

Income inequality and redistribution in the aftermath of the 2007-2008 crisis: the US case

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- 1 Introduction
- 2 The US tax and transfer system
- 3 Data and methods
- 4 Main findings
- 5 Concluding remarks

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Motivation

- **Aggregate shocks** (such as the 2007-2008 financial crisis) may have far-reaching **distributional consequences**
- This may **feedback into weaker recovery** of the aggregate economy from the shock
- In this case, **redistributive policies** may have not only a distributional but also a **macro stabilisation role**
- ▶ *Accounting for inequality and redistribution when designing policies aimed at coping with aggregate shocks may be key*

This work

- Provides empirical evidence on one important case study: the **2007-2008 crisis, in the US**. Specifically, offers insights into:
 - **Evolution of income distribution** following the crisis
 - **Cushioning role of the tax and transfer (T&T) system**
- Adds to existing literature by:
 - Looking in detail at multiple sections of the income distribution
 - Considering partial effects of different types of redistributive mechanisms
 - Providing up-to-date estimates, which proves to be crucial

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Main instruments

- **Cash-transfers - *cash*:**
 - Social security (retirement, disability and survivor's benefits)
 - Unemployment benefits
 - Welfare
 - Veteran's and worker's compensation
 - Educational assistance
- **Taxes - *tax*:**
 - Federal and state income taxes
 - Social security and federal retirement payroll deductions
- **Tax-credits - *cred*:**
 - Earned income tax credit (EITC)
 - Child tax credits
 - 2008-2010 extraordinary stimulus rebates
- **In-kind transfers - *kind*:**
 - Nutritional assistance (Food stamps)
 - Energy assistance

Main post-crisis measures

- Several **across-the-board important extraordinary measures**, following the outburst of the crisis:
 - February 2008: Economic Stimulus Act
 - May 2008: Food, Conservation and Energy Act
 - July 2008: Emergency Unemployment Compensation Program
 - February 2009: American Recovery and Reinvestment Act
 - December 2010: Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act
 - January 2013: American Taxpayer Relief Act
- Can be split into **two broad periods**:
 - 2008-2009: Strong stimulus
 - 2010-2012: Still significant stimulus, but weaker

- 1 Introduction
- 2 The US tax and transfer system
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- 5 Concluding remarks

Data

- **Data source:**

- Current Population Survey (CPS) - ASEC (or March) supplement
- Individual and household level
- Annual, cross-section
- On average, per year, 205 000 individuals, 75 000 households

- **Sample and data treatment:**

- 2007-2012 (2013 soon)
- Whole population
- Person-equivalised household income, equivalence scale = $\sqrt{\text{size}}$
- Individual weights
- All income measures deflated, using CPI-U

Income measures

For each individual i at time t , compute:

- ① $Y_{i,t}^{mark}$: **Pre-government (market) income**
- ② $T_{i,t}^k$: Value of type k tax/transfer, with $k \in \{cash, tax, cred, kind\}$
- ③ $Y_{i,t}^k$: Post tax/transfer type k income, sequentially:

$$Y_{i,t}^k = Y_{i,t}^{mark} + \sum_{j=cash}^k \alpha_j T_{i,t}^j$$

$Y_{i,t}^{transf}$: **Post cash-transfers income**

$Y_{i,t}^{tax}$: **Post tax income**

$Y_{i,t}^{cred}$: **Post tax-credits income**

$Y_{i,t}^{kind}$: **Post in-kind transfers (disposable) income**

Inequality and redistribution indicators

INEQUALITY INDICATORS:

- **Summary indicators:** Gini, P90P10, P90P50, P50P10
- **Income percentiles:** P10, P25, P50, P75, P90
- **Average income and income shares** by income group: Bottom 10%, 20%, 50%; Top 50%, 20%, 10%

REDISTRIBUTION INDICATORS:

