit—decisions about the communities that they reside in, the folks that they socialize with, and lifestyles (as distinct from consumption bundles) that they strive to attain. These considerations dictate the consumption and financial choices that are modeled for them by the people they look to for external validation. Household decision makers face uncertainty about future labor income, job security, asset market returns, and longevity, all of which muddle their choices about how much to spend and save and how to allocate their savings among asset options. At the same time, the choices that they make about their reference groups dictate what they view as normal, an important force for anchoring their expectations in light of their ignorance and uncertainty about the future.

This approach is similar to that of the sticky information expectations literature in macroeconomics. A number of recent papers have introduced the notion of “rational inattentive” behavior to describe how consumers and producers update their information sets and make new plans only sporadically Reis (2006a, b). In those models, information diffuses slowly because acquiring information and integrating it into new plans are costly actions. Recently, Carroll (2003, 2006) put forward a specific form of “sticky information” expectations that explains how households form their expectations about the economic environment. In our view, it is not only expectations about exogenous variables that households must update, but also their understanding of their own financial position, available goods and services, and even, to some extent, their preferences.

Our goal is to explain why consumers in the bottom 95 percent chose to raise their consumption-income ratio and take on the debt that was made available to them, but we pause here to note some of the supply-side explanations for the increased availability of credit over the past thirty years. These factors included the new information technology that made it easier to obtain information on prospective borrowers (e.g., credit scores) and thereby reduced the formerly prohibitive costs of underwriting unsecured lines of credit (credit cards). Tax law

changes have also affected the market for household debt. In particular, the Tax Reform Act of 1986 eliminated the income tax deduction for most categories of interest expense, but retained the deductibility of home mortgage interest, which made it advantageous to refinance non-deductible loans with home equity lines of credit. As these facilities became broadly available to households, borrowing against home equity became an easily accessible source of purchasing power for homeowners.

It is difficult for standard models, most notably the life cycle model, to account for the long decline in the saving rate starting in the early 1980s. A multitude of economists propose explanations including wealth effects, permanent income hypothesis (high expected income) effect, and demographics, but along with many researchers, we find those explanations unsatisfying.<sup>8</sup> We argue that the decline in the saving rate can best be understood by recognizing the important role of uncertainty in household decision making and the powerful influence of the reference groups to which those household decision makers turn for guidance.

We propose that households develop an identity over time that helps them make consumption decisions by informing them about the consumption bundle that is normal.<sup>9</sup> We define the *consumption norm* as the standard of consumption an individual considers normal based on his or her identity (Cynamon and Fazzari 2008, 2012a). The household decision makers weigh two questions most heavily in making consumption and financial decisions. First, they ask “Is this something a person like me would own (durable good), consume (nondurable good), or hold (asset)?” Second, they ask “If I attempt to purchase this good or asset right now, do I have the means necessary to complete the transaction?” Increasing access to credit impacts consumption decisions by increasing the rate of positive responses to the second question directly and also by increasing the rate of positive responses to the first question indirectly, as greater access to credit among households in one’s reference group raises the consumption norm of the group. Rising income inequality also tends to exert upward pressure on consumption norms as each person is more likely to see aspects of costlier lifestyles displayed by others with more money.

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<sup>8</sup> We cannot provide a literature review that does justice to the rich evolution of the debate about the declining US personal saving rate, but key papers that were written along the way include: Bosworth, Burtless, and Sabelhaus (1991), Browning and Lusardi (1996), Gale and Sabelhaus (1999), and Parker (2000). We also learned from Peach and Steindel (2000), Perozek and Reinsdorf (2002), Reinsdorf (2007), and Guidolin and La Jeunesse (2007).

<sup>9</sup> In the marketing literature, reference group effects have been examined by several researchers, including Bearden and Etzel (1982) and Childers and Rao (1992).

The coincidence of rising income inequality and increasing access to credit provided the impetus for a debt-fueled consumption boom. It may have been unreasonable for households to believe that the favorable macroeconomic trends necessary for them to validate their financial positions (i.e., falling interest rates, easier lending terms, and rapidly appreciating home prices) would continue indefinitely. But in the context of a behavioral model of consumption and financial choices under uncertainty, it was not necessary for people to believe that the systemic conditions that validated their behaviors would necessarily persist. In this way, the behavioral consumption norm model differs from the life-cycle model with self-fulfilling (rational) expectations. These behaviors persisted not because they were ultimately sustainable, but because they were validated month-by-month and year-by-year. People could observe their neighbors and media role models and internalize rising consumption norms increasingly disconnected from their own disposable incomes.<sup>10</sup> For an extended period, middle-income households were able to drive their consumption rates well above 100 percent without adverse consequences in any generalized sense and without deviating from norms of behavior they observed in their reference groups. As the Great Recession demonstrated, however, the trends highlighted in Figure 3 were ultimately on a collision course with reality, a topic to which we now turn.

