Material deprivation and sound public finance in the Eurozone

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European Policy Objectives

- **About Inequality and poverty**

In 2010, with the Lisbon strategy, it was set as target for the entire European Union to have at least 20 million people out of poverty risk and social exclusion (AROPE indicator) by 2020.

However, as the Eurostat (2016) in the year 2010 reveals they were 118.1 millions and in 2014 they became 122.3. Materially deprived people represented the 9% of the whole EU28 population in 2014

- **About fiscal policy**

Repect of fiscal parameters

automatic stabilisers should mitigate the social effects of economic fluctuations, while government structural balance adjustment should help to reach the objective of a sound public finance.

SGP states that public deficit and debt ratios to GDP should not exceed 3 percent and 60 percent, respectively. If the thresholds are exceeded, the structural deficit - that does not depend on the cycle - should not exceed 0.5 percent of GDP, and those countries with a debt/GDP ratio exceeding 60 percent should pursue a path of reduction amounting to an annual value of 1/20 of the GDP (Fiscal Compact)

Aim of the paper

➤ The aim of this paper is to individuate the existence of a relationship between material deprivation, or absolute poverty, and the need to have a "sound" public finance in the Eurozone.

We attempt to answer the question as to whether the effect on growth generated by structural public balance adjustment, implemented to comply to fiscal rules, can account for the objective of poverty alleviation.

To reach the paper's objective, the percentage of the population living in absolute poverty is connected to the cumulative change in structural public balance.

Why these indicators

- **Material deprivation**

This indicator is particularly relevant when considering EU expansion and the diversity of living condition across Eurozone countries, since, in respect to inequality, allows comparison across nations with different levels of GDP per capita (Fusco, et al., 2011; Nolan and Whelan, 2010).

It represents a measure of extreme poverty based on a minimum level of essential goods that people should have access to and can be considered a measure of the real per capita GDP of those at the lowest end of income distribution.

- **Structural public balance adjustment**

The structural public balance is the government public balance component the European institution suggests to reduce or allow to increase to reach the objective of sound public finance and. Since it is deprived from the cyclical components, represents an approximation of exogenous or "discretionary" fiscal policy measures

Existing literature

- Ball et al. (2013),

narrative approach in identifying fiscal restriction (Romer and Romer, 2007),

in 17 OECD countries, fiscal consolidation raise inequality, decreasing wage income shares and increasing long-term unemployment.

- Agnello and Sousa (2013)

"bottom up" approach in identifying fiscal restriction

in 18 OECD countries in the period 1970-2010 a greater income inequality is associated with austerity measures

- Matsaganis and Leventi, (2014a 2014b)

EUROMOD simulation models

Greece, Spain, Italy and Portugal years 2009-2013 especially young people have paid the crisis and that tax-benefits systems were not able to compensate the increased poverty and income differences among individuals

- Crettaz (2015),

2008, 2011 and 2012 survey data from EU- SILC,

In Austria, Germany, Greece, France, Italy, Spain and UK - cuts in social expenditures and labour markets deregulations –- brought to the birth of a new form of poverty: the "in work-poverty".

- Darvas et al. (2014),

 co-movements of fiscal consolidation programs and adverse social condition are registered. It is just a detection of a positive correlation

The rationale for the objective of sound public finance: the case of the Eurozone

The case of the Monetary Union is the only one adopting fiscal rules at a supranational level.