- **Comparison of inequality indicators** for all income measures
- Measures of **overall** and **partial redistribution** (next slide)
- Decomposition of partial redistribution into **3 drivers:** size, progressivity and re-ranking effects (two slides ahead)

Overall and partial redistribution

Consider Ginis G_t^{mark} (market), G_t^k (after instrument k), G_t^{k-} (before instrument k). Then:

- ① **Absolute redistribution** (Reynolds-Smolensky index):

$$Overall : AR_t^{all} = G_t^{mark} - G_t^{kind}$$

$$Partial : AR_t^k = G_t^{k-} - G_t^k$$

- ② **Change in absolute redistribution:**

$$Overall : \Delta AR_t^{all} = AR_t^{all} - AR_{t-1}^{all} = \Delta G_t^{mark} - \Delta G_t^{kind}$$

$$Partial : \Delta AR_t^k = AR_t^k - AR_{t-1}^k = \Delta G_t^{k-} - \Delta G_t^k$$

- ③ **Contribution** by k to overall change in absolute redistribution:

$$CR_t^k = \Delta AR_t^k / \Delta AR_t^{all}$$

Drivers of partial redistribution

Decompose partial redistribution by each instrument k into 3 elements:

$$AR_t^k = \frac{g_t^k}{1 - g_t^k} K_t^k - R_t^k$$

- ① **Size effect:**

$$\frac{g_t^k}{1 - g_t^k} \quad \text{with} \quad g_t^k = \frac{\sum_{i=1}^n T_{i,t}^k}{\sum_{i=1}^n Y_{i,t}^{k^-}}$$

- ② **Progressivity effect (Kakwani index):**

$$K_t^k = C(T_t^k, Y_t^{k^-}) - G_t^{k^-}$$

where $C(\cdot)$ = concentration coefficient

- ③ **Re-ranking effect:**

$$R_t^k = G_t^k - C(Y_t^k, Y_t^{k^-})$$

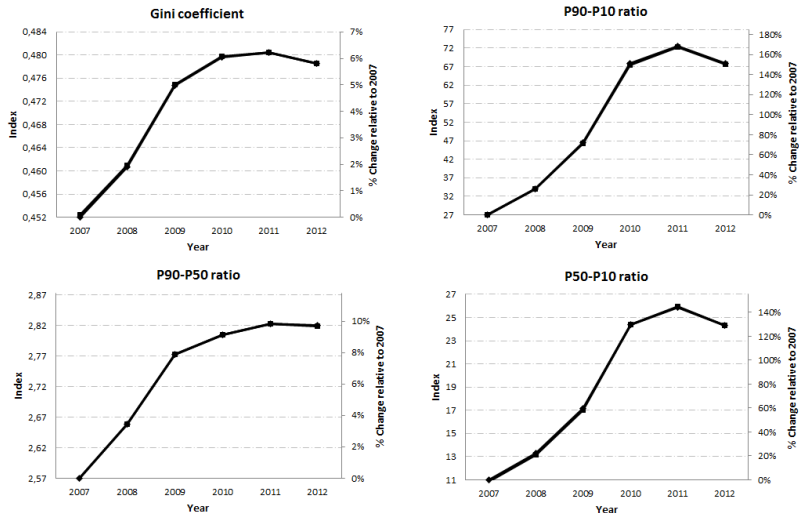
- 1 Introduction
- 2 The US tax and transfer system
- 3 Data and methods
- 4 Main findings**
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Summary

- ① **Main finding no. 1:** Crisis entailed a dramatic widening of the market income distribution. [▶ Fig1](#) [▶ Fig2](#)
- ② **Main finding no. 2:** Redistributive system as a whole crucial at taming distributional impacts of the crisis. But effect was not full and marked by two distinct phases. [▶ Fig3](#) [▶ Fig4](#) [▶ Fig5](#)
- ③ **Main finding no. 3:** All types of redistributive instruments had significant contributions. Cash-transfers were the most important. [▶ Fig6](#) [▶ Fig7](#)

