Distributional aspects of fiscal consolidation: the case of Greece

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Aim of the paper

- A **comprehensive analysis of the fiscal consolidation** in Greece during 2010-2018, focusing on the distributional impact of the policies adopted.

- **Identification of discretionary changes in fiscal policy** throughout this period using available information from Greece’s medium-term budgetary documents, as well as from official reports by the European Commission in order to create a detailed dataset of the discretionary policies adopted and implemented.

- **Distributional analysis** of the measures adopted in the context of the consolidation performed through the EUROMOD tax benefit model.

- Important questions in the literature concerning the **composition** of fiscal adjustments and the **impact on income distribution**. Size and duration of the consolidation episode imply that there could be significant insights.
Fiscal consolidation in Greece 2010-2018

- Exceptionally long and sizeable consolidation in the context of three consecutive adjustment programmes.

- The **cyclically adjusted primary balance** improved from -8% of GDP to +9.3% between 2009-2018. **The structural balance** improved from -7.4% to +6.5% between 2010-2018.

- But **real GDP** fell by almost 27% between 2007-2016, the decline being more severe and persistent than in peer EU countries.
Fiscal policy stance in Greece during the consolidation

- The fiscal stance is shown as the annual change in the structural primary balance.

- The output gap figures are based on the EU common methodology.

- The data show a clearly pro-cyclical fiscal stance in approximately the first half of the consolidation, followed by a broadly neutral stance in the second half while the output gap was still largely negative.

- A clearly counter-cyclical stance was only achieved in 2019, after the end of the adjustment programmes.

- Counter-cyclicality continued in 2020-2021 in the context of the economic policy response to the pandemic.

*Data Source: EUROSTAT*
Literature review – the impact of fiscal consolidations

- **Standard approach** identifying discrete episodes of consolidations employing statistical methods on available time series and usually focusing on the cyclically adjusted primary balance (Giavazzi & Pagano 1990, Alesina & Perotti 1995).


- Criticisms against this approach (Heylen & Everaert 1998, Romer & Romer 2010, Guajardo et al. 2014) include:
  - Definitions of fiscal consolidation episodes;
  - Possible exhaustion of potential benefits;
  - Identification problems;
  - Reverse causality.

- **Historical approach** (Romer & Romer 2010), focusing on the analysis of official documentation in order to identify discretionary policy changes. This avoids problems of identification or the direction of causality, while it allows for a comprehensive recording of discretionary policy measures.
Literature review – distributional impact of consolidations

- Less attention has been paid to distributional impact of consolidations, although it was suggested early on that expenditure-based adjustments may have adverse effect (Alesina & Perotti 1997).

- The empirical literature (Mulas-Granados 2005, Agnello & Sousa 2012, Woo et al. 2013) has found a positive link between consolidations and inequality, which is stronger for expenditure-based adjustments and amplified when adjustment is taking place during periods of low growth.

- This effect is stronger when adjustments are carried out primarily through spending cuts, while revenue increases tend to have an equalizing effect and can even lead to reductions in inequality.

- Moreover, progressive taxation and social benefits have been shown to be able to offset some of the adverse effects of consolidation on inequality, with the impact of social benefits being stronger and operating both through direct transfers and through enhancement of human capital.
Use of such techniques has increased, especially following the financial crisis and in order to examine the distributional effects of fiscal consolidations in a number of EU countries (Avram et al. 2012, Fabrizio & Flamini 2015, Paulus et al. 2017).

Usually performed through the EUROMOD tax benefit microsimulation model.

Results show an overall progressive character of consolidation measures, but also substantial declines in the disposable income of the lower segments, especially in Greece. Moreover, the studies reveal significant heterogeneity in the exact tax-benefits instruments used.

With respect to Greece, studies have shown an increase in inequality during the first years of the consolidation effort, despite the progressive character of austerity measures (Matsaganis & Leventi 2013).

Moreover, it has been shown (Andriopoulou et al. 2019) that the crisis resulted in a decline in household disposable income by more than 40%, much higher than the drop in GDP per capita.
Contribution of the study

- **Dual objective** of the study
  - To provide with a comprehensive recording and analysis of all discretionary policy measures taken in the context of the Greek consolidation, following the historical approach and using official documentation of the Greek authorities and the European Commission.
  - To analyse the distributional impact of consolidation measures through the EUROMOD tax-benefit microsimulation model for every year of the adjustment period and estimate the effect of such measures on inequality indices and on the disposable income of households per income decile.