- Externalities linked to the presence of a common currency
    - incentive to run deficits with a fixed-exchange rate
    - the existence of a financial cost of debt default due to bank holdings of government debt
    - the presence of economic costs of a debt default due to the risk of pressure on the ECB to inflate away
- In the absence of a shared policy mechanism, it is desirable to have common rules to
    - Improve predictability, address political failures and increase credibility
    - Enforce "coordination" among different countries

Fiscal policy and growth
Theory before the crisis

- Government spending does not produce long-term effects on growth, Barro (1974)

  this phenomenon applies both to expansionary and to restrictive fiscal policies

- Keynesian effects of non-Keynesian fiscal policies (Giavazzi and Pagano 1990)

  If during periods of fiscal retrenchment, an increase in consumption and investment is observed, it is proof that individuals and firms have revised their permanent income upward and that the cause of this revision is the consolidation of public finances

- Long-term macroeconomic impact of unsustainable expenses (Reinhart and Rogoff, 2010)

  threshold above which the outstanding government debt is associated with reducing rates of growth

Fiscal policy and growth
Theory after the crisis

- Fiscal retrenchments in times of crisis are very likely to have a long-term negative impact on output, causing a downward revision of potential output (Fatas and Summers 2016)

- the reduction in the public deficit has negative and higher-than-expected effects on growth (IMF, 2010 and Blanchard and Leigh, 2013) producing self-fulfilling mechanisms of decreasing growth and deteriorating public accounts (Christiano et al., 2011; Delong and Summers, 2012; Krugman 2013, De Grauwe and Ji, 2013)

- The Keynesian multiplier is positive and is larger in the presence of
  a) a financial constraint (Galì et al., 2007);
  b) wage and price rigidities (Woodford, 2011);
  c) reduced openness to the global economy (Corsetti et al., 2012);
  d) a fixed exchange rate regime, as in the case of the Eurozone (Ilzetzki et al., 2012).

Empirical analysis

- 19 Eurozone countries: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, the Slovak Republic, Slovenia and Spain from 2005 to 2015 for a total of 209 observations

- Data about **material deprivation** are collected from Eurostat EU-SILC statistics http://ec.europa.eu/eurostat/web/income-and-living-conditions/data/database,

- while data on **structural balance** are available on the World Economic Outlook database, October 2017, published by the IMF (http://www.imf.org/external/pubs/ft/weo/2017/02/weodata/index.aspx).

Eurostat calculates a very similar variable, the cyclical adjusted balance (CAB), available in the AMECO database. Both statistical offices rely on the estimates of the production function, frequently updated on the basis of new available information. However, data from the European statistical office are available from AMECO online only from the year 2009 and therefore are not suitable for our analysis.

Material deprivation

- Material deprivation is the number of people materially deprived, expressed as a share of the total population or the percentage of the population that cannot afford at least four of the following nine items: 1) to pay their rent, mortgage or utility bills; 2) to keep their home adequately warm; 3) to face unexpected expenses; 4) to eat meat or proteins regularly; 5) to go on holiday; 6) a television set; 7) a washing machine; 8) a car and 9) a telephone (Eurostat, 2016).

- This indicator is particularly relevant when considering EU expansion and the diversity of living condition across Eurozone countries, since, in respect to inequality, allows comparison across nations with different levels of GDP per capita (Fusco, et al., 2011; Nolan and Whelan, 2010).

- It represents a measure of extreme poverty based on a minimum level of essential goods that people should have access to and can be considered a measure of the real per capita GDP of those at the lowest end of income distribution.

- Its management and correction can be considered a step towards the construction of a social and economic integrated monetary union.

Cumulative structural public balance adjustment

- It is the year-by-year sum of changes in structural public balance.

$$CUM\_SA_i = \sum_{t=1}^{n} SA_{i,t}$$

- Structural adjustment SA was computed as the difference between two consecutive structural balances

$$SA_{t,i} = SB_{t,i} - SB_{t-1,i}$$

- A positive value of means the implementation of restrictive fiscal policy measures, while a negative value indicates expansive fiscal policy measures.

The structural public balance

■ This is said to be the part of government budget deprived from its cyclical component, expressed in terms of the output potential and approximates to discretionary policy measures (OECD definition). The IMF and the EC uses for its calculation a "top-down" approach which is a two-step methodology, computing the cyclical component of the budget first and then subtracting it from the actual budget balance (Mourre et al 2013 Hagemann 1999). The results are expressed in percentage of the output potential.

