Poverty and Poverty Reduction: Relationship between alternative measures of social spending and poverty rates across countries

Koen Caminada

Invited Guest Lecture
Central University of Finance and Economics, November 18th 2015
Beijing, China
Introduction

- Koen Caminada. professor Empirical analysis of social and tax policy, Leiden University

- Scientific Director Institute of Tax Law and Economics

- Scientific director Research Program Reforming Social Security

- Topics
  - Distribution tax-benefits social security and pensions
  - Tax policy / progression tax system
  - Reforming social an tax regulations
  - Poverty EU and OECD / Lisbon Agenda / Europe 2020
Global Research Team

- Kees Goudswaard, Professor of Economics, Leiden University
- Chen Wang PhD, Shanghai University of Economics and Finance
- Janet Wang, China Scholarship Council, Leiden University
- Megan Martin, Senior Policy Associate Center for the Study of Social Policy, Washington
- Ferry Koster, Distinguished Professor of Innovative Collaboration, Erasmus University Rotterdam
Related poverty papers


www.economie.leidenuniv.nl
Poverty and Poverty thresholds

Monetary poverty in an international setting →

*no agreed-upon definition* of poverty

Research → apply poverty lines – % median income

How many people are at risk of poverty = below 60% of median income?

- China 2002 (PL60: 2,840 yuan) → 31% of population
- Netherlands 2011 (PL60: €11,326) → 11% of population
Thresholds Monetary Poverty 2011

China: 4.873

Countries: Lux, Norway, Switzerland, Austria, Cyprus, NL EU, NL CBS, NL SCP, Denmark, Sweden, Germany, France, Belgium, Finland, Iceland, UK, Ireland, Italy, Slovenia, Malta, Spain, Greece, Czech Rep, Portugal, Slovakia, Poland, Estonia, Croatia, Hungary, Lithuania, Latvia, Bulgaria, Romania.
# Poverty alleviation in China, India, USA and the Netherlands

Lift out of poverty = Poverty primary income -/- Poverty disposable income

= Lift out of poverty by social transfers and taxes

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>India</th>
<th>USA</th>
<th>Neth</th>
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<tr>
<td>Poverty pri</td>
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<td>29%</td>
<td>34%</td>
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<tr>
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<td>Reduction</td>
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## Poverty: Decomposition

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<tr>
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<tr>
<td>Total</td>
<td>11</td>
<td>31</td>
</tr>
<tr>
<td>Children</td>
<td>14</td>
<td>36</td>
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<td>Elderly</td>
<td>7</td>
<td>28</td>
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<tr>
<td>Country</td>
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<td>Population</td>
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</tr>
<tr>
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<tr>
<td>France</td>
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<td>15</td>
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<tr>
<td>Finland</td>
<td>2010</td>
<td>15</td>
</tr>
<tr>
<td>Taiwan/AP of PRC</td>
<td>2005</td>
<td>16</td>
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<tr>
<td>Germany</td>
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<td>16</td>
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<td>Japan</td>
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<td>2010</td>
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<td>South Africa</td>
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<td>31</td>
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<tr>
<td>China</td>
<td>2002</td>
<td>31</td>
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</table>
# Child poverty - living in single-mother families

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<tr>
<th>Country</th>
<th>Poverty Children (PL60)</th>
<th>% Children Living in Single-Mother Families</th>
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<tr>
<td>Finland 2010</td>
<td>12</td>
<td>10</td>
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<tr>
<td>Netherlands 2010</td>
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<td>11</td>
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<td>Taiwan 2005 / AP of PRC</td>
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<td>Germany 2010</td>
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<td>16</td>
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<td>France 2005</td>
<td>18</td>
<td>12</td>
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<tr>
<td>Japan 2008</td>
<td>19</td>
<td>6</td>
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<tr>
<td>Australia 2003</td>
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<tr>
<td>Russia 2010</td>
<td>26</td>
<td>25</td>
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<tr>
<td>Mexico 2004</td>
<td>30</td>
<td>17</td>
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<tr>
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<tr>
<td>China 2002</td>
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<tr>
<td>South Africa 2010</td>
<td>38</td>
<td>49</td>
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<tr>
<td>Brazil 2006</td>
<td>39</td>
<td>18</td>
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</table>
Main factors affecting income distribution and poverty across countries