- Usefulness of this approach in that it offers a really granular description and analysis of an entire consolidation episode of unusual size and duration.

- **Caveats** to the analysis should be taken into account:
  - Difficulty in estimating the actual yield of several consolidation measures.
  - Difficulty in simulating the distributional impact of measures not belonging to specific categories.
The study incorporates all discretionary policy measures as presented in the official documentation of Greek *medium-term budgets*.

Estimates of the fiscal impact of the measures are used, although in most cases these have been informed by budgetary execution, increasing the credibility of the figures.

Reports of the European Commission on the implementation of the first adjustment programme have been used for the period prior to the first medium-term budget.

Net fiscal impact is calculated, but also the *gross impact* of contractionary and expansionary measures.

Distinction between *parametric and non-parametric* measures.
Analysis of discretionary measures – results

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</tr>
</thead>
<tbody>
<tr>
<td>Total measures (EUR million)</td>
<td>5,850</td>
<td>19,964</td>
<td>13,330</td>
<td>12,111</td>
<td>4,390</td>
<td>3,891</td>
<td>769</td>
<td>2,796</td>
<td>66,123</td>
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<tr>
<td>Revenue measures (EUR million)</td>
<td>1,300</td>
<td>11,293</td>
<td>6,124</td>
<td>3,342</td>
<td>1,130</td>
<td>1,588</td>
<td>2,881</td>
<td>1,398</td>
<td>945</td>
<td>30,001</td>
</tr>
<tr>
<td>Expenditure measures (EUR million)</td>
<td>4,550</td>
<td>8,671</td>
<td>7,206</td>
<td>8,769</td>
<td>3,260</td>
<td>1,434</td>
<td>1,010</td>
<td>-629</td>
<td>1,851</td>
<td>36,122</td>
</tr>
<tr>
<td>% of revenue measures</td>
<td>22.2%</td>
<td>56.6%</td>
<td>45.9%</td>
<td>27.6%</td>
<td>25.7%</td>
<td>52.5%</td>
<td>74.0%</td>
<td>181.8%</td>
<td>33.8%</td>
<td>45.4%</td>
</tr>
<tr>
<td>% of expenditure measures</td>
<td>77.8%</td>
<td>43.4%</td>
<td>54.1%</td>
<td>72.4%</td>
<td>74.3%</td>
<td>47.5%</td>
<td>26.0%</td>
<td>-81.8%</td>
<td>66.2%</td>
<td>54.6%</td>
</tr>
</tbody>
</table>

Measures as a % of annual GDP

- **Impact of measures expressed in marginal and net terms.**
- **Signs correspond to the impact of measures on the balance.**
- **The results show the total size of consolidation at EUR 66.1 billion or 34.7% of GDP.**
- **Overall balanced composition, with 54.6% of expenditure measures and 45.4% of revenue measures.**
- **But shift in emphasis from spending cuts to revenue increases between the first and the second half of the period.**
- **Size reduced to EUR 55.3 billion or 28.7% of GDP if only parametric measures are considered.**
Increases in direct taxes and in taxes on goods and services account for almost ¾ of the total revenue-based consolidation.

Increases in property taxes is the only category of the remaining ones that played a significant role, accounting for almost 10% of total parametric revenue measures.

Improvements in tax collection and compliance make up 17% of total revenue measures, but the effect is much smaller if only parametric measures are taken into account.
Analysis of discretionary measures – expenditures

- Cuts in pension spending account for more than 1/3 of total expenditure measures and for more than 1/5 of the total consolidation.

- Cuts in the public sector wage bill and in purchases of goods and services correspond also to a substantial fraction of the total effort, amounting to about 26% and 12% of total expenditure measures respectively.

- Fiscal savings in these categories are concentrated in the first half of the period, which could also reflect the presence of “low hanging fruits”.

- Public investment spending was reduced significantly over 2010-2014, confirming the empirical literature result about consolidations in OECD countries usually involving a large drop in capital spending.
The distributional analysis performed is based on the **EUROMOD** tax benefit microsimulation model, which simulates **personal tax** and **social insurance contribution** liabilities as well as **cash benefit entitlements** for all EU countries based on the national tax-benefit policy rules.

We use the Greek EUROMOD model along with the relevant microdata of the Survey of Income and Living Conditions (SILC) of the Hellenic Statistical Authority.