■ Limits:

1) it is not an observable value

2) the output potential is the results of estimates of the production function, considering changes in total factor productivity and availability of production factors (Anderton et al. 2014).

3) it accounts for the eventual effects on output potential of a change in the availability of the factors of production induced by change in aggregate demand. (Tereanu et al.2014).

■ **It is the variable the IMF and the EC uses for budgetary surveillance: it is the government public balance component the European institution suggests to reduce or allow to increase to reach the objective of sound public finance and therefore the main component of the adjustment programs** implemented in the selected Eurozone countries

Material deprivation and cumulative structural adjustment: panel yearly means
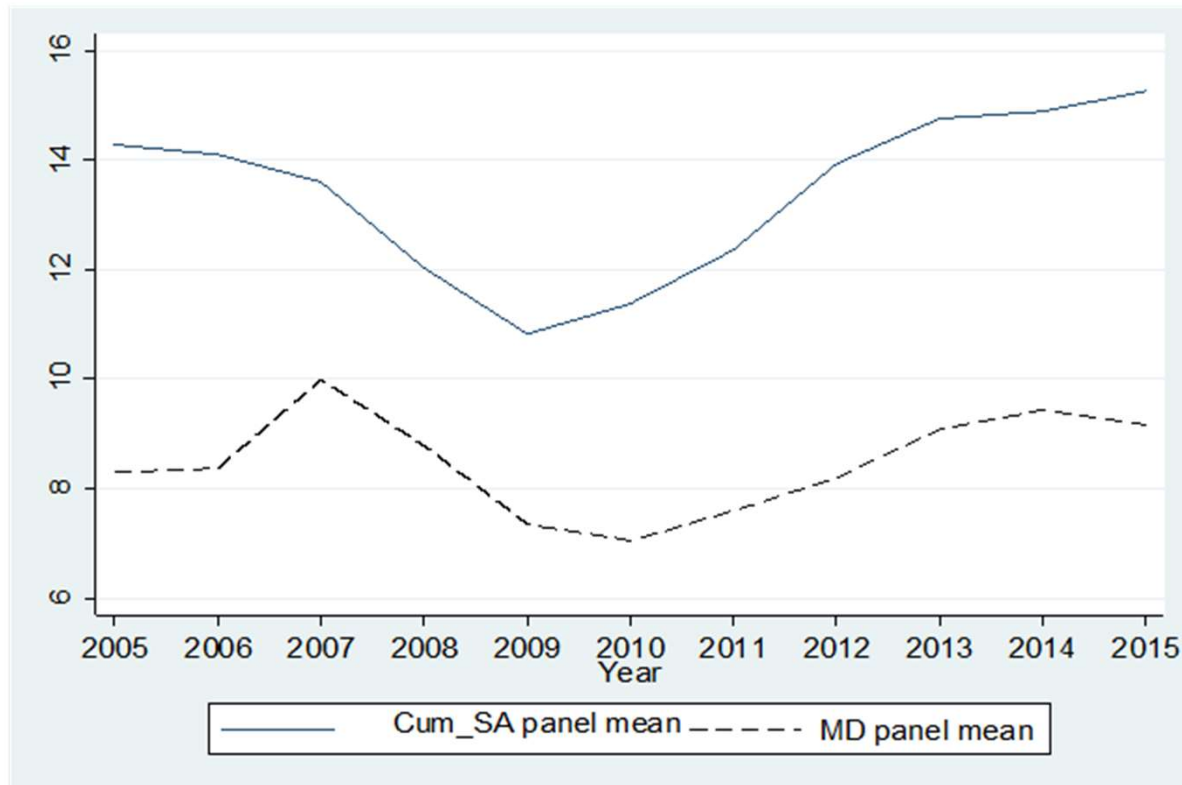
- Figure 1 shows the by-year panel mean of the two indicators considered. The indicators follow a similar path: from 2005 and until 2009, expansionary discretionary policy measures are associated with a reduction in poverty. The cumulative structural adjustments decline from 2007 to 2010, and the same is true for the material deprivation indicator. From the year 2009, when the financial crisis in the Eurozone became a sovereign bond crisis, the cumulative structural adjustments turned from negative (expansionary discretionary measures) to positive (restrictive discretionary measures). In the same years, an increase in the yearly mean value of material deprivation is registered. In the year 2015, a slight decline in absolute poverty is observable, despite the country mean cumulative structural adjustment still increasing.

