The issue of income inequality is at the centerpiece of the recent economic and political debate in the US and internationally. As recently as December 4th 2013, President Obama stated, in front of congress, that the growing income gap is a "defining challenge of our time."

There are probably two main reasons why inequality is discussed so much. The first is that so that there is perception that income inequality in US is at an historical high, and the second is that there is a sense that the high inequality has something to do with the weakness of the current US recovery.

Understanding the impact of inequality on the recovery is very hard; established economists disagree on this issue at a fundamental level: some (see, for example, Stiglitz, 2013) believe high inequality is a prime cause of the slow recovery, while others (see, for example, Taylor, 2013) believe that the high inequality is just a consequence of the slow recovery, which is instead driven by more structural factors.

The purpose of this essay is to contribute to this debate, even though in a fairly narrow way. We will first document a number of facts about inequality in the United States with particular attention to our time, i.e. to the pattern of inequality during the Great Recession of 2008 and the subsequent recovery. We will first assess whether it is indeed the case that inequality is at an historical high and we then assess whether the path of inequality during the recovery from the 2008 recession is different from what the US economy has experienced in the past. Our attention will be in particular on the difference between inequality in private resources among private households and the role of government policies (such as tax and transfers) in affecting this inequality.

Before entering the details of the data analysis it is useful to briefly discuss some issues about measuring inequality. In inequality research the prime object of interest is the distribution of resources among US households (or sometimes persons). Distributions are complex objects that are hard to summarize with a single number. For this reason throughout this paper, we will concentrate on two measures of inequality: the 50/20 ratio and the 95/50 ratio. These are ratios of percentiles in the income distribution. For example, the 50/20 ratio for income is the ratio of median income (the “50”) to the income of the richest household in the bottom fifth of
the income distribution (the “20”). Similarly the 95/20 is the ratio of the lowest income household in the top 5 percent of the income distribution (the “95”) to the median income.

These two ratios capture in a simple fashion two key dimensions of the income gap. The first captures the gap between the middle and the poorest section of the distribution; a high value for this ratio usually signal that the poorest fraction of the population is far from the average, and it could be a worrisome signal for the policy maker as it indicates that a large number of households are in serious economic distress/poverty. The second ratio (the 95/50) captures the gap between the high echelons of the income distribution and the median. An increasing value for this ratio does not necessarily signal economic distress/poverty; rather it indicates growing economic differences between “regular” households, which might lead to lower social cohesion and lower social mobility. As we will see below these indicators can have very different secular trends and very different patterns over the course of a recession and recovery.

The piece is structured in three parts. In the first part we analyze long run trend trends in inequality, focusing in particular on how government policies have affected the evolution of inequality. In the second part we focus on the patterns of inequality during the Great recession and its aftermath.

*Inequality in United States: 1967-2012*

We start our analysis by comparing the patterns of income inequality in the Great Recession and the subsequent recovery with patterns of inequality in previous post-war economic cycles. For this analysis, our data source is the March supplement of the Current Population Survey (CPS), an annual survey of about 60,000 households selected to represent the U.S. civilian noninstitutional population. The longest series that is comparable, for the purpose of our analysis, starts with the March 1968 sample (which refers to 1967 calendar year) and ends with the survey collected in March 2013, which covers incomes over the calendar year 2012. Because of our interest in the recession and recovery, which mostly affected households in labor markets, we select all those households with at least one member between the ages of 22 and 60 years, which represent on average about 80% of the total household in the sample.

In terms of household resources, we focus on two measures of income. The first is what we call *private income*, which include wages, salaries, business and farm income, interest, dividends, rents, private transfers (such as alimony and child support), from all household members. This is a measure of income that would be available to the household, absent any government intervention.

The second is *disposable income*, which includes private income and adds all government transfers (such as Social Security, unemployment insurance and welfare) and subtracts tax
liabilities.\textsuperscript{1} This is a measure of the resources which are actually available to household members for spending. Differences in inequality between the two measures capture how government policies directly affect the distribution of resources.

Finally to account for different household sizes, we divide both measures of household income by the number of “adult equivalents” in the household.\textsuperscript{2}

Figures 1 and 2 report the evolution, from 1967 to 2012, of the 95/50 ratio (inequality at the top) and of the 50/20 ratio (inequality at the bottom) for these two measures of household resources.