1. Demographic factors
   The changes in population structure by both age and household type

2. Labor-market trends
   Driving earning inequality

3. Government redistribution
   Cash benefits & household taxes

See OECD (2008 and 2011)

Our focus: ad 3
Welfare state effort and poverty: Europe, USA and China

Tackling the problem

- Convergence of social protection systems is an explicit EU-objective (Nice 1957)
- European objective (Lisbon 2000; Europe 2020)/ OMC
- EU: 84 million people = 17% lives at risk of poverty
- Poverty rates have risen since 2000

Persistence of poverty calls for an explanation

- Why is there still sizable poverty?
- Some counties are more effective: why?
- What can explain cross-country differences in effectiveness?
Background (1): Europe

EU Millennium Goals:

(1) Economic Performance
(2) Social Inclusion

- Targets agreed upon
- Social Inclusion - A set of Social Indicators
- Among them: Poverty breakdown by age / gender
- Formal protocol measuring social indicators
- Benchmarking – best practices - mutual learning
- Open Method of Coordination – Soft Law
Background (2): USA

The States Safety Net

- Targets agreed upon?
- Social Inclusion - A set of Social Indicators?
- Formal protocol measuring social indicators
- Benchmarking – best practices - mutual learning?
- Open Method of Coordination – Soft Law?
Provinces ↔ Coordination?
- Targets agreed upon?
- Social Inclusion - A set of Social Indicators?
- Formal protocol measuring social indicators?
- Benchmarking – best practices - mutual learning?
- Open Method of Coordination – Soft Law?
Poverty and income inequality in east, middle and west China, 2002

<table>
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<tr>
<th></th>
<th>East</th>
<th>Middle</th>
<th>West</th>
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<tr>
<td>Average income (yuan)</td>
<td>10.571</td>
<td>6.282</td>
<td>5.880</td>
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<td>Gini</td>
<td>0.498</td>
<td>0.450</td>
<td>0.495</td>
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<tr>
<td>PL40</td>
<td>15%</td>
<td>18%</td>
<td>24%</td>
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<tr>
<td>PL50</td>
<td>19%</td>
<td>25%</td>
<td>33%</td>
</tr>
<tr>
<td>PL60</td>
<td>24%</td>
<td>32%</td>
<td>41%</td>
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Poverty and income inequality in urban and rural China, 2002

<table>
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<tr>
<td>Gini</td>
<td>0.319</td>
<td>0.415</td>
<td>0.505</td>
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<tr>
<td>PL40</td>
<td>0.1%</td>
<td>29%</td>
<td>19%</td>
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<tr>
<td>PL50</td>
<td>0.3%</td>
<td>39%</td>
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</tr>
<tr>
<td>PL60</td>
<td>0.5%</td>
<td>49%</td>
<td>31%</td>
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Agenda

1. Best-practices of poverty reduction in Europe – comparison with other OECD countries

2. Are (high) levels of social expenditures and (high) poverty rates related (OECD-setting)?
   - public expenditures
   - private arrangements
   - effect of tax systems

Comparative analyses – reforms – social indicators – policy – empirical analysis
At-risk-of-poverty rate after social transfers 2011 (PL 60)

Poverty rate EU27:
- PL 40 = 6
- PL 50 = 10
- PL 60 = 17
- PL EU60 = 22.5

Poverty line:
- PL EU = 60
- PL USA = 30
- PL China = ??

Poverty rate USA 2010 (LIS / OECD):
- PL 40 = 12
- PL 50 = 18
- PL 60 = 25

China PL60 = 31

Source: Eurostat: ECHP/EU-SILC
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<th>2011</th>
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<td>12,3</td>
<td>12,6</td>
<td>0,6</td>
</tr>
<tr>
<td>Belgium</td>
<td>13,0</td>
<td>14,8</td>
<td>15,3</td>
<td>2,3</td>
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<tr>
<td>Finland</td>
<td>11,0</td>
<td>11,7</td>
<td>13,7</td>
<td>2,7</td>
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<tr>
<td>France</td>
<td>16,0</td>
<td>13,0</td>
<td>14,0</td>
<td>-2,0</td>
</tr>
<tr>
<td>Germany</td>
<td>10,0</td>
<td>12,2</td>
<td>15,8</td>
<td>5,8</td>
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<td>21,4</td>
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<td>Ireland</td>
<td>20,0</td>
<td>19,7</td>
<td>16,1</td>
<td>-3,9</td>
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<td>18,9</td>
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<td>13,6</td>
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<td>15,5</td>
<td>15,7</td>
<td>16,1</td>
<td>0,6</td>
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Evidence-based knowledge is lacking – outline presentation