## **II. UNSUSTAINABLE HOUSEHOLD FINANCE AND THE GREAT RECESSION**

The rising rate of household spending out of income in the bottom 95 percent of the income distribution during the Consumer Age, in a sense, rescued the US economy from possible demand stagnation caused by rising inequality. This section considers how this unusual history set the stage for the Great Recession and the painfully slow recovery that has followed.

### **A. Household Debt Leverage**

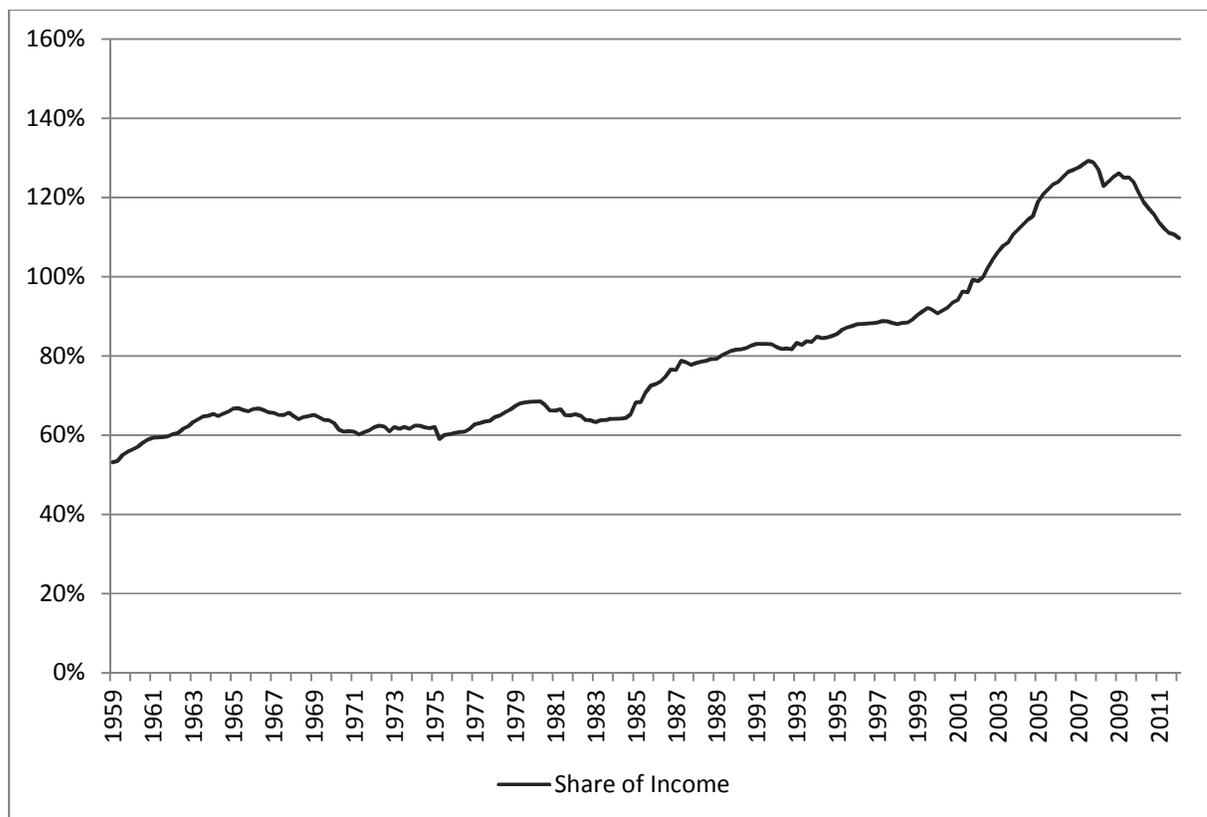
As the spending rate for the bottom 95 percent of households increased while the disposable incomes of this group stagnated, it is hardly surprising that debt leverage increased significantly. Figure 4 shows the aggregate ratio of household debt to disposable income. From the 1960s

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<sup>10</sup> Barba and Pivetti (2009) make related points. Carr and Jayadev (2012) study a sample from 1999–2009 in the PSID and find that changes in leverage for a given household were strongly associated with lower *relative* income, controlling for own income. Specifically, the leverage of a household grew faster if there were a larger proportion of relatively richer households in the same state as the household, and it grew faster for households with lower relative income compared to other households in similar demographic groups.

through the early 1980s, this measure of household leverage was largely constant, an indication that household financial behavior was, at least in the aggregate, sustainable in those years. At the beginning of the Consumer Age, however, household debt began to rise, and the trend accelerated after 2000. But this lend-and-spend dynamic came to an abrupt end with the onset of the Great Recession, a fact that has important implications for what has happened between 2008 and 2012, and what we can expect going forward.

