

A Macroeconomic Impact Assessment of the 2007-2013 EU Cohesion Policy in Tuscany

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Motivations

- ▶ Provide an ex-post comprehensive economic assessment of the 2007-2013 EU CP based on monitoring data. Exact timing of public expenditure, detail of beneficiaries, output indicators.
- ▶ Develop an approach for the ex-post economic evaluation of regional plans which can combine a macro and a very detailed micro setup. Our framework allows us to perform a comparative analysis of the effectiveness of different policy mixes wrt to macro variables, with a clear specification of the policy targets at the micro-level.
- ▶ Assess the short-run and medium-run effects of the actual and alternatives Cohesion Policy scenarios.

Structural Funds, payments

- ▶ ROP-ERDF, ROP-ESF, EAFRD, EMFF programmes.
- ▶ 1.7 billions of euros, 1.8% of the 2013 Tuscan GDP.
- ▶ The 41% of certified payments (730 Mlns) are represented by ROP-ERDF financial resources.
- ▶ Most of the financial resources were actually disbursed in the middle of the contraction phase of the regional (and national) economy.
- ▶ Annual payments represent a share of Tuscan GDP ranging between 0.1% (2008) and 0.5% (2011), average 0.3%.

▶ Funds

The Analytical Model

- ▶ In order to perform our analysis we apply the Remi-IRPET model.
- ▶ Structural, multi-sectoral, I-O based, CGE.
- ▶ Encompasses New Economic Geography linkages, endogenizing intermediate inputs, labour productivity.
- ▶ Accessibility, transport and commuting costs play a major role.

▶ Remi-IRPET

Intermediate Input Access Index

The *intermediate input access index* - which is defined for each of the n industries and m regions - writes as

$$MCPROD_{i,t}^l = \left\{ \frac{Q_{i,t}^l}{Q_{i,T}^l} / \sum_{j=1}^m \frac{Q_{i,t}^j}{Q_{i,T}^j} \cdot \left[\left(ED_{i,t}^{lj} \right)^{\eta_i} \right]^{1-\sigma_i} \right\}^{-\frac{1}{1-\sigma_i}} \quad (1)$$

It depends on the li -industry's output $Q_{i,t}^l$ compared to the national output of the i -industry ($\sum_{j=1}^m Q_{i,t}^j$). The latter is weighted by $ED_{i,t}^{lj}$, the effective distance between region l and region j , which is obtained by an aggregation of the inter-regional and intra-regional trade flows. Effective distance enters in the index as weighted by η_i , the distance deterrence elasticity.

Labor Access Index

The *labor access index* is the second key index of the Remi-Irpet model. It captures the positive effect on labor productivity (and thus on labor costs) stemming from local firms' access to a wider variety of potential employees. It writes as

$$FL_{i,t}^l = \frac{\left(\sum_{j=1}^q d_{j,i} \cdot FLO_{j,t}^l\right) + RCW_{i,t}^l}{2 \cdot FL_{i,T}^l}, \quad (2)$$

where q is the number of occupation types in industry i , $d_{j,i}$ is the occupation j 's proportion of industry i 's employment.

Labor Access Index

The index is then the aggregation of two separate sub-indexes. The first, weighted by the factor $d_{j,i}$ is the labor productivity by occupation type. For region k it writes as

$$FLO_{j,t}^k = \left[\sum_{l=1}^m \frac{EO_{j,t}^l}{EO_{j,t}^u} \cdot (1 + cc^{l,k})^{1-\sigma_j} \right]^{-\frac{1}{1-\sigma_j}}, \quad (3)$$

while the second is the relative labor productivity due to industry concentration of labor

$$RCW_{i,t}^k = \left[\sum_{l=1}^m \frac{E_{i,t}^l}{E_{i,t}^u} \cdot (1 + cc^{l,k})^{1-\sigma_i} \right]^{-\frac{1}{1-\sigma_i}}. \quad (4)$$

Both indexes, like the commodity access index, are built up in a classic CES fashion and are functions of the concentration of labor.