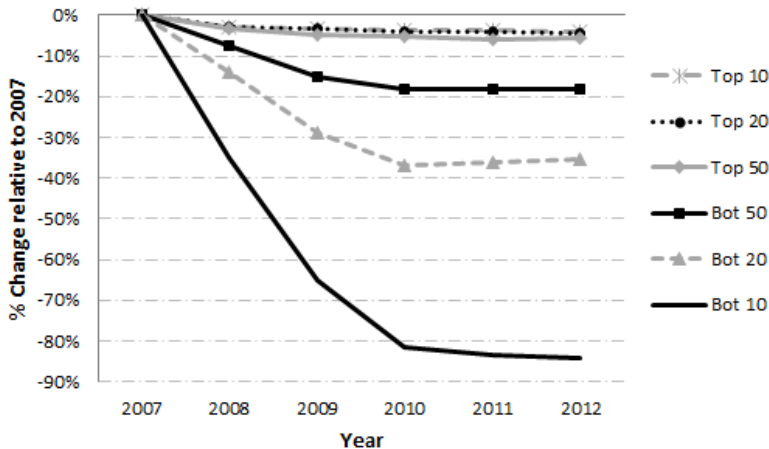
1. Widening of market income distribution (I) [Return](#)

Figure 1 : Summary measures of market income inequality



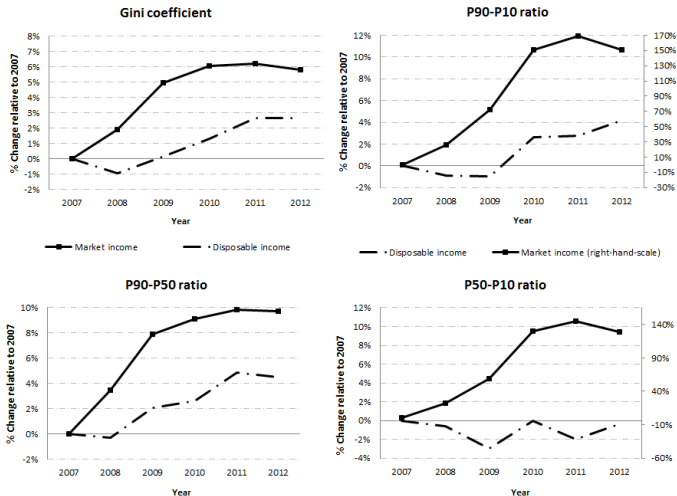
1. Widening of market income distribution (II) [Return](#)

Figure 2 : Average market income by income group



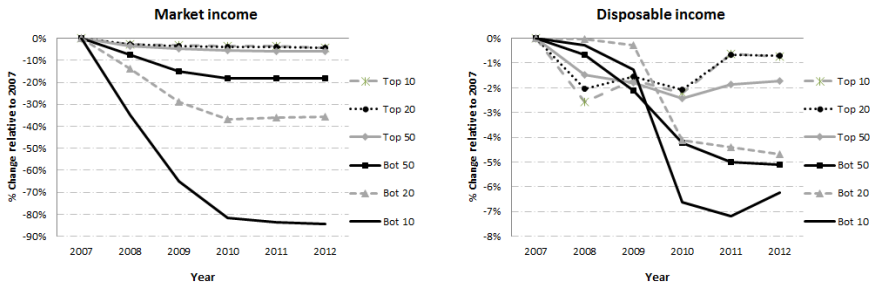
2. Overall cushioning effect of T&T system (I) [Return](#)