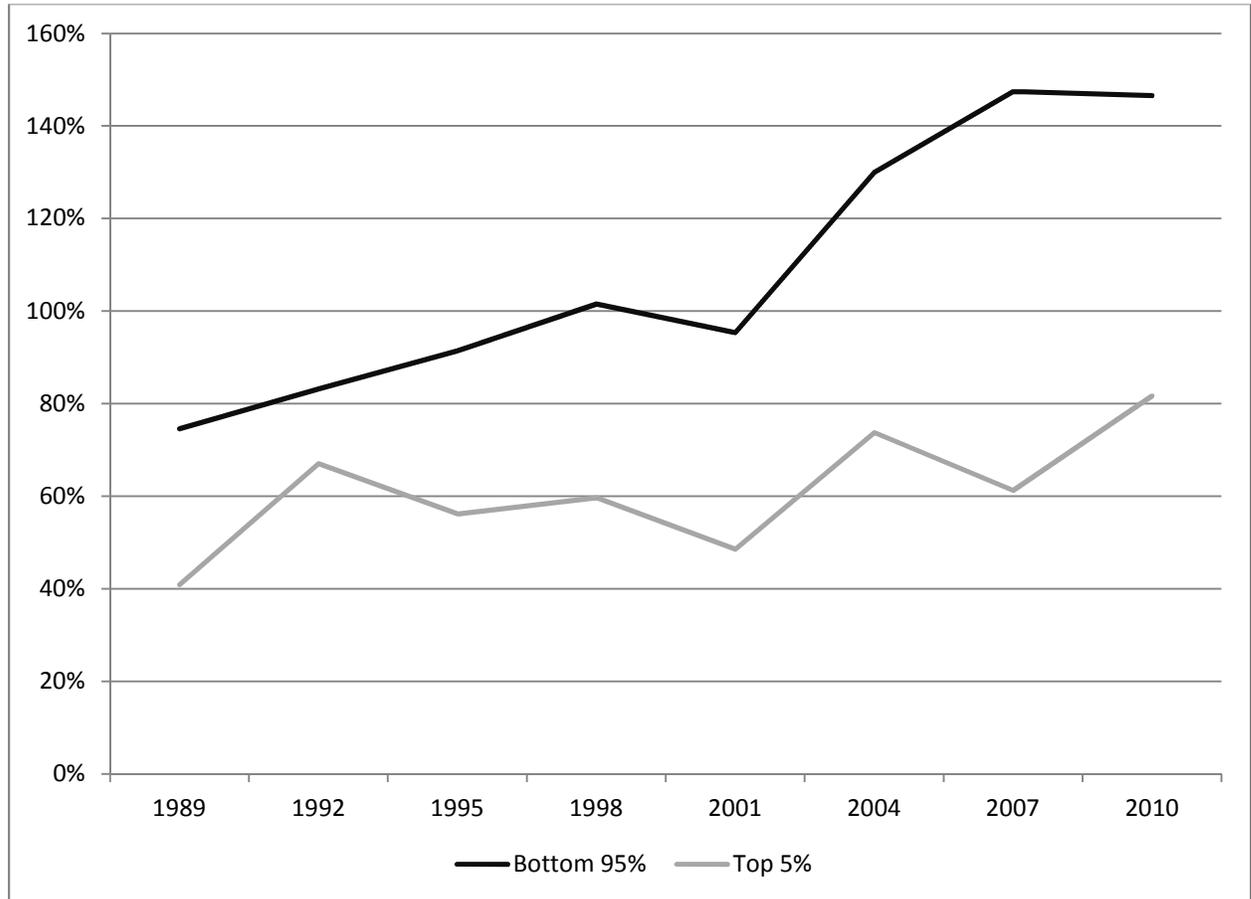
Figure 4 Household debt as a share of disposable income



Even the strong trend in aggregate household leverage between the mid-1980s and 2007 almost certainly understates the rise in household financial fragility. The combination of slow income growth and fast spending growth for the lower 95 percent implies that the rise in leverage was likely more severe for households outside of the top of the income distribution. Figure 5 provides some evidence from the SCF that supports this hypothesis. It shows debt-income ratios for the lower 95 percent and top 5 percent of the income distribution. (More finely disaggregated groupings of households below the 95<sup>th</sup> percentile led to very similar results as putting this entire group together.) Compare the first observation in 1989 to the final observation

before the onset of the Great Recession, that is, the last observation of the Consumer Age era in 2007. The ratio almost doubles for the bottom 95 percent, rising 73 percentage points. The increase for the top 5 percent was just 20 percentage points.<sup>11</sup>

Figure 5 Debt-income ratios across income groups



## B. What Caused the Great Recession?

These results help to explain how the Consumer Age sowed the seeds of the Great Recession. Spending outside of the top 5 percent of the income distribution rose sharply relative to spendable income starting in the mid-1980s. The US economy came to rely on this demand growth to drive production and employment upward. But higher spending outside of the top of

<sup>11</sup> The same conclusion holds if one extends the final point of the calculations to the most recently available SCF data from 2010, but the size of the difference between the bottom 95 percent and top 5 percent groups declines. We consider extending the comparison to 2010 misleading for two reasons. First, the Consumer Age ends with the Great Recession in 2008 and the household sector enters a period of deleveraging. Second, the primary reason for the jump in the debt-income ratio for the rich in 2010 is that their income declines. As Figure 5 shows, this is typical behavior in a recession (also see the jumps in 1992 and 2004 in the ratio for the top 5 percent that can be associated with recessions).

the income distribution was not supported by rising incomes and the result was an ultimately unsustainable rise in the debt leverage of households outside of the top 5 percent. Problems with default and a retrenchment of lending became almost inevitable. When financial troubles erupted in the summer of 2007, the Consumer Age demand engine stalled and then crashed. Although some aspects of this story are fairly widespread in analyses based on aggregate data, our results provide direct evidence that the financial instability did indeed emerge from a particular part of the household sector, those outside of the top 5 percent whose income share declined in the Consumer Age period. This finding directly links the macroeconomic dynamics that caused the Great Recession to the trend toward rising income inequality.