Labor Access Index

Cost-of-living effect:

$$ECMG_t^l = [\lambda^l + \beta_1 \ln(REO_t^l) + \beta_2 \ln(RWR_t^l) + \beta_3 (MIGPROD_t^l)] \cdot LF_{t-1}^l \quad (5)$$

Production-cost effect:

$$a_{ij}^l = \frac{a_{ij}^u}{MCPRODA_{j,t}^l} \quad (6)$$

Ex-post estimation strategy

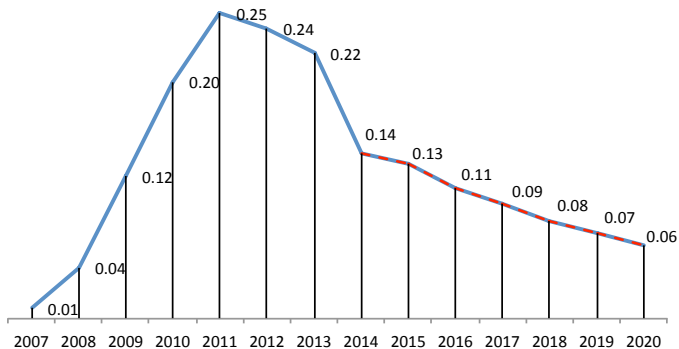
- ▶ We design a counterfactual scenario based on the hypothesis that none of the EU-CP measures have been implemented in 2007-2013.
- ▶ The analytical model's baseline already encompasses the actual impact of the EU-CP.
- ▶ We have simulated the counterfactual dynamics of the regional economy. This is supposed to deliver a negative impact with respect to the baseline scenario.
- ▶ This impact is the differential simulated effect of the EU-CP.

The Counterfactual Scenario. Policy outcomes and model's policy variables.

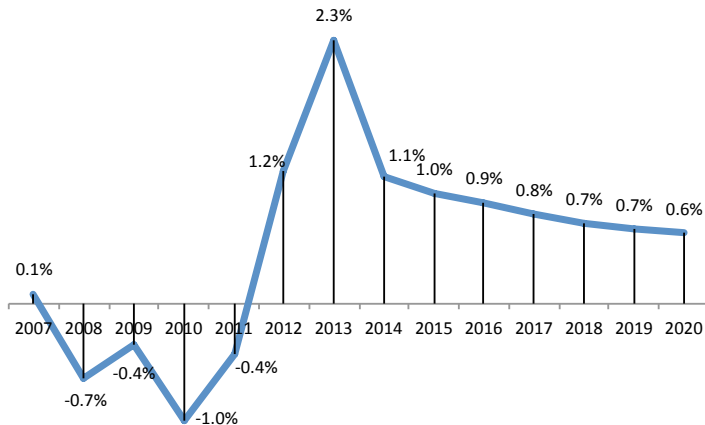
1. Policy outcomes exclusively affecting the short-term dynamics of the regional economy:
 - ▶ Investment expenditure, Capital cost, Final expenditure.
2. Policy outcomes affecting both the short and the medium-run (structural):
 - ▶ Innovation in SMEs (increase in R&D expenditure, increase in final demand for beneficiaries firms due to innovative products development)
 - ▶ Human capital accumulation, occupational training and employability (a short-term increase (2007-2013) in final demand addressed to the Education sector and in the number of occupational trainees; a medium-term increase (2014-2020) in labour productivity.)
 - ▶ Policies aimed at increasing the level of intra-regional and inter-regional accessibility (reduction in intra-regional and inter-regional transport and commuting costs associated with the infrastructural investments.)

Results. Regional GDP

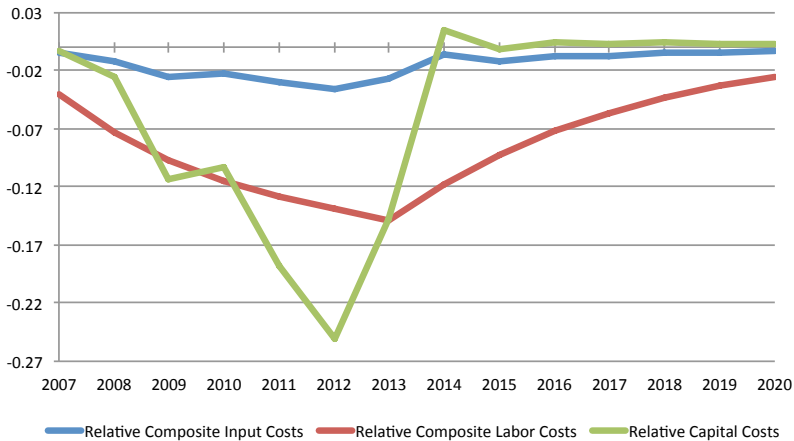
0.15% average annual increase in GDP (2007-2013). 0.1% average impact (2014-2020).