\textbf{Inequality at the top}

Let’s first focus on the patterns of private income inequality in Figure 1. The figures show that starting in the early 1980s there has been a sharp increase in private income inequality at the top. Private income in the high part of the distribution has been growing much faster than private income in the middle. To give more precise numbers the median private income (in constant 2012 dollars), for a household of 2 adults and two children, was around 68000$ in 1980, while in 2012 the same figure rose to 74000$, for an unimpressive growth of around 9% over the entire period. On the other hand the same measure of income for the 95\textsuperscript{th} percentile went from around 180000$ in 1980 to 270000$ in 2013, a growth over the period that exceeds 50%. This finding is well known and is one of the reasons why inequality has become so predominant in the current economic discourse.

Less well known, although equally interesting, are the dynamics of disposable income at the top, depicted by the dashed line in figure 1. The line shows that over the period 1980-1996 the increase in inequality in disposable income tracked closely the inequality in private income. After 1996 the two series have started diverging: private income inequality has kept increasing at a steady pace while disposable income inequality has remained roughly flat. Indeed over the period 1996-2012 private income of the top grew at 8% while private income of the middle actually fell 3%. Over the same period however disposable income of the median and of the top displayed similar growth rates of 5% and 8%, respectively.

This all suggests that despite increasing inequality in private income, after 1996 there has been substantial government redistribution, through taxes and transfers, which has kept the top and the middle of the distribution much closer together. Interestingly a big part of this

\textsuperscript{1} The CPS does not provide data for tax liabilities for all years in our sample. Therefore, we compute tax liabilities for each household using TAXSIM, a widely used tax simulation program provided by the National Bureau of Economic Research. In years for which we have tax liabilities from the CPS, summary measures of tax liabilities in the CPS are very similar to our measures computed using TAXSIM.

\textsuperscript{2} Following the commonly used OECD scale, the number of “adult equivalents” in a household is a weighted sum of household members in which the first adult is given a weight of 1, each additional adult has a weight of 0.7 and each member under the age of 17 has a weight of 0.5.
Redistribution appears to have taken place exactly during the Great Recession period, as during the 2007-2009 period the gap between the solid and the dash line in figure 1 opens up and stays at its historical high ever since.

Overall the picture shows that there is always redistribution between the top and the middle (the solid line is always above the dashed one) and that this redistribution has been increasing over time, especially after 1996, (the gap between the solid and the dashed line is increasing). Moreover the data suggests that although inequality at the top in private income is currently at its historical high, inequality in disposable income has actually been flat or slightly falling over the past 15 years. This is because, together with inequality in private income, government redistribution between the top and the middle (the distance between the solid and the dashed line) is also at its historical high.

An important caveat is that the measures of income inequality at the top presented in figure 1 are conceptually different from measures that focus on inequality at the top of the distribution, as those computed by Piketty and Saez (2003), and very often cited in the popular press. There are three key differences. The first is that Piketty and Saez focus on inequality in income of tax units while here we focus on inequality at size-adjusted income of households.3 As explained by Burkhauser et al. (2013) using tax units, instead of households, tend to give a bleaker picture of the performance of the middle class relative to the top. This is because, over the sample we consider, there has been a significant increase in the fraction of households in which adult members live together (and share resources) but are not married. Treating adult members of these households as separate tax units tend to overstate the true increase in inequality of resources.

The second is that Piketty and Saez tend to focus on differences between the very high income units (for example the top 0.1%) and the rest of the population. Top coding restrictions in the CPS data prevents us to analyze these differences so here we focus only on the differences between the top 5% and the median, which nevertheless are a relevant measure of the polarization of society.

The last difference is that Piketty and Saez focus on private income while here we look both at private and post government income, which includes tax and transfers. Although transfers do not play a very important role in redistribution resources at the top, taxes do, and, as we discuss below have done increasingly so after the Great recession.

---

3 An household where the spouses file separately enter as single unit in CPS but as two separate units in the Piketty Saez data.
Inequality at the bottom
Let’s first focus on the patterns of private income inequality, represented by the solid line in figure 2. The first notable feature of the series is its strong cyclicality, as during all the recessions in the sample the 50/20 ratio increases. To understand why this is case recall that he defining feature of a recession is the sharp decline in employment rate and corresponding increase in unemployment rate. The reduction in employment though typically is not evenly spread across households. The majority of households whose earners keep their jobs experience little change in their earnings during the recession, while households with members facing job losses experience large drop in earnings. The drop in earnings pushes these households at the bottom of the distribution, so earnings (and thus private income) at the bottom of the distribution fall and the private income gap between the median and the bottom spikes up. The second remarkable feature of the series is how the great recession and its aftermath stands out relative to rest of the sample. The spike of the series that took place during the Great Recession shows that private income of the bottom of the distribution took, relatively to the median, an unprecedented hit, a hit from which, so far, there are no signs of recovery, as the level of the 50/20 ratio still is, 4 years after the recession, very close to its
historical high. Moving now to the inequality in disposable income (the dashed line) it is apparent that inequality in disposable income is also cyclical and rises in recession, although much less so than inequality in private income. This suggests that government programs, such as unemployment benefits, partially shield the bottom part of the income distribution from the loss of resources experienced during recessions.

