Income distribution in recession in Nordic countries

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Outline

Introduction

Income distribution and the business cycle

Nordic recessions

Income distribution in the 1990s recession(s)

Income distribution in the Great Recession

Discussion

Concluding comments
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▶ the Nordic countries have extensive welfare states (Esping-Andersen, 1990; Korpi and Palme, 1998)
▶ distributional outcomes in the cross section favorable (i.e., low inequality) (Atkinson, Rainwater, and Smeeding, 1995)
▶ longer-run measures (intra- and inter-generational inequality) also favorable (Aaberge et al., 2002; Björklund and Jäntti, 2009; Burkhauser and Couch, 2009)
▶ small open economies (such as the Nordic ones) vulnerable to large economic shocks – is inequality affected?
This talk

- discuss a traditional way of examining the sensitivity of income distribution to macroeconomic variation (with evidence for UK)
- discuss two macroeconomic shocks that hit the Nordic countries in early 1990s and late 2000s
- examine inequality during the first shock (all Nordic countries)
- compare inequality during the two shocks (mainly Sweden)
- look at longer-term worries
- conclude

- I draw on papers with many coauthors, including Jäntti and Jenkins (2010), Aaberge et al. (2002), and Björklund and Jäntti (2012)
Inequality and real income around 2004 (LIS Wave VI)

Source: Own calculations based on LIS data (Luxembourg Income Study Database (LIS), 2011)
Relative inequality trends (Gini) in LIS

<table>
<thead>
<tr>
<th>Year</th>
<th>Gini coefficient of disposable income</th>
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<tbody>
<tr>
<td>1980</td>
<td>0.2</td>
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<td>2000</td>
<td>0.3</td>
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</table>

Source: Own calculations based on LIS data (Luxembourg Income Study Database (LIS), 2011)
**Long-run trends in income inequality in selected OECD countries**

Average annual growth across the income distribution ca 1985-2008

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
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<th>Top 10 %</th>
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<td>1.5</td>
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<td>Sweden</td>
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<td>2.4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2.1</td>
<td>0.9</td>
<td>2.5</td>
</tr>
<tr>
<td>United States</td>
<td>1.3</td>
<td>0.5</td>
<td>1.9</td>
</tr>
<tr>
<td>OECD27</td>
<td>1.7</td>
<td>1.3</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Source: OECD (2011)
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Inequality across the business cycle

▶ Blinder and Esaki (1978) examined inequality wrt. both inflation and unemployment, inspired by pronouncements on the harmfulness of inflation for the poor (see also Metcalf, 1969; Thurow, 1970)

▶ issue studied in **US** i.a. by Blank and Blinder (1986), Beach (1977); **UK** Nolan (1988-89), Jäntti and Jenkins (2010); **Sweden** Björklund (1991); **Canada** McWatters and Beach (1990)

▶ the typical finding is that unemployment is positively associated with increases in inequality, inflation not at all or negatively
Parker (2000) critically reviews the earlier approaches
Parker points out that time series tend to be integrated, so one should look for cointegration relations among the data.

...but (many popular) inequality indices are logically bounded (e.g., Gini coefficient, quantile group shares) (Jäntti and Jenkins, 2010)
a logically bounded variable can not by integrated and thus can not be cointegrated
A bounded variable and a random walk

- $S_{i,t}$ is the share of the $i$th income quintile group in year $t = 1, \ldots, T$; $0 \leq S_{1,t} \leq \cdots \leq S_{5,t} \leq 1$; it follows that $\text{Var}(S_{i,t}) < \infty, \forall t$

- consider the simplest possible case of a variable that is integrated of order 1 [$I(1)$], the random walk:

$$S_{i,t} = S_{i,t-1} + \varepsilon_{i,t}, \quad \varepsilon_{i,t} \sim N(0, \sigma_i^2)$$  \hspace{1cm} (1)