We use the **policy effect tool** when estimating distributional differences between two years, whereby the underlying microdata refer to the base year.

We focus only on the policy effect of reforms. Thus, we do not use **uprating factors for the different income sources**.

We use **equivalized household disposable income** with the OECD equivalence scale to rank of the members of the population and to calculate various distributional indices.
Distributional analysis – winners and losers

Measures seemed to have a protective effect only for the first decile in the first years of the crisis and up to 2012. Then between 2013-2015 the effect is mixed. While after 2015 there is a clearer progressive pattern in terms of winners and losers.

Data Source: ELSTAT, SILC 2010-2018, EUROMOD
The chart depicts official figures of the **Gini coefficient** and of the **S80/S20 ratio**, as well as **estimates produced by the EUROMOD**.

- By definition the two lines cannot be identical.
- The divergence is smaller in the first half of the period but increases afterwards.
- However, the direction is satisfactorily captured.
- The shifting pattern of inequality during the period is reproduced by the microsimulations.

**Data Source**: ELSTAT, SILC 2010-2018, EUROMOD
The chart depicts annual differences compared to the baseline value (previous year) for the Gini coefficient and the S80/S20 ratio that can be attributed only to the policy effect (no growth effect and e.g. changes in unemployment).


The S80/S20 ratio shows a similar pattern.

**Data Source:** ELSTAT, SILC 2010-2018, EUROMOD
Distributional analysis – inequality indicators II

The chart depicts **annual differences compared to the baseline value** (previous year) for one inequality indicator the **Atkinson index**, and two progressivity indicators the **Kakwani index** and the **Reynolds-Smolensky index**.

- The values for the Atkinson index have been calculated for an inequality aversion parameter of 0.75 and of 0.25, giving higher sensitivity to changes at the bottom and top of the income distribution respectively.

- Increase in Kakwani index and the Reynolds-Smolensky index depict increase in progressivity

- Increase in Atkinson equals an increase in inequality.

*Data Source: ELSTAT, SILC 2010-2018, EUROMOD*
Distributional analysis – analysis by type of measures

<table>
<thead>
<tr>
<th>Year</th>
<th>Gini coefficient</th>
<th>S80/S20 (r.h.s.)</th>
<th>Atkinson index (0.75)</th>
<th>Atkinson index (0.25)</th>
<th>Kawkani index</th>
<th>Reynolds-Smolensky index</th>
<th>Deciles</th>
<th>Revenue-based consolidation</th>
<th>Revenue-based consolidation (parametric measures only)</th>
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<tbody>
<tr>
<td>2010</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>2011</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>2012</td>
<td>+</td>
<td>-</td>
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<td>-</td>
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</tr>
</tbody>
</table>

Data Source: ELSTAT, SILC 2010-2018, EUROMOD
Distributional analysis – analysis by type of measures

**Data Source:** ELSTAT, SILC 2010-2018, EUROMOD
Distributional analysis – analysis by type of measures

Data Source: ELSTAT, SILC 2010-2018, EUROMOD
Conclusions

- **Balanced composition** of consolidation, with a broadly shifting pattern from expenditures to revenues, in line with observations in the literature about the gradually declining room for successful expenditure-based adjustments.

- Shift in the **factors accounting for the overall effect on income distribution**, from pension spending and direct taxes in the first years to an increasingly stronger effect of means-tested welfare benefits afterwards.

- **Impact of consolidation on income distribution** broadly in line with empirical findings about the opposite effects of expenditure- and revenue-based adjustments.
  - Regressive distributional impact of measures at the peak of the crisis 2012, 2013 and 2015
  - Clearly progressive distributional impact in 2016-2018, with the improvement being much smaller in 2018, when expenditure measures were more pronounced.

- **Microsimulation analysis** through EUROMOD capable to capture the broad direction of standard inequality indices over an exceptionally long and sizeable consolidation episode.
THANK YOU
Summaries CVs

- **Eirini Andriopoulou** specializes in labour economics, applied microeconomic analysis and public policy making. She is the Head of the Unit of Experts at the Greek Ministry of Labour and Social Affairs. Her research work focuses on inequality of income distribution and poverty, as well as the design of social and tax policies.

- **Lefteris Tserkezis** works at the Council of Economic Advisors at the Greek Ministry of Finance and is the Head of Macroeconomic Policy and Forecast Division. His research focuses on fiscal policy, economic growth and business fluctuations.