So overall some of the patterns described above for inequality at the top, also appear in the inequality at the bottom. In particular while inequality in private income is at its post-war high, inequality in disposable income has not raised much, so suggesting that government redistribution, measured as the distance between the solid and the dashed line, is operating now at a very large scale.

One important issue that the figure raises is why the fall in private income of the bottom part of the distribution has been so large. After all unemployment during at the peak of the great recession has not risen above the peak it reached in the 1981-83 recession. To better understand this in figure 3 we plot, alongside the 50/20 ratio in private income (the solid line from figure 2) the number of persons who are long term (more than 27 weeks) unemployed as a fraction of the population. Notice how the two series track each other closely, how both series display an unprecedented peak in the Great Recession, and how both series are still, three years out of the recession, well above their pre 2007 peak.

The figure suggests that the dramatic fall in the income of the bottom part of the distribution is not just explained by unemployment but also importantly by long term unemployment, which has a more significant negative impact on the yearly income of households whose members are in this category. This fact could be informative for policy makers involved in the recent debate on the extension of unemployment benefits. Figures 2 and 3 taken together suggest that long term unemployment so far has impacted the private income of the bottom portion of the distribution, but only marginally the bottom of the distribution of disposable income. The reason why the inequality in disposable income has been mostly stable is due in large part to unemployment benefits with long duration. Should these not be extended, the bottom part of the distribution of disposable income will, most likely, be affected.
Figure 2 Inequality at the bottom of the income distribution, 1967-2012

Note: Shaded areas represent years that contain at least one quarter classified as recession by the NBER.
Assessing the role of tax and transfers

The data presented so far suggest that tax and transfers have played an important role in preventing the inequality in disposable income from rising during the Great Recession. To see why taxes and transfers reduce inequality more during a recession consider that typically in recessions many households suffer a large loss in private income due, for example, to unemployment spells. This increases inequality in private income. These losses, however, also cause a reduction in tax liabilities of the households involved and also trigger transfers to the households (for example unemployment insurance). Reduction in tax liabilities and increase in transfers imply that disposable income of the household will not fall as much as private income, and thus inequality in disposable income will not go up as much as inequality in private income during the recession.

Here we will present some simple numbers that allow to separately identify the role played by transfers, by tax and by changes in the tax code, in reducing inequality in disposable income during the Great Recession. In particular we construct inequality measures like the ones discussed above (95/50 and 50/20 ratios) for two alternative measures of income.

The first is disposable income excluding all government transfers. The difference between inequality in disposable income and inequality in disposable income without transfers identifies the impact of
transfers on inequality. Instead the difference between inequality in disposable income without transfers and inequality in private incomes identifies the role of the system.

The second measure is the inequality in disposable income using an alternative tax policy. In particular we compute tax liabilities by households during the great recession period (2007-2012) using the 2006 tax code. The difference between actual inequality in disposable income and disposable income under the alternative tax code identifies the role of tax code changes in reducing inequality. Possibly the biggest change in tax code that took place during the Great Recession is the tax rebate part of the stimulus plan of 2008, which rebated $600 (for a single person) or $1200 (married couple filing jointly) to households with income below $75,000 ($150,000 for couples filing jointly).

The left panel of figure 4 shows the impact on the 95/50 (i.e. inequality at the top) of these policies, while the right panel shows the impact of the policies on inequality at the bottom (50/20). To highlight the change of the impact of the policies during the Great Recession their impact is normalized to 0 in 2006, and note that a positive value indicates inequality reduction. So a value of, for example, 0.3 indicates that a given policy is responsible for a reduction of 0.3 in the inequality index relative to its 2006 value.

Several features are worth mentioning.