Change in material deprivation and cumulative structural adjustment from 2005-2015 in single EZ countries
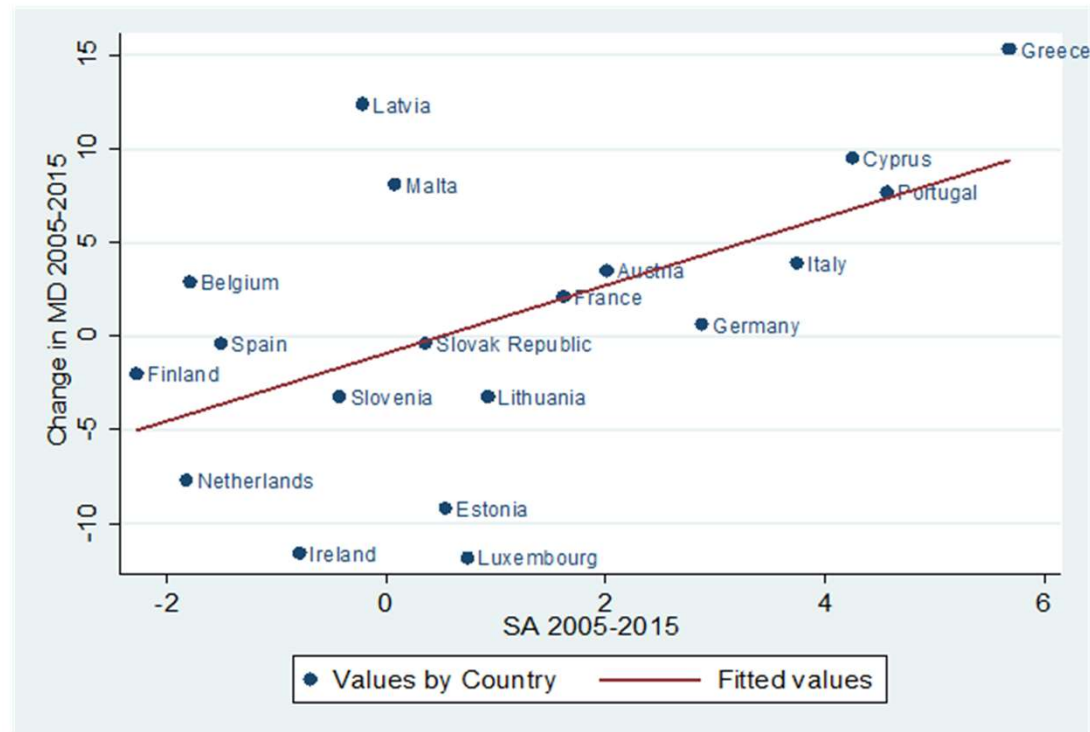
- In Figure 2, the country-specific conditions are considered; the by-country cumulative structural adjustment occurring during the whole period is connected to the change in the percentage of people materially deprived. The graph provides an upward-sloped connection since the fitted line suggests that, on average, an increase in material deprivation is associated with restrictive fiscal policy measures and vice-versa.

- However, the position on the graph of some countries also suggests that country-specific macroeconomic conditions are relevant to defining the dimension of the connection between the two variables. Estonia, Lithuania and Luxemburg, despite having implemented restrictive measures (CUM_SA>0), experienced a decrease in absolute poverty (change in MD <0), while in Belgium and Latvia, the opposite case occurred, with expansive structural balance adjustments (CUM_SA<0) and an increase in material deprivation (change in MD>0).