Figure 3 : Summary measures of market and disposable income inequality



2. Overall cushioning effect of T&T system (II) [Return](#)

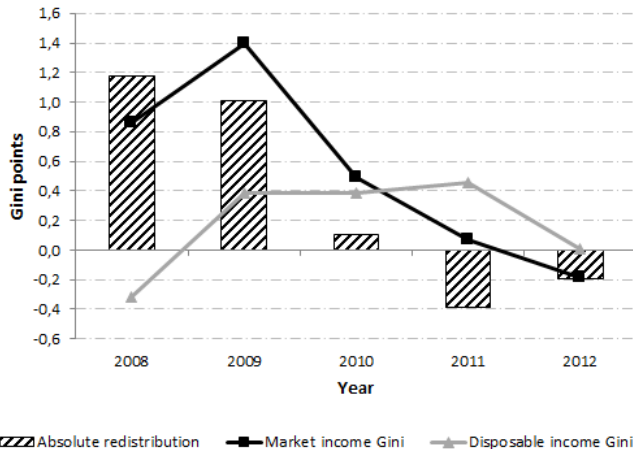
Figure 4 : Average market and disposable income by income group



2. Overall cushioning effect of T&T system (III)

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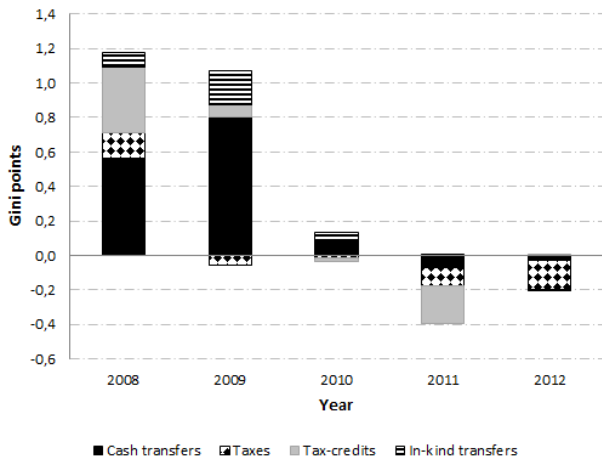
Figure 5 : Annual change in absolute redistribution



3. Partial cushioning effects of T&T system (I)

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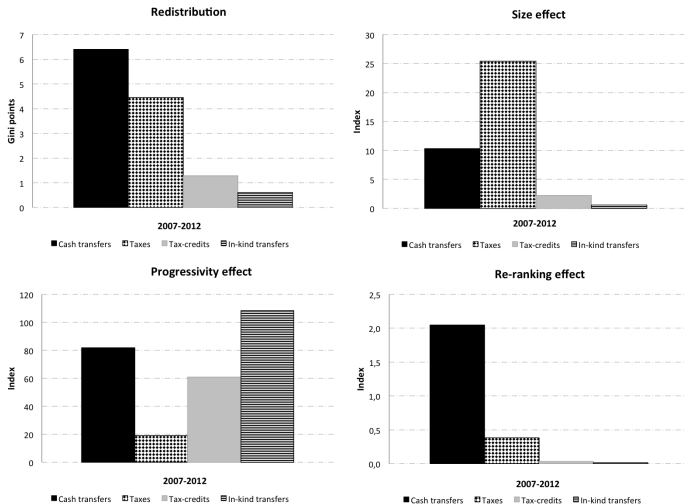
Figure 6 : Components of annual change in absolute redistribution



3. Partial cushioning effects of T&T system (II)

[Return](#)

Figure 7 : Drivers of redistribution



- 1 Introduction
- 2 The US tax and transfer system
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Main conclusions (I)

- This paper provided evidence on the existence of **substantial adverse distributional effects of the 2007-2008 crisis**
 - Middle of the market income distribution lost relative to top, bottom lost substantially relative to both middle and top
- It shed light on the importance of **redistributive mechanisms as countercyclical tools** to offset inequality increase following the crisis
 - Disposable income inequality increased considerably less than market income inequality

Main conclusions (II)

- It showed that, when taking a longer term view, the **cushioning effect of T&T system was only partial**
 - Both bottom and middle of the disposable income distribution lost relative to the top after 2 first post-crisis years, particularly bottom
- It **set the stage for theoretical analysis** of importance of stabilising income distribution after a crisis and role of redistributive policies as macro stabilisation tools

Thank you for your attention!