First notice the tax system is responsible for the largest inequality reduction, both at the top and at the bottom, and that it plays a bigger role in reducing inequality at the bottom than at the top. This is due to the fact that the US tax system is more progressive for lower levels of income, due to the presence of the earned income tax credit. This implies that households which fall, say, from the middle to the bottom of the distribution are the ones likely to enjoy the biggest reduction in tax liabilities.

The second feature is that transfers also play a larger role in reduction in inequality at the bottom than at the top, and this is also due to the fact that the transfers that increased during the Great Recession were mostly to the bottom part of the distribution.

Finally notice that tax reform plays a bigger role in reducing inequality at the top than inequality at the bottom. This is not surprising given the relatively high income eligibility limit for the rebate. The high income limit implied that both the median and the bottom 20% (but not the top 5%) received the rebate, hence the policy reduce inequality between the top and the middle but not inequality between the middle and the bottom.
Assessing long run trends
What do learn from all these data? Is inequality at its postwar high? Is the distribution of income of US working households becoming more and more dispersed?

Inequality in private income at the top and at the bottom has been trending up and it is now indeed close to its post-war high. But the increasing trends have different nature. Inequality at the top has been increasing at a steady pace, throughout recessions and recoveries, suggesting the presence of some structural change that has amplified the difference in returns to labor between the top and the middle.\(^4\)

Inequality in private income at the bottom has instead mainly increased during recession, and it appears to have increased the most during the two biggest recessions of the postwar, the 1980-1982 and the 2007-2009.

These conclusions are different though if one looks at disposable income. At the top inequality in disposable income appear stable over the past 15 years, and this mostly due to a more redistributive tax policy. Inequality at the bottom also appears stable over the period 1983-20079 also due to tax and transfers, that have supported the income of the bottom part of the distribution. It is important to notice though in the last two years of the sample (i.e. in the recovery after the great recession)

\(^4\) For the early part of the sample researchers (see, for example, Krusell and others, 2000) have assessed an important role of increasing returns to education, possibly due to skill biased technical change. For the late part researchers have suggested the disappearance of routine jobs as a reason for the poor performance of middle part of the distribution (see for example Jaimovich and Siu, 2012)
inequality at the bottom has been increasing, and is indeed now at its historical high. This is a trend that will be important to watch in the coming years.

**Inequality, recessions and recoveries: two big business cycles in comparison**

During the post war period in the United States the two biggest episodes of business cycles were undoubtedly the 1980-82 recession and the Great Recession of 2007-2009. In terms of macroeconomic dynamics, in both recessions unemployment peaked at around 10%, while unemployment in the 2007 recession has displayed a slower recovery. In 1985, five years after the start of the 1980-82 recession unemployment had fallen to 7.2% while in 2012, five years after the start of the Great Recession, unemployment was still 8.1%. In this section will beyond the macro dynamics and document how the two cycles compare in terms of household resources and their distribution.

In table 1 we compare the pattern of private income and disposable income for three points of the distribution (bottom 20%, median and top 95%) at three points in time: before the recession (2006 and 1979), at the peak of the recession (2009 and 1982), and 3 years into the recovery (2012 and 1985).

First let’s compare the pattern of private income in the two recessions. Comparing the first three columns of panels A and C we see the two recessions had similar impact on the private income distribution. The top of the distribution was little affected (-4% in 2009, -1% in 1982), the middle was affected significantly (-9% in 2009 and -10% in 1982) while the bottom took the biggest hit (-20% in both recessions). As a consequence inequality in private income rose significantly, both at the bottom and at the top. When recovery ensues, the fourth and fifth column of the two panels show an important difference between the two episodes. In the post 2009 recovery all three points of the income distribution experience a further decline, with the bottom experiencing the largest fall. In the post 1982 recovery instead all three points of the distribution enjoy a similar recovery of about 10%. Overall the two cycles display a remarkably similar pattern for the evolution of inequality in private income during the recession. Inequality patterns in the recovery phase are different; after the 1980-82 recession inequality stabilized while after the 2009 recession the bottom of the distribution continued to lose ground relative to the median.