Methodology

➧ To evaluate the impact of structural adjustments on absolute poverty, the following model was constructed and estimated:

$$MD_{i,t} = \alpha_i + \beta_1 MD_{i,t-1} + \beta_2 CUM\_SA_{i,t} + \beta_3 X'_{i,t} + \varepsilon_i$$

➧ Where $MD_{i,t}$ is the percentage of the total population materially deprived in country i at time t, $Md_{i,t-1}$ is the lagged dependent variable introduced to take into account specific country conditions, $CUM\_SA_{i,t}$ is the cumulative structural public balance adjustment, $X'_{i,t}$ is a matrix containing a set of control variables, α_i is the constant term and ε_i is the error term. The i-th country ranges from 1 to 19, and t goes from 1 to 11 or from 2005 to 2015 for a total of 209 observations

The control variables

➥ **1) the labour market flexibility index**

This index ranges from 0 to 100 and captures both the so-called flexibility of the labour market and the general macroeconomic conditions of each single country.

➥ **2) The number of people with an upper secondary, post-secondary non-tertiary and tertiary education** (levels 3-8), as a percentage of people aged 15-64.

Education plays a central role in assuring access to the labour market and in gaining a higher income. While the effect on inequality is controversial (Knight and Sabot, 1983), the effect on the number of absolute poor people is no doubt an opposite sign.

➥ **3) Private credit**, as a share of GDP,

It is an indicator of the presence of financially constrained households and banking system efficiency. Standard literature agrees that access to credit increases an individual's opportunity to anticipate future income via, for example, the implementation of an entrepreneurial activity today. At the opposite the inability to repay the debt increases poverty.

➥ **4) The inflation rate** measured by the Harmonised Index of Consumer Prices, which is supposed to be negatively correlated with poverty.

➥ **5) Financial openness** as an indicator measuring the degree of globalization; this is the sum of financial assets and financial liabilities as a share of GDP.

The effect on poverty of this variable is not univocally determined in the literature since it can be considered both an instrument to sustain growth and convergence among countries (Blanchard and Giavazzi 2002) and a signal of a larger exposure to speculative bubbles and external shocks (Pattillo et al., 2004, Calvo 1998).

➥ **6) Trade openness** is the sum of export plus imports as a share of GDP, as a measure of external competitiveness in the goods market.

It can occur that higher exports are obtained at the expense of wage reduction or that an increase in imports of cheaper, foreign goods causes a reduction in internal demand and, hence, unemployment. In this case , a higher degree of trade openness is associated with a larger number of materially deprived people. However the increase of exports has positive effects on internal growth.

The GMM estimator

- the GMM dynamic panel methodology, removes the fixed country-specific effect α_i and uses moment conditions in which the lagged differences of the dependent variables are used as instruments in the level equation.

accounts for autocorrelation (Arellano and Bover 1995).

is well suited in the case of i>t, (19 countries 11 years).

a number of instruments less than or equal to the number of groups are considered (Roodman, 2009)

To account for heteroscedasticity the robust option is implemented.

Test Arellano–Bond test for first- and second-order autocorrelation (Arellano-Bond 1991) in the first-differenced errors is performed after the estimation;

The Sargan-J test (Sargan 1975, Hansen 1982) is implemented to check for the validity of the over-identifying restrictions.

- To check the robustness of the relationship between material deprivation and cumulative structural adjustment, equation (1) was estimated first by considering only the main independent variable and by then adding the control variables one at a time.