Additionally, we consider an important quantitative question: how large was the unsustainable part of the demand coming out of the bottom 95 percent on the eve of the Great Recession? In order to measure the unsustainable part of the demand of the bottom 95 percent, we must suppose first that some amount of spending is sustainable based on the household's reasonable expectation of an ongoing ability to finance that level of consumption indefinitely, and we must estimate that amount and compare it to actual spending. We approach this problem by establishing a benchmark saving rate and comparing actual saving to that benchmark. Establishing this benchmark requires some assumptions, and the results are sensitive to those assumptions. In a survey of 156 financial planners and educators Greninger et al. (1996) identified 10 percent as the median recommended ratio of savings to disposable income for a typical family.<sup>12</sup> A study based on data from the 1992 wave of the Health and Retirement Survey (HRS) attempted to estimate how much households need to set aside in order to maintain their living standards into retirement and found the desired saving rate for those households with incomes between \$15,000 and \$100,000 was about 14 percent (Bernheim et al. 2000). There is no universally optimal saving rate for households: "retirement planning *should* mirror individual psychological preferences," and "is complex and uncertain" (Skinner 2007). While providing some guidance, neither a widely accepted rule of thumb nor a model dependent on demographic characteristics and expectations of individual households can provide a satisfactory benchmark saving rate; but our goal is not to assert that a single ratio of saving to disposable income

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<sup>12</sup> Among the 156 respondents, the mean recommended saving rate was 12 percent and the standard deviation 5 percent. The authors concluded that 10 percent was the suggested minimum threshold saving rate to recommend to families.

reflects the optimal rate for every household, it is to determine a rate of saving that appears to be sustainable in the aggregate.

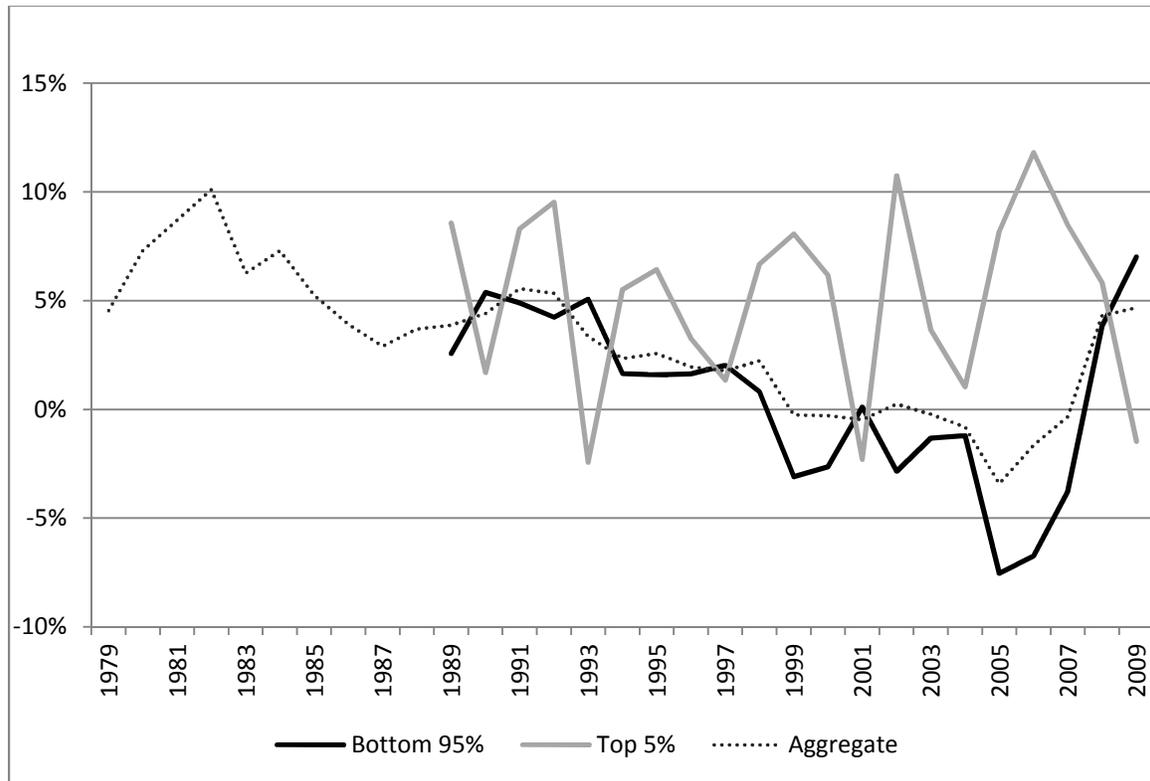
In this case, historical behavior may be the best guide. History, especially when it is reasonably stable, also can be interpreted as reflecting norms of behavior that guide individual decision making, as described earlier. The evidence presented so far implies that household financial circumstances were stable through the early 1980s. Figure 4 shows that aggregate household debt was a stable share of disposable income through about 1984. Figure 2 shows that the aggregate household demand rate was stable, also through about 1984. And the income share of the bottom 95 percent was approximately stable through 1982 (see Figure 1). We therefore assume that the early 1980s period provides a useful benchmark for sustainable household finance. Let us consider how the saving rates of the two income groups deviated from that benchmark in the Consumer Age decades.