The two recessions are even more different when we focus on the evolution of disposable income (panels B and D). In the first phase of the 2007-2009 recession disposable income of all three points of the distribution fall by about the same amount (4% for the top, 2% for the median, 3% for the bottom) suggesting that government redistribution significantly softened the blow of the recession for the middle and at the bottom of the distribution. In the 1980 recession this took place to a lesser extent: disposable income of the median declined by 10%, which the same amount as the median private income decline, and disposable income of the bottom fell 16%, which is only slightly less than the fall in bottom of private income (20%). So government redistribution, through tax and transfers, was much more active during the 2007-2009 recession, and that kept disposable income inequality in the recession basically stable, while inequality went up significantly in the 1980-82 recession.
During the post 2009 recovery we see that disposable income of all sections of the distribution is still well below their pre-recession levels, but we also see that disposable income of the bottom is falling further behind (-6%) relative to the median and the top (-3% and -2%), suggesting that government income policies have not completely prevented the dramatic fall in the bottom of private income distribution from affecting the distribution of disposable income. Still in the post 2009 recovery government policies have worked to keep the distribution of disposable income close together.

In the post 1982 recovery instead government policies have induced more income dispersion than the one arising from private income. Comparing column 5 in panels C and D of table 1 notice that, even though during the recovery all segments of the private income distribution experienced similar recovery rate (around 10%), the distribution of disposable income grew more unequal with the top experiencing faster growth (11%) against 5% and 6% for the bottom and the median.

Overall we want to highlight two main differences between the two cycles.

In terms of private income the key difference is that that Great Recession has been followed by a diffused decline/stagnation, while the recession in 1980-1982 recession has been followed by a robust diffused growth.

The second difference is that throughout the business cycle of the early 80s the distribution of disposable income of US households had grown significantly more unequal, both at the top and at the bottom. Throughout the 2007-2012 cycle instead, this distribution has been more stable, due to government policies which have supported the income of the median and the bottom.

Certainly from a policy perspective a worrisome feature of these data is that the bottom part of the disposable income distribution still is, 6 years from the start of the recession, 9% (see the last column and the last row last of panel B) below the pre-recession level). But perhaps an even more worrisome one is that almost the entire distribution is still 5% (see the last column of panel B) below the pre-recession level, suggesting a generalized stagnation of resources available to the majority of US households. In the next two sections we will focus more on the welfare consequences of this, by analyzing the distribution of household expenditures both across households and over time.
### Table 1. Income Distribution in Two Recessions and Recoveries

**The 2007-2009 Recession and Recovery**

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2009</th>
<th>06-09 %Change</th>
<th>2012</th>
<th>09-12 %Change</th>
<th>Overall %Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Private Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95&lt;sup&gt;th&lt;/sup&gt; Percentile</td>
<td>289658</td>
<td>277824</td>
<td>-4%</td>
<td>270158</td>
<td>-3%</td>
<td>-7%</td>
</tr>
<tr>
<td>Median</td>
<td>83197</td>
<td>75999</td>
<td>-9%</td>
<td>74456</td>
<td>-2%</td>
<td>-11%</td>
</tr>
<tr>
<td>20&lt;sup&gt;th&lt;/sup&gt; percentile</td>
<td>33640</td>
<td>26869</td>
<td>-20%</td>
<td>25000</td>
<td>-7%</td>
<td>-26%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>09-12 %Change</th>
<th>Overall %Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>95&lt;sup&gt;th&lt;/sup&gt; Percentile</td>
<td>270158</td>
<td>-3%</td>
<td>-7%</td>
</tr>
<tr>
<td>Median</td>
<td>74456</td>
<td>-2%</td>
<td>-11%</td>
</tr>
<tr>
<td>20&lt;sup&gt;th&lt;/sup&gt; percentile</td>
<td>25000</td>
<td>-7%</td>
<td>-26%</td>
</tr>
</tbody>
</table>

|                      |      |      |               |      |               |                 |
|----------------------|      |      |               |      |               |                 |
| **B. Disposable income** |      |      |               |      |               |                 |
| 95<sup>th</sup> Percentile | 220128 | 211765 | -4% | 208571 | -2% | -5% |
| Median               | 74232  | 72583 | -2% | 70634  | -3% | -5% |
| 20<sup>th</sup> percentile | 39381 | 38356 | -3% | 35941  | -6% | -9% |