Results. Trade and competitiveness



Results. Competitiveness



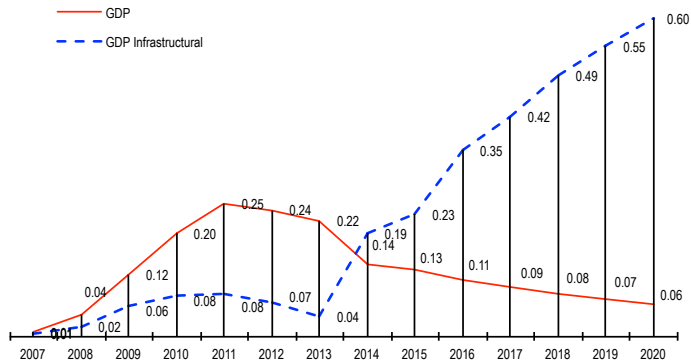
Results. Labour Market



Alternative Policy scenario

- ▶ The Remi-IRPET model allows us to specify different alternative policy mixes, in order to provide a comparative analysis of the actual EU-CP impact.
- ▶ Here, we have only sketched an alternative scenario based on infrastructural expenditure (the amount of EU-CP financial resources are supposed as exclusively directed to infrastructural investments).
- ▶ The infrastructural investments are effective in reducing inward, outward and intra-regional transport and commuting costs by the 1% (per year).

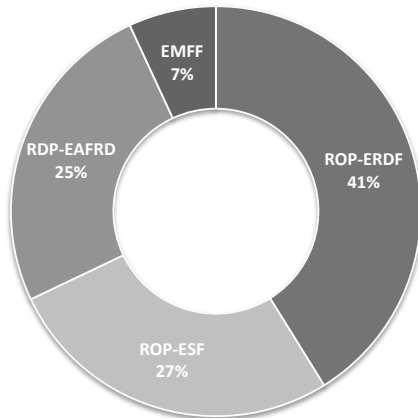
Alternative policy scenario vs EU-CP



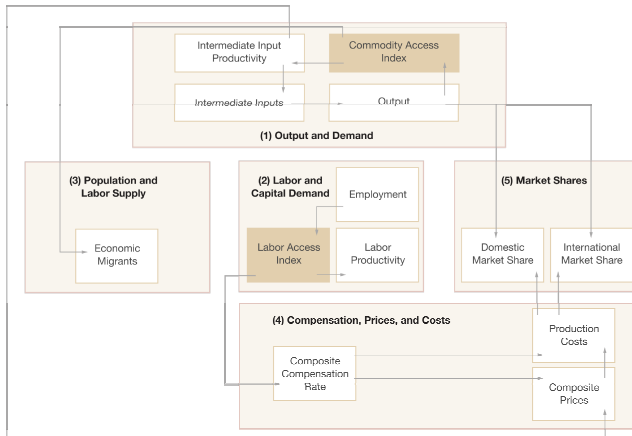
Conclusions

- ▶ Strictly positive effects of the EU-CP both in the short and medium-run.
- ▶ Supply-driven growth effect also in the short-run.
- ▶ EU-CP better performs in the short-run as compared to a financially equivalent infrastructural policy. Infrastructural policy better performs if successful in decreasing transport and commuting costs at least by 0.5%.
- ▶ Scope for further detailing the design of the counterfactual scenario, based on ex-post microeconometrics evaluations of implemented policies or on more detailed monitoring data.
- ▶ Scope for further extending the comparative analysis by evaluating the hypothetical impact on Tuscan economy of policy mixes implemented by comparable European regions.

Payments by Fund



Remi-IRPET and NEG linkages



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