Results

Table 1. Material deprivation and cumulative structural adjustment in 19 Eurozone Countries

Variables	I	II	III	IV	V	VI	VII
l.MD	0.566*** (0.047)	0.557*** (0.053)	0.511*** (0.068)	0.509*** (0.086)	0.498*** (0.084)	0.490*** (0.084)	0.491*** (0.081)
CUM_SA	0.276*** (0.091)	0.280*** (0.092)	0.337*** (0.107)	0.360*** (0.111)	0.360*** (0.136)	0.361*** (0.135)	0.318*** (0.120)
LAB_FREE		0.002 (0.037)	-0.004 (0.043)	-0.003 (0.045)	-0.011 (0.046)	-0.007 (0.045)	-0.008 (0.042)
TER_EDU			-0.082* (0.049)	-0.121** (0.054)	-0.130* (0.074)	-0.129*** (0.073)	-0.155*** (0.065)
CREDIT				-0.016 (0.017)	-0.014 (0.021)	-0.013 (0.029)	-0.009 (0.029)
HICP					-0.084* (0.045)	-0.079* (0.043)	-0.076** (0.036)
FIN_OP						-0.000 (0.001)	-0.000 (0.001)
TRADE_OP							0.012 (0.013)
Constant	-0.582 (1.385)	-0.754 (2.346)	1.035 (2.772)	1.591 (2.914)	10.342*** (3.495)	9.506*** (3.517)	9.289*** (2.838)
Nr. Instr.	11	12	13	14	15	16	17

Note:***, **, and * reject the null hypothesis at 1%, 5% and 10%, respectively; standard errors are presented below the estimated coefficients.

CUM_SA is the cumulative structural adjustment; LAB_FREE is an indicator of freedom in the labour market; TER_EDU is the number of people with a tertiary level of education; CREDIT is the amount of private credit, as a share of GDP; HICP is the consumer price index; FIN_OP is the sum of financial assets and financial liabilities as an indicator of financial globalization and TRADE_OP the sum of export plus imports as a share of GDP as a measure of external competitiveness. Model I does not contain control variables. Models II to VII account for control variables

- The cumulative structural adjustment always has a positive and significant impact on poverty, increasing as additional control variables are introduced (the coefficient ranges from β_2=0.276*** in model I to β_2= 0.318*** in model VII, with a peak of β_2= 0.361*** in model VI). Since both MD and CUM_SA are percentages, it can be stated, according to the estimates, that cumulative structural adjustment has a same sign effect on the absolute poverty for approximately or for more than 30%. When looking at control variables, two out of six appear to influence material deprivation in all the models where they are introduced: tertiary education and the consumer price index. In particular, if in a country there is a larger percentage of graduates, material deprivation decreases (β_3=-0.082* in model III and β_3=-0.155*** in model VII) for approximately or for more than 10%. This result may depend both on the existence of a skill premium for higher professional figures and on the wider opportunities to find a job for those having a higher degree of education. An increase in the HICP, used as a proxy of the inflation rate, decreases material deprivation, while deflation increases absolute poverty. Although the coefficient is very low (β_3= -0.084* in model V and β_3= -0.076** in model VII), this may be due to the very low or negative changes in the consumer price index in the years considered. Finally, the last line of the table reports that the number of instrumental variables is always lower than the number of countries in the sample.

- Arellano-Bond (1991) test for zero autocorrelation of first-differenced errors accepts the null-hypothesis of second order no-autocorrelation (first order z=-1.8269*, second order z=-1.3257

- Sargan-J test (Sargan 1975, Hansen 1982) shows that χ_2=7.422, accepting the null hypothesis that the over-identifying restrictions are valid.

Conclusions

- The empirical estimates presented allow us to support the conclusion that cumulative structural public balance adjustments have a direct relation with absolute poverty and that restrictive exogenous fiscal measures increase material deprivation, while expansive measures decrease it. In line with the recent debate on the efficacy of fiscal policy, this is the result of the effects of government expenditure on growth that the eventual presence of redistributive measures has not been able to counteract. The introduction in the estimates of other variables affecting poverty consolidates the results and indicates, as a main additional cause, the level of education.

- National and common policy institutions in the Eurozone appear able to use fiscal policy to counteract poverty when it is not really needed or only in the presence of a rate of growth compatible with the respect of fiscal parameters. However, these institutions are unable to reconcile the objective of poverty alleviation with that of sound public finance in times of crisis