**The 1980-82 Recession and Recovery**

<table>
<thead>
<tr>
<th></th>
<th>1979</th>
<th>1982</th>
<th>79-82 %Change</th>
<th>1985</th>
<th>82-85 %Change</th>
<th>Overall %Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C. Private Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95&lt;sup&gt;th&lt;/sup&gt; Percentile</td>
<td>191784</td>
<td>189636</td>
<td>-1%</td>
<td>209549</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>Median</td>
<td>71871</td>
<td>64975</td>
<td>-10%</td>
<td>71117</td>
<td>9%</td>
<td>-1%</td>
</tr>
<tr>
<td>20&lt;sup&gt;th&lt;/sup&gt; percentile</td>
<td>33101</td>
<td>26330</td>
<td>-20%</td>
<td>29105</td>
<td>11%</td>
<td>-12%</td>
</tr>
</tbody>
</table>

|                      |      |      |               |      |               |                 |
|----------------------|      |      |               |      |               |                 |
| **D. Disposable income** |      |      |               |      |               |                 |
| 95<sup>th</sup> Percentile | 150700 | 141923 | -4% | 157151 | 11% | 4% |
| Median               | 64000  | 56847 | -11% | 60398  | 6% | -6% |
| 20<sup>th</sup> percentile | 36726 | 30809 | -16% | 32206  | 5% | -12% |

Note: All figures are in 2012 Dollars and refer to income of a household with two adults and 2 children.

**Household expenditures during the Great Recession and the recovery**

In this section we continue our analysis of inequality of resources during the Great Recession, moving beyond the concept of income and looking at the distribution of expenditures. There two reasons for doing this. The first is that expenditures are possibly more closely connected to the lifetime resources (and thus welfare) available to a household than current income. This is because expenditures also respond to changes in the value of household wealth and changes in the individual future income prospects, which are not captured in current income. Since during the 2007-2009 recession there were both significant declines in many asset prices and significant changes in labor market prospects for many
households, the distribution of consumption should give us better information on the impact of these changes on inequality. The second reason is that many commentators (see for example Stiglitz, 2013) have argued that weak expenditures and in particular weak expenditures by the bottom and middle part of the income distribution are an important cause of the weak recovery. Looking at the distribution of expenditures inform us on how much of the overall decline in expenditure can indeed be accounted by the decline in expenditures of these groups.

Our analysis is based on household-level data from the Consumer Expenditure (CE) Interview Survey. The CE Survey is a rotating panel of households that are selected to be representative of the U.S. population. Each quarter the survey reports, for the cross section of households interviewed (about 6,000), detailed demographic characteristics for all household members, detailed information on consumption expenditures for the three-month period preceding the interview and information on income, hours worked and taxes paid over a yearly period. We focus on a sample that starts in the first quarter of 2006 (before the start of the Great Recession) and ends in first quarter of 2013, which is the most recent quarter available from the CE.

The statistics we present are based on those discussed earlier for income. In particular for every quarter of our sample we group the sample in three groups. The top, i.e. those households with size-adjusted disposable income which is above the 95th percentile of the distribution; the middle, i.e. households with disposable income between the 45th and 55th percentile, and the bottom, which are households with size adjusted disposable income is below the 20th percentile. For each group we compute average total quarterly expenditures. The top panel of figure 2 reports the average real expenditures (in 2012 dollars) of households in bottom part of the disposable income distribution. Not surprisingly expenditures fall during the Great Recession, and similar to the pattern of disposable income, they are still, in the first quarter of 2013, well below (about 10%) their pre-recession level. The bottom panel shows the average consumption expenditures for the mid and the top (as defined above) as a ratio of the average expenditures of the group immediately below. Notice both ratios are bigger than 1, showing, not surprisingly, that the mid has higher expenditures than the bottom and that the top has higher expenditures than the middle. But one remarkable feature of the figure is that gap across the three groups, i.e. inequality in consumption expenditures, is stable across the Great Recession and the recovery.

Overall the figure certainly suggests a stagnation of expenditures in US over the past 6 years, but also suggests that the stagnation is accounted by a uniform decline of expenditure across all segments of the income distribution, so that the distribution of expenditures across households has remained stable across the whole period. Again these figures do not tell us whether the distribution of expenditures is stable.

5 Specifically, we include expenditures on non-durable goods and services (food and beverages, utilities and fuels, education, medical supplies, clothing and personal care, reading, transportation, entertainment and shelter services) and on durables (transportation equipment, housing, furniture, jewelry and durable entertainment goods.)

6 This result is robust to different way of dividing the three groups. When we divide the sample using private income or consumption expenditures, we still observe fall in overall expenditures but stability of inequality in expenditures.
“fair” or whether the government should engage in more of less redistribution. They just tell us, perhaps contradicting some of the rhetoric on the popular press, that the Great Recession has certainly represented a period of prolonged stagnation in expenditures, but this stagnation has been diffused across all segments of the population.  