Figure 6 shows that the aggregate adjusted saving rate has no discernible trend through about 1984 before it declines substantially. The disaggregated data begin in 1989. From that point, Figure 6 shows that the trend decline in the saving rate was driven almost exclusively by falling saving in the bottom 95 percent income group. The saving rate of the top 5 percent was volatile, but without any trend during the period for which we have data.<sup>13</sup>

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<sup>13</sup> The disaggregated saving rate data in Figure 6 are closely related to the disaggregated demand data from Figure 3, but they are not the exact mirror image of one another. That is because saving is computed by subtracting personal transfers, not just demand, from spendable income. The largest part of personal transfers, particularly with the approach from Cynamon and Fazzari (2013), is interest payments on debt, which accumulated for the bottom 95 percent as their borrowing grew in the Consumer Age.

Figure 6 Adjusted saving rates for aggregate and 95 percent–5 percent income groups

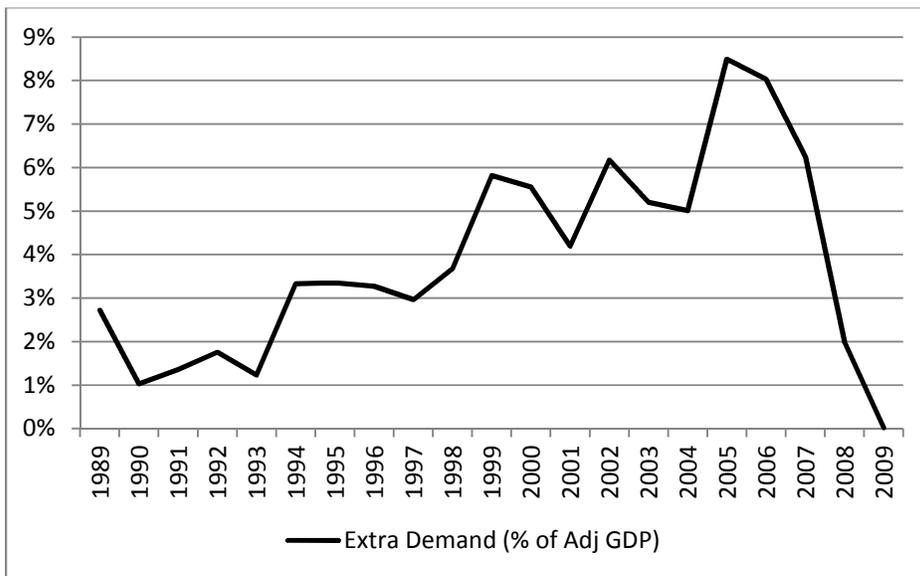


Based on the data in Figure 6, we assume a benchmark saving rate for the lower 95 percent of 7.0 percent. To compute this benchmark, we need to account for the decline in the aggregate saving rate prior to the beginning of the disaggregated data in 1989. The average adjusted saving rate for the lower 95 percent was 4.28 percent between 1989 and 1991. The average *aggregate* saving rate fell from 7.37 percent (1979–84) to 4.61 percent (1989–91). We assume that the saving rate for the lower 95 percent fell by the same amount as the aggregate saving rate from 1985 to 1989.<sup>14</sup> We therefore estimate the benchmark for the lower 95 percent as 4.28 percent plus the drop in the aggregate saving rate (7.37 percent less 4.61 percent), which rounds to 7.0 percent. Note that this benchmark is substantially less than the 10 percent to 12 percent recommended saving rate from Greninger et al. (1996). If the appropriate benchmark saving rate that delivers sustainable balance sheet dynamics for the bottom 95 percent is higher than 7.0 percent, the results discussed in the next paragraph will be even larger.

<sup>14</sup> Note that for the period for which we have data for both the aggregate and lower 95 percent saving rates, the lower 95 percent rate almost always falls more quickly. So linking the decline in the lower 95 percent rate between the benchmark period and 1989 likely understates the actual decline in the lower 95 percent saving rate.

