



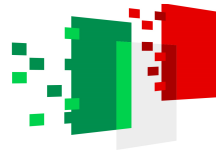
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Regional Fiscal Multipliers

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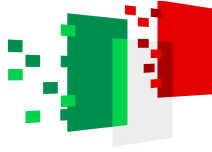
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Motivations

- The pandemic has exacerbated territorial disparities, with the most economically vulnerable regions being the hardest hit.
- Italy has experienced a worsening of the "north-south" divide
- National Recovery and Resilience Plan (NRRP) promotes regional convergence in its agenda, allocating a significant share of public investments towards the south
- Quantifying regional multipliers and disparities is crucial in this context to inform policy actions



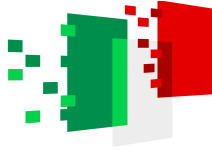
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Main Goals

- **Data:** Construction of a regional database of time series tailored for “fiscal” policy analysis
- **Output:** Quantifying regional and national fiscal tax and spending multipliers, and comparing them with existing literature.
- **Methodology:** Development of an innovative econometric methodology to identify and estimate fiscal policy reaction functions at the regional level. This involves using external instruments suitably extracted through factor analysis.



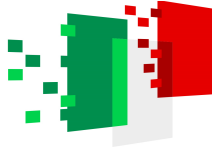
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Data

- We constructed a database of annual regional time series from 1995 to 2021, built from ISTAT (and other sources)
- For each region, we consider: (i) **GDP**, (ii) **fiscal spending** (general government consumption + public investment), (iii) **net tax revenues** (obtained as the sum of direct, indirect taxes and social contributions, net of transfers to households and firms)



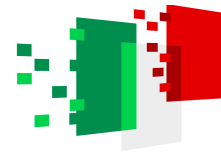
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Sketch of the novel suggested methodology

- Region “i”, observed variables $Y_{i,t} = [tax_{i,t}, g_{i,t}, gdp_{i,t}]$ modelled as VAR(p):

$$A(L)Y_{i,t} = u_{i,t}$$

with VAR innovations $u_{i,t} = [u_{i,t}^{tax}, u_{i,t}^g, u_{i,t}^{gdp}]$;

- Cholesky-SVARs here represent a benchmark region-wise.
- Following Caldara and Kamps (2017, REStud), we specify regional tax and fiscal reaction functions:

$$u_{i,t}^{tax} = \psi_{tax,i} u_{i,t}^{gdp} + \sigma_{tax,i} \varepsilon_{i,t}^{tax}$$

$$u_{i,t}^g = \psi_{g,i} u_{i,t}^{gdp} + \sigma_{g,i} \varepsilon_{i,t}^g$$

where $\psi_{tax,i}$ and $\psi_{g,i}$ are fiscal (regional) elasticities, $\varepsilon_{i,t}^{tax}$ and $\varepsilon_{i,t}^g$ are the fiscal shocks and $\sigma_{tax,i}$ and $\sigma_{g,i}$ associated standard deviations.



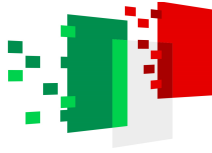
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Sketch of the novel suggested methodology (cont'd)

- If we can estimate $\psi_{tax,i}$ and $\psi_{g,i}$, we can easily recover multipliers $M_{i,t}^{tax}$ and $M_{i,t}^g$
- We can use proxies (external instruments) for $u_{i,t}^{gdp}$ to consistently estimate $\psi_{tax,i}$ and $\psi_{g,i}$
- Preliminary idea: construct the proxy for $u_{i,t}^{gdp}$ using factors
- Let F_t^{gdp} be the factor derived from $[gdp_{1,t}, gdp_{2,t}, \dots, gdp_{20,t}]$. Similarly, we can derive F_t^{tax} and F_t^g .
- Consider the static regression: $F_t^{gdp} = \beta_1 F_t^{tax} + \beta_2 F_t^g + z_t$
- We propose using as proxy the innovation component z_t , which is orthogonal to F_t^{tax} and F_t^g , by construction