---

7 By all segments here we mean all households represented in the CE survey. Ultra high income households are not well represented in the survey, so we know little on how their expenditure patterns compare with the rest of society.
Figure 4 Household Expenditures during the Great Recession and Recovery

A. Quarterly Expenditures of bottom 20% of Disposable Income Distribution

B. Expenditures of Top 5% and Mid 10% of disposable income distribution

Note: Note: Shaded areas represent quarters classified as recession by the NBER.
Individual household dynamics

So far in this report we have focused our analysis on repeated cross-sections, that is snapshots of the distribution of resources in the US at different points in time.

These snapshots are important indicators of economic disparity but they do not tell us how individual households are faring over time, in particular during events, like the Great Recession, that cause further spreading of resources.

This is because the identity of households in a given group of the income distribution change every year; so, for example, when we see the private income of the bottom 20% of the population fall, we do not know the identity of households which actually experienced the fall in income and thus we cannot assess the consequences of the fall on their welfare. The use of panel data, i.e. of datasets which collect information of a large set of families for many years, however, can overcome this problem.

In this section we use panel data from the Panel Study of Income Dynamics (PSID) is the longest-running representative household panel study in the United States. The PSID data sets provide a wide variety of information on income, employment and expenditures for many households that are followed, after 1996, at a biannual frequency. We concentrate our analysis on the 2005, 2007 and 2009 and 2011 surveys (which provide data for the years 2004, 2006, 2008 and 2010) to study the impact of the Great recession on individual households. As we did for the CPS data set we select only households which have at least one member between the ages of 21 and 60.

In order to study the impact of the Great Recession on individual household dynamics, in each year we select a group of households which are particularly vulnerable; in particular we select households with head that is currently unemployed and, at the same time, report a drop in private income (relative to the previous survey) by at least 10%. For these households in panel A of table 2 we report several statistics, in particular their percentage changes in private income, disposable income and consumption expenditures in every year of the sample. As a control group in panel B we also report the same statistics for the rest of the PSID sample.

---

8 Unfortunately the PSID only reports comprehensive consumption expenditures starting in 2005, so we cannot extend our analysis back and compare the two greatest recession as we did in the previous section.
Table 2. Income Distribution in Two Recessions and Recoveries

A. Vulnerable group: unemployed + Private Income Change < -10%

<table>
<thead>
<tr>
<th>Year</th>
<th>Size</th>
<th>% of Sample</th>
<th>% Change</th>
<th>Level Last Disp. Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Private Income</td>
<td>Disp. Income</td>
</tr>
<tr>
<td>2006</td>
<td>113</td>
<td>2.3</td>
<td>-46.1</td>
<td>-35.9</td>
</tr>
<tr>
<td>2008</td>
<td>169</td>
<td>3.6</td>
<td>-44.6</td>
<td>-21.2</td>
</tr>
<tr>
<td>2010</td>
<td>229</td>
<td>5.1</td>
<td>-57.4</td>
<td>-25.6</td>
</tr>
</tbody>
</table>

B. Control group: rest of the sample

<table>
<thead>
<tr>
<th>Year</th>
<th>Size</th>
<th>% of Sample</th>
<th>% Change</th>
<th>Level Last Disp. Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Private Income</td>
<td>Disp. Income</td>
</tr>
<tr>
<td>2006</td>
<td>4700</td>
<td>97.7</td>
<td>12</td>
<td>12.7</td>
</tr>
<tr>
<td>2008</td>
<td>4552</td>
<td>96.4</td>
<td>16</td>
<td>16.9</td>
</tr>
<tr>
<td>2010</td>
<td>4305</td>
<td>94.9</td>
<td>-1.8</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Starting with the first two columns of panel A notice how the group of “vulnerable households” is only 2.3% of the sample in 2006 (before the start of the recession) but it more than doubles in size at the end of the recession in 2010. The next column shows how the size of the private income drop of this group is increasing over time, from -46.1% pre-recession to 57.4% at the end of the recession. Overall the vulnerable group grows larger (not surprisingly given the increase in unemployment) and is also hit by bigger shocks. The next columns show how disposable income drops but much less than private income, suggesting that government redistribution reduces the resource losses of vulnerable households. Notice also how, over the course of the recession, the size of disposable income shock is reduced (35.9 to 25.6), despite the increase in the size of private income shocks. This shows once again a growing role of redistribution during the Great Recession. But perhaps the more interesting finding of the table is the column that reports the response of expenditures to the income drop. Notice that in 2006 a drop in disposable income of 35.9 only resulted in a drop in expenditures of 4.2%. As noted in Perri and Steinberg (2012), one possible reason for the small response of expenditure to income drop is that in 2006 the wealth of US households was high, so households could use borrowing or running down on assets to keep their expenditures smooth. In 2010 a smaller drop in disposable income (-25.6%) is now associated with a much more significant drop in consumption expenditure (-15.5%), suggesting that US households in 2010 no longer had a wealth buffer against income shocks. It is also conceivable that the increasing duration of unemployment over the course of the recession makes, on average, unemployment status a more permanent one, and this would induce households to reduce their expenditure more in response to an unemployment spell.
Moving now to panel B notice first that households in the control group (non-vulnerable households) have quite a bit higher disposable income (compare the last columns of both panels). As a consequence the differences between change in private income and in disposable income for the control group are much smaller, as at higher level of income there is less government redistribution. Importantly notice how even the control group, reduces its expenditure relative to its income growth. In 2006 (pre-recession) expenditure growth (23.1%) of the control group was outstripping disposable income growth (12.7%). During the recession times of 2008-2010 disposable income growth has remained, on average, at around 10%, but consumption growth rate has declined to an average of 5%. This suggests that the falling wealth has also played a role in dampening the expenditure of higher income households, which reduced consumption in order to rebuild their assets. The fact that expenditure slows down for both groups help explaining why, as we observed in figure 4 above, overall expenditure inequality has not increased.\(^9\)

