The interaction between income distribution and the Great Recession
Stylized Facts on the Cross Country nexus

NERO-Meeting OECD
Paris, 18th June 2012

Karl Aiginger
The hypothesis:

- Income distribution became less equal in the years preceding Great Depression as well as Great Recession

⇒ Increasing inequality one cause of crises

The research questions:

Did countries with larger shifts in the distribution suffer a deeper/longer output loss in 2007/2010?

Thus with less equality (level)?
Related own papers

- Strengthening the Resilience of an Economy. Intereconomics, October 2009
How distribution effects stability: Three hypotheses

- Decreasing wage shares reduce growth, if the "gap" is not invested (underinvestment)

- Polarization reduces consumption because of lower consumption ratios for rich people (underconsumption)

- Inequality fosters volatility:
  - investment and luxury goods more volatile *

Policy reactions to rising inequality may mitigate problems in the short run, but aggravate them in the long run

- Expansionary monetary policy
- Cheap credits to low income people
- High government deficits
- Export strategies
Inequality may not cause crises, but be "co-determined" by third causes

- Policy shift, globalization, technology
- Education
- Technology
- Currency issues
- Some hypotheses refer to polarization, some to profit share
- Evidence on past crises (Atkinson, Bordo, Acemoglu) *

⇒ No cross section investigations so far relating to Great Recession 2007/10
The deepness of the Great Recession (output performance)

Four sub-indicators using GDP data:

- GDP change in 2009
- Cumulated change of GDP 2008/09/10
- Decrease in quarterly GDP from peak to trough
- “Trend” change 08/09/10 vs. 2000-2007

⇒ Single indicator: First Principle Component maximizing the information value
Top and low performers in output 2007/10

- **Top 10:**
  China, India, Poland, Australia, Korea, Switzerland, Canada, New Zealand, Norway, Belgium

- **Low 10:**
  Greece, Hungary, Finland, Romania, Slovenia, Iceland, Ireland, Lithuania, Estonia, Latvia

Method: Principle Component Analysis (Aiginger, 2011)
Level of inequality
(and pre-crisis change)

Five indicators (three personal, two functional)

- Gini of household incomes 2005 (and 2005 vs. mid 80s)
- Poverty rate mid 2000s (and vs. mid 90s)
- Interquintile ratio mid 2000s (and vs. mid 90s)
- Wage/income ratio 2007 (and 2007 vs. 1995)
- Wage/income ratio adjusted for number of employees

Single indicator: PC for pre-crisis level (PC-DISTR-level)

Single indicator: PC for pre-crisis change (PC-DISTR-change)
The disappointing first results

No correlation between

Output performance and level of distribution

$R = 0.08, 0.05, 0.07, -0.06, -0.06, 0.08$

Output performance and change in distribution

$R = -0.33^*, 0.06, -0.01, -0.01, -0.01, -0.05$

Neither with overall indicator (bold)

Nor with any single indicator (with the exception of Gini change)
The relation between output performance and level of distribution

The image shows a scatter plot with data points representing different countries. The x-axis represents the PC-Distribution level, while the y-axis represents the PC-Output level. The plot is divided into four quadrants, each with different combinations of PC-Distribution and PC-Output levels:

- Top left: PC-Dist: low and PC-Output: high; N = 9 (Average output performance rank: 13)
- Top right: PC-Dist: high and PC-Output: high; N = 13 (Average output performance rank: 14)
- Bottom left: PC-Dist: low and PC-Output: low; N = 8 (Average output performance rank: 32)
- Bottom right: PC-Dist: high and PC-Output: low; N = 4 (Average output performance rank: 30)
The top performers in output and their position in equality level 2005

High performers in crisis, high equality 2005

Switzerland (6; 6)

Norway (9; 13), Belgium (10; 11)

High performers in crisis, low equality 2005

Poland (3; 34), Korea (5; 25), New Zealand (8; 30)

China (1; 27), India (2; 20) *

Average rank of 10 top performers in output 20

Remark: blue = rank in PC Output
red = rank in equality level
The low performers in output and their position in equality level 2005

Low performers in crisis, low equality 2005 (level)