1) Effectiveness of poverty alleviation by social transfers: best-practices across countries (OMC). And the winner is ...?

2) Familiar claim income transfer policy:
Social expenditure goes along with lower poverty levels and higher antipoverty effects across countries. True or false?

Research design

- Measuring effects of taxes and transfers
  - Pre-tax-transfer poverty
  - Post-tax-transfer poverty
  - Absolute antipoverty effect
- Measuring social effort / expenditure
  - Gross public versus Net public
  - Capturing of private social arrangements
- Linkages social protection ↔ poverty
  - Step 1: Antipoverty effect taxes and transfers
  - Step 2: Are high social expenditure rates associated with low poverty rates?
  - Step 3: Social policy areas (redistribution)
Part I - Antipoverty effectiveness of social spending

Standard approach:

- Market income versus disposable income

- Antipoverty effect social transfers and taxes = (a) pre-tax-transfer poverty –/- (b) post-tax-transfer poverty

- Targeting effect (antipoverty effectiveness): poverty reduction per percentage point social spending GDP
  = [(a) – (b)] / social spending % GDP
Broadening the standard approach


- Special feature: treatment of pensions. Public versus private pension plans, and their antipoverty effects through transfers and taxes (contributions) *at one moment in time*.

- Overcoming this bias (pragmatically) by broadening the framework. We also compute the antipoverty effect of taxes and social transfers *other than pension*. Recent data of Eurostat allow such a (new) approach.
Total population: Antipoverty effect transfers and taxes, EU15, 2011

Effect social transfers and taxes
Poverty after social transfers and taxes

Netherlands: 10
Austria: 12
Denmark: 15
Lux: 14
Finland: 14
France: 11
Sweden: 14
Belgium: 13
Germany: 9
Ireland: 24
UK: 14
Portugal: 7
Italy: 5
Spain: 8
EU14: 12
Total population: Antipoverty effect transfers and taxes, EU15, 2011

Effect social transfers and taxes
Poverty after social transfers and taxes

Netherlands
Austria
Denmark
Lux
Finland
France
Sweden
Belgium
Germany
Ireland
UK
Portugal
Italy
Spain
EU14

Poverty after social transfers and taxes
Targeting effect of social expenditures on poverty reduction in the EU

<table>
<thead>
<tr>
<th>Country</th>
<th>Before, pensions included (a)</th>
<th>Before, pensions excluded (b)</th>
<th>After (c)</th>
<th>Net social expenditure 2009 (d)</th>
<th>(a-c)/d</th>
<th>(b-c)/d</th>
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<tr>
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<td>50,9</td>
<td>40,4</td>
<td>16,1</td>
<td>23,3</td>
<td>1,49</td>
<td>1,04</td>
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</table>
Targeting effect of *gross* social expenditures on poverty reduction
Summary of findings

- Each point GDP net social spending alleviates poverty in European countries on average by .5 percentage points.

- Practices of poverty alleviation
  
  **Best practice**
  - Ireland
  - Scandinavia

  **Low score**
  - Italy
  - Greece
  - Spain

- Mutual learning and policy exchanges ....
Part II - Effectiveness of income transfer policies in alleviating poverty

- Vast literature claims “strong negative relationship at country level between the level of social spending and the incidence of poverty” – “arguably one of the most robust findings in comparative poverty research”

Research design (1)

- Cross-country analysis (EU15, OECD28)

- Measuring poverty incidence, around 2004 (2011)
  - OECD: 40%, 50%, and 60% threshold
  - LIS: 40%, 50%, and 60% threshold

- Measuring social effort / expenditure, 2007 (2011)
  - Gross public social expenditures
  - Capturing of private social arrangements
  - Capturing for social expenditures excl. health
  - Capturing for the tax system
Research design (2)