Overall the table highlights that during the Great Recession there is a growing group of households which have become more subject to larger and larger drops in private income. These shocks have been increasingly (but still partially) smoothed by more active government redistribution over the course of the Recession. The shocks also have resulted in larger decline in expenditures, either because the households have lost, due to the fall in wealth, much of the ability to self-insure against income shocks, or because, labor shocks have become more permanent, due to higher likelihood of long term unemployment.

**Conclusions**

We have shown that inequality in private income among US households is, in the aftermath of the Great Recession, at its postwar highs, both at the bottom and at the top of the distribution. This increase in inequality at the bottom seems to be tightly linked to the historically high level of long term unemployment, which depresses the income of the bottom part of the distribution. We have also shown that, exactly during the Great Recession, the redistributive scope of government policies (tax and transfers) has increased to historical highs, again both at the bottom and at the top of the distribution, so disparities in disposable income have not grown much over the past 10 years.

More specific to the recession recovery cycle we compare the Great Recession and its aftermath with the recession of 1980-82 and its aftermath and found that the distributional impact of the recent recession has been much smaller, precisely because of stronger role played by redistributive policies. Five years after the start of the 1980-82 recession, incomes at the top of the distribution were growing, and incomes at the bottom were falling, so society was much more unequal that it was at the start of the recession. Five years after the onset of the Great Recession, most segments of the disposable

\(^9\) It is important to stress that when we compute on the PSID sample the same cross sectional statistics we have computed for CPS and CE we obtain very similar results (from more on this see Heathcote and al. 2012). So the reason we use the PSID in this section is not because it has a different coverage but simply because it panel dimension.
income distribution are still well below the pre-recession level; the society is poorer, but only marginally more unequal, due to redistribution.

This generalized stagnation is apparent also in the distribution of expenditures, which have been falling uniformly across the entire distribution. In the final part of this paper we have followed households through time to ask whether redistribution can also shield individual households from adverse shocks to private resources. The answer to the question is no. As the Great Recession has progressed there has been more redistribution, but at the same time households have lost the ability of self insure against shocks, and shocks to their disposable resources have affected their expenditures.

Obviously the data analysis conducted here does not tell us whether the current US system of redistribution through tax and transfers is too high or too low. It tells us that the US system does much more redistribution of resources across households now than it has ever done in the postwar. But it also tells us that the disposable income of the lowest 20% of the distribution is now at the lowest level, relative to the rest of the society than it has ever been in the post-war. And it tells us at the peak of the Great Recession, households which suffered shocks to their labor income were only partially sheltered by redistribution and in the end suffered fairly substantial reduction in expenditures (and hence standard of living). We believe that these facts might help inform policy makers in the difficult decisions that lay ahead like, to name one, the decision of whether or not to extend long term unemployment benefits.
References


Jaimovich N. and H. Siu (2013), The Trend is the Cycle: Job Polarization and Jobless Recoveries. NBER Working Paper No. 18334


Perri, F. and J. Steinberg, (2012) Inequality and redistribution during the Great Recession, Minneapolis FED Policy paper