Lithuania (35; 24), Latvia (37; 19), Estonia (36; 26),
Greece (28; 33), Ireland (34; 28), Romania (31; 31)

Low performers in crisis, high equality 2005

Iceland (33; 1), Slovenia (32; 5), Finland (30; 7),
Hungary (29; 4) *

⇒ Average rank of 10 low performers in output is 18

Remark: blue = rank in PC Output
       red = rank in equality level
## Performance of countries with "improving" distribution (ranks)

<table>
<thead>
<tr>
<th>PC-Distribution change</th>
<th>PC-Output</th>
<th>PC-Distribution level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Rank</td>
<td>Rank</td>
</tr>
<tr>
<td>Iceland</td>
<td>1</td>
<td>33</td>
</tr>
<tr>
<td>Turkey</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Greece</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td>Portugal</td>
<td>4</td>
<td>15</td>
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<tr>
<td>Spain</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Denmark</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>Italy</td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>Switzerland</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Belgium</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Korea</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td><strong>Top 10</strong></td>
<td><strong>18</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>
## Performance of countries with increasing inequality (ranks)

<table>
<thead>
<tr>
<th></th>
<th>PC-Distribution change</th>
<th>PC-Output</th>
<th>PC-Distribution level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovenia</td>
<td>28</td>
<td>32</td>
<td>5</td>
</tr>
<tr>
<td>Slovakia</td>
<td>29</td>
<td>23</td>
<td>15</td>
</tr>
<tr>
<td>Canada</td>
<td>30</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Poland</td>
<td>31</td>
<td>3</td>
<td>34</td>
</tr>
<tr>
<td>Latvia</td>
<td>32</td>
<td>37</td>
<td>19</td>
</tr>
<tr>
<td>Estonia</td>
<td>33</td>
<td>36</td>
<td>26</td>
</tr>
<tr>
<td>Austria</td>
<td>34</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>Norway</td>
<td>35</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Finland</td>
<td>36</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>Germany</td>
<td>37</td>
<td>18</td>
<td>14</td>
</tr>
<tr>
<td><strong>Low 10</strong></td>
<td></td>
<td><strong>21</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>
## Stylized Facts: Correlation output performance vs. distribution

### Values

<table>
<thead>
<tr>
<th></th>
<th>Level</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC distribution</td>
<td>0.08</td>
<td>-0.05</td>
</tr>
<tr>
<td>Gini</td>
<td>0.08</td>
<td>-0.33 xx</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>0.05</td>
<td>0.06</td>
</tr>
<tr>
<td>Interquintile ratio</td>
<td>0.07</td>
<td>-0.01</td>
</tr>
<tr>
<td>Wage share (^1))</td>
<td>-0.06</td>
<td>-0.01</td>
</tr>
<tr>
<td>Wage share adjusted (^1))</td>
<td>-0.06</td>
<td>-0.01</td>
</tr>
<tr>
<td>Wage rate long (^1))</td>
<td>-0.30 x</td>
<td></td>
</tr>
<tr>
<td>Wage rate long adjusted (^1))</td>
<td>-0.34 xx</td>
<td></td>
</tr>
</tbody>
</table>

1) Remark: Minus implies that output performance better for lower wage share (more inequality)

x: t-statistic at 5% level. xx t-statistic at 10% level.
Correlation: 0.34 - significant at 5% level

- Several top performers had decreasing Ginis
  - Australia (4, 9) - Korea (5, 4) – Switzerland (6, 3) –
  - Canada (7, 16) - Belgium (10, 8)

- Several low performers had increasing inequality:
  - Latvia (37, 37) - Estonia (36, 33) - Lithuania (35, 36) –
  - Slovenia (32, 27) - Romania (31, 35) - Hungary (29, 31)

- A tentative Interpretation:
  - Anglo Saxon countries group 1
  - New member countries group 2
Better output performance/decreasing Gini
The surprise: Output better in countries with decreasing wage rate