- Linkages social protection ⇐ ⇒ poverty

- Focus on social expenditure
  - Familiar claim: higher social expenditures goes along with lower poverty levels and higher antipoverty effects across countries

- Data Sources: OECD / LIS

- Remarks
  - Controversial debate: absolute or relative poverty?
  - Comparative analyses are rather sensitivity for data source, income concepts, equivalence scales, poverty lines (thresholds), etc
  - Literature study / References
Private social expenditures

- Most analyses of social protection are focused on public programs, but social policy is not restricted to the public domain

- All kinds of private arrangements are substitutes to public programs

- OECD has developed a data set on private social expenditures
Why more private?

- Welfare state reforms, public budget cuts
- Ideology / type of welfare state
- Efficiency gains (private providers have stronger incentives to reduce costs)
- Other
Redistributions impact?

- Private employment-related social benefits mostly re-allocate income between the (formerly) employed population

- Tax advantages towards private pensions and health plans are more likely to benefit the rich

- Expectation: private schemes will generate less redistribution

- Cross country linkage: poverty rates ↔ social expenditures
## Trend Private Social Expenditure, 1985-2011

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<td>0.5</td>
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<td>3.1</td>
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<td>0.5</td>
<td>0.7</td>
<td>3.6</td>
<td>3.3</td>
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<td>0.5</td>
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<td>3.2</td>
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<td>1.9</td>
<td>1.9</td>
<td>4.6</td>
<td>6.6</td>
<td>6.3</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.8</td>
<td>1.1</td>
<td>1.9</td>
<td>3.0</td>
<td>7.6</td>
<td>7.0</td>
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<td>Austria</td>
<td>2.3</td>
<td>2.1</td>
<td>2.0</td>
<td>4.9</td>
<td>6.7</td>
<td>7.5</td>
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<tr>
<td>Belgium</td>
<td>0.8</td>
<td>2.1</td>
<td>2.1</td>
<td>6.3</td>
<td>8.3</td>
<td>10.8</td>
</tr>
</tbody>
</table>
Simple correlation tests across countries

- Coefficient estimated using a linear OLS regression model of cross-sectional data

- Form:  \( Y_{i,t} = A + \beta X_{i,t} + u_i \)

\( Y_{i,t} \) = level poverty indicator of country \( i \) at time-period \( t \)

\( X_{i,t} \) = level of social expenditure as percentage of GDP in country \( i \) at period \( t \)

\( u_i \) = disturbance term
Linkage *gross public* social expenditure and OECD poverty rates (PL 60), 2003-2007

Non-EU15

- All 28 countries: **
- PL 40 and PL 50: ≈ same results
- LIS 24 countries: ≈ similar results
- Mid-1980’s and mid-1990’s: same results

EU15

\[
y = -0.78x + 31.9 \\
\text{Adj } R^2 = 0.381
\]

\[
y = -0.62x + 31.1 \\
\text{Adj } R^2 = 0.287
\]
Linkage gross public **and private** social expenditure and OECD poverty rates (PL 60), 2003-07

- All 28 countries: **
- PL 40 and PL 50: ≈ same results
- LIS 24 countries: ≈ same results
- Mid-1980’s and mid-1990’s: same results

Non-EU15

- \( y = -0.37x + 25.9 \)
- \( \text{Adj R}^2 = 0.098 \)

EU15

- \( y = -0.63x + 32.8 \)
- \( \text{Adj R}^2 = 0.398 \)
Linkage gross social expenditure other than Health and OECD poverty rates (PL 60), 2003-05

- All 28 countries: **
- PL 40 and PL 50: ≈ same results
- LIS 24 countries: ≈ same results
- Mid-1980’s and mid-1990’s: same results
Multiple tests across countries

- Caminada, Goudswaard and Koster (2012)
- Panel analysis: pooled time series cross-section analysis of 24 countries and five points in time (NxT=103), using Beck and Katz’s method of ordinary least squares with panel-corrected standard errors (OLS-PCSE) and a first-order autocorrelation correction (AR1)

- Form: \( Y_{i,t} = A + \beta X_{1i,t} + \ldots + \varepsilon X_{ni,t} + u_i \)