The actual saving rate for the lower 95 percent was below the benchmark throughout the entire Consumer Age, and often substantially negative. This shortfall in saving contributed to the run-up in household debt, and it has driven a large share of US households into financial distress.<sup>15</sup> Figure 7 presents data that helps assess the effect of the falling saving rate for the lower 95 percent on the overall economy. It shows the demand that would have been withdrawn if the lower 95 percent were to restore their saving rate back to the benchmark level. The measurement unit in Figure 7 is the share of adjusted GDP.<sup>16</sup> This measure peaks in 2005 and 2006 above 8 percent. This demand stimulus was withdrawn between 2007 and 2009 as the statistic in Figure 7 plummets to zero. The result was the Great Recession. These calculations imply that the falling demand from the overleveraged bottom 95 percent of the income distribution was severe enough to explain a very significant decline in production. It is consistent with the interpretation of the Great Recession as entirely the result of the end of a period in which households outside of the top of the income distribution were spending at a rate inconsistent with the growth rate of their income.

Figure 7 Estimated demand loss to restore benchmark saving for the lower 95 percent



<sup>15</sup> Mason and Jayadev (2012) also point out that high real interest rates and low inflation contribute to the rise in household leverage over this period, particularly the period before 2000.

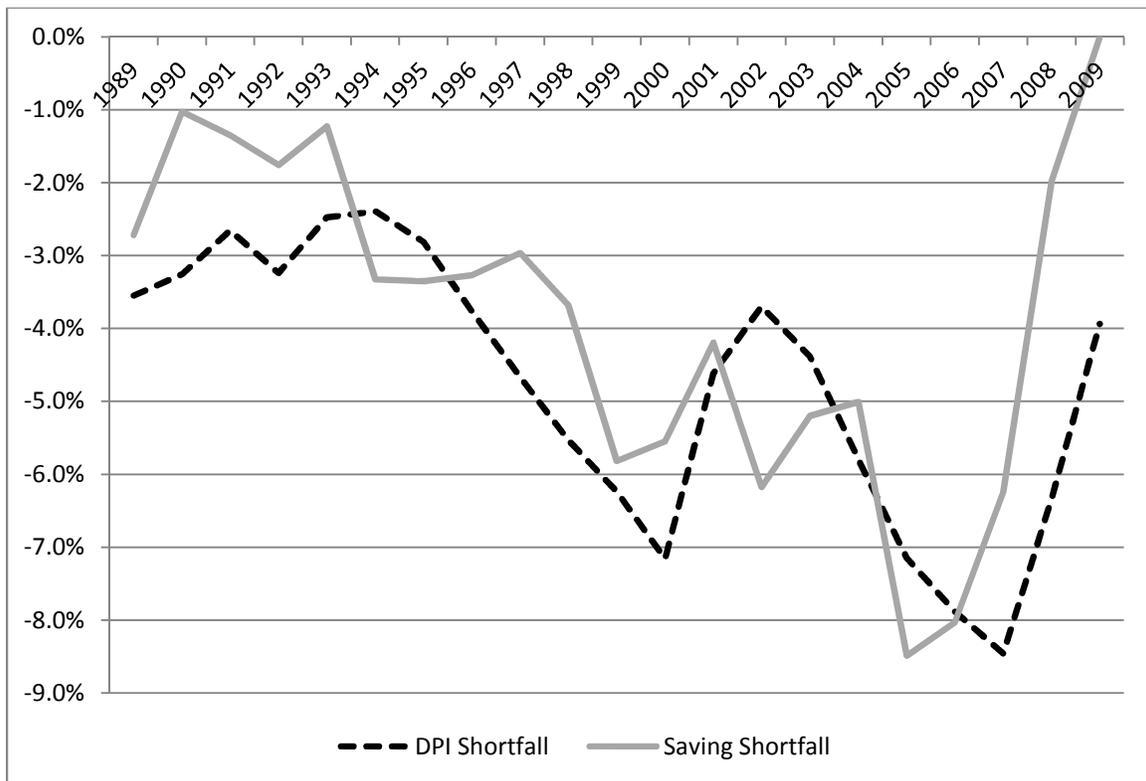
<sup>16</sup> We adjust the GDP measure to correspond to the housing expenditure adjustment described earlier. Adjusted GDP differs from the standard NIPA concept of GDP because both implicit and explicit rent on pre-existing housing are not considered part of the economy's production of final goods and services.

### C. Interpreting the Role of Rising Inequality

The collapse of the saving rate and the rise in leverage for the lower 95 percent would likely not have been as severe if the share of income this group received had not declined. The data we present in this paper provide a quantitative dimension to the possible effects of rising inequality for the economy as a whole. Following the historical approach of the previous subsection, we estimate a benchmark after-tax and after-transfer income share of 81.9 percent for the bottom 95 percent. This figure is the average of Congressional Budget Office data from the first year available in 1979 through 1982. In 1983, the share declines a full percentage point and then continues on a mostly downward trend, with just a small upward jump after the stock market crash of 2000 and 2001. Considering the flat trend of the bottom 95 percent income share (before taxes and transfers) prior to 1980 from Figure 1, going back further in history to establish this benchmark would be unlikely to change the results substantially.