- Change in wage ratio 2005/1995 not significant
- Extending “upcoming period” to 1985-2007
  \[ R = 0.34 \text{ significant at 5\% level (p = 0.04)} \]
- 6 of top 10 have decreasing long run wage ratio
  specifically NO, PL, NZ, AUS, CA, BE
  only 2 of top 10 increasing wage ratio: CH, KOR
- Low performers with increasing wage: GR, RO, LT, EE

Caveat: direction of causality?
Increasing wage rate does not increase resilience.
A tentative hypothesis:

- Long run polarization decreases resilience
- Wage shares increases do not foster resilience
- Rational for the "surprise"
- Wage increases below productivity, lead to unsustainable current account deficits
- Technological competitiveness enables stable profits and resilience
Robustness checks

- More on correlations
- Outlier elimination (China, India, Iceland)
- Ranks instead of quantitative values
- Adding inequality to “best practice” in regressions
- Specifically to current account 2007 (CA)
  - Inequality level marginally significant (+)
  - Inequality change significant at 5 % (-)
  - Gini change insignificant
Interactions between determinants of the depth of the crisis

- There is an interaction between inequality and CA
  - Gini change works through current accounts
  - Other components impact additional to CA

- Countries with wage increases larger than productivity lose competitiveness

- Lower wage shares seem to have cushioned crisis
Methodological Caveats 1

- Data quality (wage shares/part time/household/Individuals)
- No causality analysis possible, no panel econometrics
- Long run data seem to be more important than short run
- Dependant variable: one crisis only
- Cross section evidence maybe difficult in world with globalizing trade and finance
Methodological Caveats 2

- Upcoming period too short (10-20 years)
- Country sample too small (37)
- Output performance insufficiently measured
- Crisis not yet over (Greece 2011, 2012)
- Shifts in distribution not measured adequately (tail risks, uncertainty)
What could have happened economically

- Lower wage rate and high polarization increases global volatility, not the national economy
- Countries are hit if they have fundamental weaknesses, not only those from distribution
- Countries could counteract increasing volatility by distribution according to different strategies (openness/credits/redistribution/subsidies)
- Distribution is not a single important component but only if it interacts with other
- Current account, credit booms, sovereign debt are weaknesses amplified if distribution changes
Further research is needed

- Testing the influence of different time spans
- Including policy reactions (leverage, deficits etc)
- Share of industrial sector (and its development)
- Socioeconomic systems (liberal, coordinated, emerging countries)
- Investigation of interactions
  - Current accounts, Gini, wage share
  - Liberalization – current accounts
No easy cross section link between crisis and distribution

If anything there could be a bifurcation hypothesis
- Increasing wage share did not stabilize (aggravate)
- Decreasing GINIS increased resilience

Research on crisis and distribution is interesting
- It is important to find factors increasing resilience
- Impact of polarization/decreasing wage shares
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Towards a new path of growth for Europe (Welfare, Wealth and Work for Europe)

- **Goal:**
  - More social, ecological, dynamic; consistent with EU 2020 strategy (smart, sustainable, inclusive)

- **Tendered as 7th Framework Program**
  - Winner: WIFO + team of 32 partners, 4 years programme

- **Start:** April 2012
Boards of WWWforEurope

- **Scientific Board:**

- **Policy Board:**
Challenges for Europe defined in WWWforEurope

- Globalisation
- Welfare model under pressure
- Demography/Ageing
- New technologies and post industrialism
- Ecological issues/climate change *

Constraints:
- deficits and public debts
- Imbalances in world and within Europe
- Instability of financial system.
The 5 main “areas” of the WWW project
(New path of growth and social development for Europe)

- European Welfare State
- Ecological and biophysical dimension of new path
- Drivers for change: innovation, industrial policy, innovation policy
- New governance and institutions on the EU level
- Regions in transition
The project in a nutshell

**CHALLENGES**
- Environment
- New technology & globalization
- Ageing
- Fiscal constraints
- Imbalances

**Socio-ecological transition**
- towards a new path of growth

**Welfare and labour**
- under fiscal and demographic restraints

**R&D, knowledge society and social innovation**
- towards the new path

**Environmental sustainability**

**Governance structures**
- promoting and adapting for transition

**Regional and local institutions**
- under regional diversity