\( Y_{i,t} \) = poverty rate country i at time-period t

\( X_1 \) = gross social expenditure ratios (several)
\( X_2 \) = ratio of the elderly population
\( X_3 \) = unemployment rate of total labor force
\( X_4 \) = GDP per capita $ (current prices and PPS)


Multiple tests across countries

- Sampled data set model
  - gross public expenditure ** ** **
  - gross total expenditure ** ** **
  - idem, excluding Health ** ** **
  - 65+ (% population) ** 0 **
  - unemployment rate 0 ** 0
  - GDP per capita ** 0 0

- Gross social spending is THE driving force as far as differences in poverty levels across countries concerned

Multidimensional approach poverty

- Poverty has (too) many faces

- Complex undertaking (Haveman, 2009)

- Main difficulty: estimation of interaction between dimensions of poverty. One has to define a list of attributes to be taken into account and decide how much weight to give to each of these dimensions.

- EU-context: Social Inclusion – A set of agreed Social Indicators

The linkage net total social expenditure and OECD poverty rates (PL 60), 2003-2007

- All 28 countries: *
- LIS 24 countries: not significant in all cases
- SOCX 2005: not significant in all cases
- Mid-1980’s and mid-1990’s: lag of data
## Summary: $R^2$ and significance

<table>
<thead>
<tr>
<th></th>
<th>Non-EU15 countries</th>
<th>EU15 countries</th>
<th>All countries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross public</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- PL40, OECD data</td>
<td>0.398 *</td>
<td>0.214 *</td>
<td>0.453 **</td>
</tr>
<tr>
<td>- PL50, OECD data</td>
<td>0.429 **</td>
<td>0.336 *</td>
<td>0.441 **</td>
</tr>
<tr>
<td>- PL60, OECD data</td>
<td>0.381 *</td>
<td>0.287 *</td>
<td>0.361 **</td>
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<tr>
<td><strong>Public and private</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- PL40, OECD data</td>
<td>0.113 --</td>
<td>0.345 *</td>
<td>0.344 **</td>
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<tr>
<td>- PL50, OECD data</td>
<td>0.106 --</td>
<td>0.478 **</td>
<td>0.329 **</td>
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<tr>
<td>- PL60, OECD data</td>
<td>0.098 --</td>
<td>0.398 **</td>
<td>0.272 **</td>
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<tr>
<td><strong>Idem, excl. Health</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- PL40, OECD data</td>
<td>0.309 *</td>
<td>0.407 **</td>
<td>0.474 **</td>
</tr>
<tr>
<td>- PL50, OECD data</td>
<td>0.287 *</td>
<td>0.566 **</td>
<td>0.457 **</td>
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<tr>
<td>- PL60, OECD data</td>
<td>0.323 *</td>
<td>0.466 **</td>
<td>0.407 **</td>
</tr>
<tr>
<td><strong>Net total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- PL40, OECD data</td>
<td>-0.058 --</td>
<td>0.046 --</td>
<td>0.184 *</td>
</tr>
<tr>
<td>- PL50, OECD data</td>
<td>-0.068 --</td>
<td>0.105 --</td>
<td>0.162 *</td>
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<tr>
<td>- PL60, OECD data</td>
<td>-0.069 --</td>
<td>0.067 --</td>
<td>0.130 *</td>
</tr>
</tbody>
</table>
Differences EU15 - other OECD countries

Some tentative explanations

- Anti-poverty policies
- National preferences for social spending
- Policy coordination mechanisms to combat poverty
- Other

Caminada and Van Vliet (2011, FISS-paper)
Martin and Caminada (2011, published in PPP)
## Summary of findings

- Correlation poverty and social spending

<table>
<thead>
<tr>
<th></th>
<th>Non-EU</th>
<th>EU</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross public</td>
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</tr>
<tr>
<td>Public and private</td>
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<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Idem, excl. Health</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Net total</td>
<td>0</td>
<td>0</td>
<td>-/0</td>
</tr>
</tbody>
</table>

- Familiar claim *(higher social expenditures goes along with lower poverty levels)* must at least toned down

- A shift from public to private social arrangements – as we’ve seen in some countries - implies less redistribution