We do not know what would have actually happened to aggregate disposable income, household spending, and debt if the disposable income share of the bottom 95 percent had remained at its 82 percent benchmark after 1982 rather than falling below 72 percent, as it actually did by 2007. But Figure 8 presents the results of some simple calculations that compare reduced saving of the bottom 95 percent to their declining income share. The dotted line in the figure shows the difference between the actual bottom 95 percent disposable income and a counterfactual level that assumes that the share of the bottom 95 percent remained constant at the benchmark level set at the 1979–1982 average (scaled by adjusted GDP). The solid line is the saving shortfall of the bottom 95 percent, as discussed previously. The correspondence between the two series is remarkable. The figure suggests that, other things equal, the extra disposable income that the bottom 95 percent would have had if their income share had remained at the benchmark level would have been adequate to offset the entire saving shortfall through 2007. That the cumulative effect of the changing income share and the changing saving rate are roughly equal in magnitude over this period shows that absent the increase in income inequality, the realized level of household demand that stimulated the economy during the Consumer Age could have been supported *without* the realized decline in the saving rate. Household debt would not have needed to rise at the rate it did in order to support the realized rate of household demand. It is possible that the Great Recession would not have happened, or if it did, that it would have been much less severe. This exercise leaves little doubt that rising inequality played an important role in the dramatic macroeconomic events of the past few years.

Figure 8 Shortfall of disposable income and saving relative to early 1980s benchmarks (bottom 95 percent)



### III. DEMAND GROWTH IN THE AFTERMATH OF THE GREAT RECESSION

The US economy had to confront two broad macroeconomic problems as of 2007. First, we estimate about 8 percent of aggregate demand was based on unsustainable borrowing of households in the bottom 95 percent of the income distribution. Second, much of the growth of demand since the mid-1980s was generated by the unsustainable lend-and-spend dynamic of the Consumer Age that presumably has been lost. This section considers the implications of these problems for the macroeconomic recovery going forward and suggests how they may be addressed by public policy.

Clearly, the consumption and residential construction generated by a declining saving rate of the bottom 95 percent was bound to stop growing and likely to start shrinking. Our calculations estimate that this measure of the saving rate became negative in 1999, and stayed

negative until the Great Recession with only the brief exception of a meager positive 0.1 percent rate in 2001. The saving rate of the bottom 95 percent returned in 2009 to the benchmark rate of the early 1980s and, as Figure 2 shows, total demand plummeted. Yet, there is still an overhang of debt built up during the Consumer Age. Figure 4 shows that the aggregate debt-income ratio has declined from its peak, but it remains well above the historical levels that appeared sustainable from the 1960s to the early 1980s. No doubt that low interest rates help households service this high debt level. But any increase in rates could hit the economy very hard.

The second problem regarding the source of future demand growth is less obvious, but potentially serious. From the figures presented here, we estimate that 0.40 to 0.60 percentage points of annual demand growth came from the unsustainable lend-and-spend dynamic of the Consumer Age. Following the financial crisis of the Great Recession, we believe that this source of growth is gone. These quantities represent about 30 percent to 60 percent of conventional estimates of per capita growth of the US economy.

From a conventional macroeconomics perspective, this problem might not seem particularly daunting over the medium term as higher household saving ultimately leads to higher business investment. We do not believe, however, that this process will be effective in leading demand out of its post-recession stagnation. The loanable funds process that channels higher saving into investment through lower interest rates assumes that the economy operates at full employment. In our actual circumstances, five years after the beginning of the Great Recession, this is clearly not the case. Furthermore, interest rates have already fallen to historic lows and have remained there for some time, but business investment has yet to attain even its pre-recession level, much less the much higher level necessary to put a significant dent in the consumption and housing demand shortfall. Should *another* source of demand initiate a robust recovery, business investment would likely follow and help support demand. But it is unlikely to play the leading role in filling the hole left by the end of the Consumer Age, an interpretation consistent with the historical evidence presented by Barbosa-Filho et al. (2008) who show that investment has not led historical US recoveries.

The results presented here raise the question of whether adequate demand growth to approach full employment can be attained in a sustainable way with the kind of income inequality that now prevails in the US economy. There are a variety of *possible* solutions for the shortfall of demand growth in the aftermath of the Great Recession, including rising exports, a higher share of government demand, and a renewed lend-and-spend dynamic for the household

sector that may lead to another bout with financial fragility. The best outcome, however, is likely to be attained if the trend toward greater inequality is reversed, or at least stabilized. Redistributive tax policy could help to meet this goal, as discussed at the end of Cynamon and Fazzari (2012b), although direct redistribution is politically contentious in the US. A more attractive alternative is the “golden rule” for good economic performance proposed by Setterfield (2012), that wage growth across the income distribution keep up with productivity growth (see, also, Palley 2012). It is far from obvious how to implement policies that would reach this goal, but there may be no other way to generate the demand necessary to escape stagnation in a sustainable way.