- we know that

$$S_{i,t} = \sum_{\tau=0}^{t} \varepsilon_{i,t-\tau} \Rightarrow$$

$$\text{Var}(S_{i,t}) = t\sigma^2 \Rightarrow$$

$$\lim_{t \to \infty} \text{Var}(S_{i,t}) \to \infty.$$  \hspace{1cm} (2)

- it follows that examining the degree of integration in income shares, or the Gini coefficient, is fruitless
Inequality and the business cycle using parametric distributions

- one option would be to specify a joint distribution function for income and the macroeconomic variables of interest $F(Y, U, \pi; \{t\})$, and deduce the relevant structural relationships based on a theoretical model

- another, purely descriptive/empirical alternative is to regress estimated parameters of a parametric distribution function on macro variables

- thus, instead of
  \[ I_t = x'_t \beta + \varepsilon_t, \]  
  (3)
  formulate
  \[ \theta_t = X_t \beta + \varepsilon_t; \]  
  (4)

- find the empirical relationships of interest from
  \[ I[F(y; \hat{\theta}_t)] = I[F(y; X_t \hat{\beta})]. \]  
  (5)
Income inequality and business cycle in UK
Source: Jäntti and Jenkins (2010)
Income inequality and business cycle in UK

Poorest fifth: Non-Employment

Richest fifth: Non-Employment

Poorest fifth: Inflation

Richest fifth: Inflation
Why are associations absent?

- the “road” from macroeconomic fluctuation to income inequality long (see OECD analytical framework); not all stages much affected by cycles
- protective effect of policy?
- unemployment less unequally distributed than one might think?
- effects on different groups and income components operate with different lags, making it hard to measure effects
- we may be asking both too much and too little using time series methods – descriptive analysis instead
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GDP per capita in selected countries

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<thead>
<tr>
<th>Year</th>
<th>DEU</th>
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GDP per capita in selected countries

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<td>2010</td>
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Source: International Monetary Fund (IMF) World Economic Outlook Database.
Unemployment in selected countries

<table>
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<th></th>
</tr>
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<tr>
<td>DNK</td>
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<td>GBR</td>
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<tr>
<td>SWE</td>
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<td></td>
</tr>
<tr>
<td>USA</td>
<td></td>
<td></td>
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</table>
Income inequality in Nordic countries in the late 2000s
Gini coefficient for disposable income (national definitions)

<table>
<thead>
<tr>
<th>Country</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
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<tr>
<td>Finland</td>
<td>0.273</td>
<td>0.280</td>
<td>0.268</td>
<td>0.259</td>
<td>0.266</td>
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<td>Iceland</td>
<td>0.40</td>
<td>0.44</td>
<td>0.37</td>
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<td>Norway</td>
<td>0.243</td>
<td>0.252</td>
<td>0.248</td>
<td>0.241</td>
<td>0.245</td>
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<tr>
<td>Sweden</td>
<td>0.288</td>
<td>0.307</td>
<td>0.289</td>
<td>0.291</td>
<td>0.297</td>
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</table>
Inequality in Iceland

![Graph showing Gini coefficients for disposable earnings, all incomes included, disposable earnings excluding capital gains, and the bubble effect difference between Ginis. The years range from 1993 to 2010 with Gini coefficients plotted on the y-axis. The graph displays a significant rise in inequality during the 2000s, followed by a sharp decline post-financial crisis.]
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Unemployment shocks in and income inequality in Nordic countries in 1990s

- Nordic countries in early 1980s had likely among the most equal income distributions
- unemployment shocks to all Nordic countries in late 1980s/early 1990s (Denmark had persistently high and increasing unemployment)
- what consequences for inequality did increased unemployment have?
Unemployment and income distribution – lessons from the 1990s

Denmark

Norway

Unemployment

The Gini coefficient of disposable income

Source: Aaberge et al. (2000)
Unemployment and income distribution – lessons from the 1990s