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## APPENDIX A. DISAGGREGATION OF NIPA SAVING AND CONSUMPTION

There are three published aggregate measures of saving by the US personal sector, which includes households and nonprofit organizations that serve households. First, the Bureau of Economic Analysis (BEA) publishes the NIPA personal saving rate calculated with data from the national income and product accounts using the “income and expenditure concept” (IE). This approach defines saving as the residual obtained from subtracting personal outlays (equal to consumption plus personal transfers) from disposable income. Second, the Federal Reserve Board (FRB) publishes the personal saving rate calculated with data from the Flow of Funds Accounts (FFA) using the “balance sheet concept” (BS) that defines saving as the change in net wealth. As Guidolin and La Jeunesse (2007) point out, a bit of algebra involving the basic consumer budget constraint yields an equality in which change in net worth is on one side and the difference between income and expenditure is on the other. In other words, the IE and BS definitions would be identical in a world without measurement errors and problems with accounting definitions. In reality, the series published by the BEA and FRB regularly differ, and the FRB even publishes a third personal saving rate calculated with data from the Flow of Funds Accounts but using the income and expenditure concept.<sup>17</sup> While the BEA (NIPA) considers net acquisitions of consumer durable goods by households as personal consumption expenditures, the Board of Governors (FFA) considers the consumption of durable goods as part of gross private investment (Guidolin and La Jeunesse 2007). We refer to these three measures as the NIPA/IE, FFA/BS, and FFA/IE measures, respectively, reflecting the data source and the concept.

From Mark Zandi, we received a data file generated by applying the procedure developed by Maki and Palumbo (2001) for combining distributional data from the Survey of Consumer Finances, available only once every three years, with aggregate data available quarterly in the Flow of Funds Accounts. This procedure generates higher-frequency imputed balance sheet information for a cross-section of the US. The data we use in this paper apply the procedure to generate quarterly data for households divided into two segments: the top 5 percent and the bottom 95 percent of households by income. The personal saving rate numbers for the 5

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<sup>17</sup> The Bureau of Economic Analysis publishes a website with graphs and data tables called “Comparison of Personal Saving in the National Income and Product Accounts (NIPAs) with Personal Saving in the Flow of Funds Accounts (FFAs),” available at <http://www.bea.gov/national/nipaweb/Nipa-Frb.asp>. This is our source for all three aggregate personal saving rate data series.

percent and 95 percent that we start out with aggregate to a series that estimates a decomposition of the FFA/IE aggregate personal saving rate from the Federal Reserve Board.

Our goal is to generate personal saving rate series for the 5 percent and 95 percent that aggregate to the NIPA/IE saving rate so that we can make consistent adjustments based on the more widely used IE concept. We get there in two steps. First, we calculate the percentage point difference between the FFA/IE saving rates of the 5 percent and 95 percent from Zandi's calculations. Then we use that difference along with disposable income share data from the Congressional Budget Office—CBO (2012) and the FFA/IE series itself to identify disaggregated saving rates that aggregate to the FFA/IE rate. More specifically, we use the series supplied by Zandi to come up with a relationship between the saving rates of the top 5 percent and bottom 95 percent:

$$s_t^H = s_t^L + \gamma_t$$

where  $H$  is the high (top 5 percent) group and  $L$  is the lower group;  $s$  signifies the saving rate. We compute  $\gamma_t$  from the Zandi data. Then we use the estimated  $\gamma$  to decompose the aggregate NIPA saving rate ( $s^A$ ) as follows to solve for the saving rate of the bottom 95 percent ( $w^j$  gives the income share for group  $j$ ):

$$\begin{aligned} s_t^A &= w_t^L s_t^L + w_t^H s_t^H \\ s_t^A &= w_t^L s_t^L + w_t^H (s_t^L + \gamma_t) \\ s_t^A - w_t^H \gamma_t &= w_t^L s_t^L + w_t^H s_t^L = s_t^L \end{aligned}$$

We use the CBO income shares for  $w^L$  and  $w^H$ .

The next step is to adjust the FFA/IE series for the 5 percent and the 95 percent so that they aggregate to the NIPA/IE concept. Our method is to disaggregate the gap between the FFA/IE and NIPA/IE series and then to add the disaggregated differences to the 5 percent and 95 percent FFA/IE series. What results are personal saving rates for the 5 percent and 95 percent that aggregate to the NIPA/IE series with the CBO income shares. Because we attribute the bulk of the measurement difference between the two concepts to capital market activity, we adopt the CBO measure of capital gains share between the 5 percent and 95 percent (which adds to one) as a proxy for allocating the FFA/IE – NIPA/IE difference.

Because we have data on disposable income, shares of disposable income, and saving rates for our two household segments, we are able to solve for disposable personal income (DPI), saving, and outlays of the two segments (DPI - saving = outlays). In order to back out

disaggregated personal consumption expenditures (PCE), we need one more identifying assumption. That is because personal outlays is composed of both PCE and transfers. We assume that both the 5 percent and the 95 percent have the same proportion of transfers (and consumption) to outlays. Thus, we use the aggregate ratios of transfers to outlays and consumption to outlays to decompose the outlays of the two household segments into their component parts.