Finland

Unemployment

The Gini coefficient of disposable income

Source: Aaberge et al. (2000)
### Components of the Gini coefficient

<table>
<thead>
<tr>
<th>Income source</th>
<th>Denmark</th>
<th>Norway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings</td>
<td>0.304</td>
<td>0.311</td>
</tr>
<tr>
<td>Self-employment</td>
<td>0.049</td>
<td>0.059</td>
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<tr>
<td>Capital income</td>
<td>0.017</td>
<td>0.00</td>
</tr>
<tr>
<td>Unempl. ben.</td>
<td>-0.008</td>
<td>-0.012</td>
</tr>
<tr>
<td>Public transfers</td>
<td>-0.005</td>
<td>-0.018</td>
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<tr>
<td>Taxes</td>
<td>-0.38</td>
<td>0.139</td>
</tr>
<tr>
<td>Disposable income</td>
<td>0.220</td>
<td>0.209</td>
</tr>
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</table>

Source: Aaberge et al. (2000)
Unemployment and income distribution – lessons from the 1990s recession

Components of the Gini coefficient

<table>
<thead>
<tr>
<th>Income source</th>
<th>Finland</th>
<th>Finland</th>
<th>Sweden</th>
<th>Sweden</th>
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</thead>
<tbody>
<tr>
<td>Earnings</td>
<td>0.269</td>
<td>0.276</td>
<td>0.291</td>
<td>0.327</td>
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<tr>
<td>Self-employment</td>
<td>0.049</td>
<td>0.032</td>
<td>0.002</td>
<td>0.006</td>
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<tr>
<td>Capital income</td>
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<td>0.047</td>
<td>0.071</td>
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<tr>
<td>Unempl. ben,</td>
<td>−0.004</td>
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<td>−0.002</td>
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<tr>
<td>Public transfers</td>
<td>−0.021</td>
<td>−0.005</td>
<td>−0.014</td>
<td>−0.021</td>
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<tr>
<td>Taxes</td>
<td>−0.141</td>
<td>−0.128</td>
<td>−0.132</td>
<td>−0.119</td>
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<tr>
<td>Disposable income</td>
<td>0.208</td>
<td>0.204</td>
<td>0.214</td>
<td>0.223</td>
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<tr>
<td></td>
<td>(0.002)</td>
<td>(0.003)</td>
<td>(0.004)</td>
<td>(0.010)</td>
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Source: Aaberge et al. (2000)
What did we learn?

- inequality changed little (varying patterns)
- explanations:
  - unemployment benefits vary in generosity, but in conjunction with other benefit systems, UB may have limited income losses, but not by much
  - unemployment may have been reasonably evenly distributed across the distribution, but also here, this explains little
  - intra-household adjustments also do not explain much
- the recession involves many complex mechanisms; a model that accounted for interactions between income components and allow different groups to fare differently would probably be needed
- the move to dual tax systems (at least in Sweden and Finland) coincides with the shock, further complicating matters
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the Great Recession is the second large macroeconomic shock to hit Sweden in a generation

the two recessions quite different:

- 1990s: bursting housing/debt bubble, hike in real interest rates, currency devaluation (internal reasons); steep increase in unemployment, weak public finances
- GR: larger decline in GDP, driven by large negative shock to export demand, strong public finances

effect on income inequality?
The great recession and income distribution – Sweden

GDP change

Source: (Björklund and Jäntti, 2012)
The great recession and income distribution – Sweden

GDP change

Source: (Björklund and Jäntti, 2012)
The great recession and income distribution – Sweden

Unemployment

[Graph showing unemployment rates from 1985 to 2011 with a significant drop in 2009.]
The great recession and income distribution – Sweden

Unemployment

[Graph showing unemployment rates over time with labels for months since Jan. 1991 and Jan. 2007.]

- Months since Jan. 1991
- Months since Jan. 2007
The great recession and income distribution – Sweden

Real income change 1985-2009
The great recession and income distribution – Sweden
Real income change in the 1990s and 2000s recession
The great recession and income distribution – Sweden
Real income change 1985-2009 – 10th percentile
The great recession and income distribution – Sweden
Real income change 1985-2009 – 50th percentile (median)
The great recession and income distribution – Sweden

Inequality of disposable income 1985-2009
The great recession and income distribution – Sweden
Composition of inequality 1985-2009
The great recession and income distribution – Sweden
Composition of inequality 1985-2009

[Graph showing the composition of inequality over time, with different lines representing earnings, capital income, transfers, and taxes.]
Inequality in two crises (and aftermath)
Disposable and factor income; national definitions

<table>
<thead>
<tr>
<th>Year</th>
<th>Gini Coefficient</th>
<th>Finland</th>
<th>Sweden</th>
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<td>1980</td>
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<tr>
<td>2010</td>
<td>0.5</td>
<td>●</td>
<td>●</td>
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Poverty rates for all persons and children in lone-parent and two-parent households in Sweden
Income and life expectancy in Finland

(Tarkiainen et al., 2011)
Simulated and realised levels of inequality in Finland 1995-2004

<table>
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<th></th>
<th>1995</th>
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<th>2004</th>
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<td><strong>Overall inequality</strong></td>
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<tr>
<td>Simulated</td>
<td>105.2</td>
<td>112.1</td>
<td>113.8</td>
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<td>Realised</td>
<td>94.6</td>
<td>109.1</td>
<td>113.1</td>
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<tr>
<td><strong>Inequality at low end</strong></td>
<td><strong>log(p50/p10)</strong></td>
<td></td>
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</tr>
<tr>
<td>Simulated</td>
<td>52.8</td>
<td>58.7</td>
<td>60.0</td>
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<tr>
<td>Realised</td>
<td>49.2</td>
<td>56.7</td>
<td>59.3</td>
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</table>
Short- and long-run effects of government policy on income distribution in Sweden

Källor: Statistiska centralbyrån och egna beräkningar.
Income and political power

- who, in terms of income, do decision-makers listen to?
- i.e., are income differences associated with differences in political influence?
- if yes, will *increased* inequality of income lead to *increased* inequality of political influence?
Income and political power (in the US)
(Bartels, 2006)
Income and political power (in the US)
(Bartels, 2005)

Figure 3: Democratic and Republican Senators’ Responsiveness to Income Groups

Responsiveness (Regression Estimate)

Democrats
Republicans

Low Income Middle Income High Income
Income and political power (in the US)
Gilens (2005)
Income and political power (in the US)
Gilens (2005)
Questions where Preferences of the 50th and 90th Income Percentiles Diverge

Predicted Probability of Change

Percent Favoring Change
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Concluding comments

- Inequality has increased in many countries...
- ...including the Nordic ones
- The effect of recessions on income inequality dampened by income protections
- Inequality increases driven by
  - Changes in taxation and capital markets (income shifting, increased capital income inequality, lower progressivity)
  - Stagnant transfers at the bottom
The equality multiplier

- traditional view: equity-efficiency trade-offs
  redistribution desirable (more equality is good), but costly
  (reduces efficiency through disincentives): find suitable balance

- modern view: the equality multiplier (Barth and Moene, 2009)
  - equal outcomes in labour markets and tax-and-transfer policies reinforce each other
  - more equality not necessarily inefficient, but...
  - shocks toward increased inequality may lead to reinforcing upward spiral
Concluding remarks

- increased cross-sectional inequality not necessarily followed by negative consequences, but...
- ...we may value small income differences in and of themselves
- greater inequality suggest re-evaluating policies (e.g., higher pension-age limits for high-income earners)
- the consequences of rapid rise in income inequality important topic for future research:
  - long-run (economic) outcomes
  - long-run (health, education, etc) outcomes
  - citizenship, civic participation, political influence

Aaberge, Rolf et al. (Dec. 2002). “Income Inequality and Income Mobility in the Scandinavian Countries Compared to the United States”. In: Review of Income and Wealth 48.4, pp. 443–469.


McWatters, Catherine J and Charles M Beach (Feb. 1990). “Factors behind the changes in Canada’s family income distribution and the share of the middle class”. In: Relation Industrielles, pp. 118–133.

death”. In: Journal of Epidemiology and Community Health x.y. doi:10.1136/jech.2010.123182, x–y.