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Spatial interaction in property tax policies among Italian municipalities

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Intro

The study of local policies exercised on property tax is of great interest especially at a time of significant regulatory change.
When analysing the determinants of policy choices, one of the main aspects to be investigated is the presence of a mimicking component in the tax decision processes which produce a spatial interaction among jurisdictions.

Aims of our work

- Estimate the determinants of the fiscal policies on property tax adopted by Italian municipalities in 2014 both on residential and on business properties;
- Assess the existence of strategic interactions influencing their revenue decisions;
- Investigate the possible sources of tax mimicking.

Previous Literature

Recent literature on local fiscal policies highlights how the decisions related to the level and composition of revenues are determined both by political and socio-economic features (Inman 1987) and by strategic interactions among local jurisdictions (Brueckner 2003).

Most studies have focused on horizontal tax mimicking and its determinants and all have found empirical evidence of a positive interdependence among neighbouring local governments of many countries, like Belgium (Heyndels and Vuchelen 1998), Canada (Brett and Pinkse 2000), France (Feld et al. 2003), Germany (Buettner 2001), Italy (Bordignon et al. 2003), Spain (Solé-Ollé 2003), Switzerland (Feld and Kirchgässner 2001), United Kingdom (Revelli 2001) and United States (Ladd 1992; Wu and Hendrick 2009).

Property tax in Italy

The standard rates of the property tax vary in relation with the property type and are imposed at national level. Each municipality can determine their own rates, up to a maximum allowed by state law.

Therefore, the actual property tax revenue is the result of two components:

- The **tax base**;
- The **choices on tax rates and deductions** applied by the municipalities.

The value of the tax base can be approximated by the revenue at standard rate (**standard revenue**), while the fiscal policy of a jurisdiction can be measured by the difference between the actual and the standard revenue (**extra-standard revenue**).

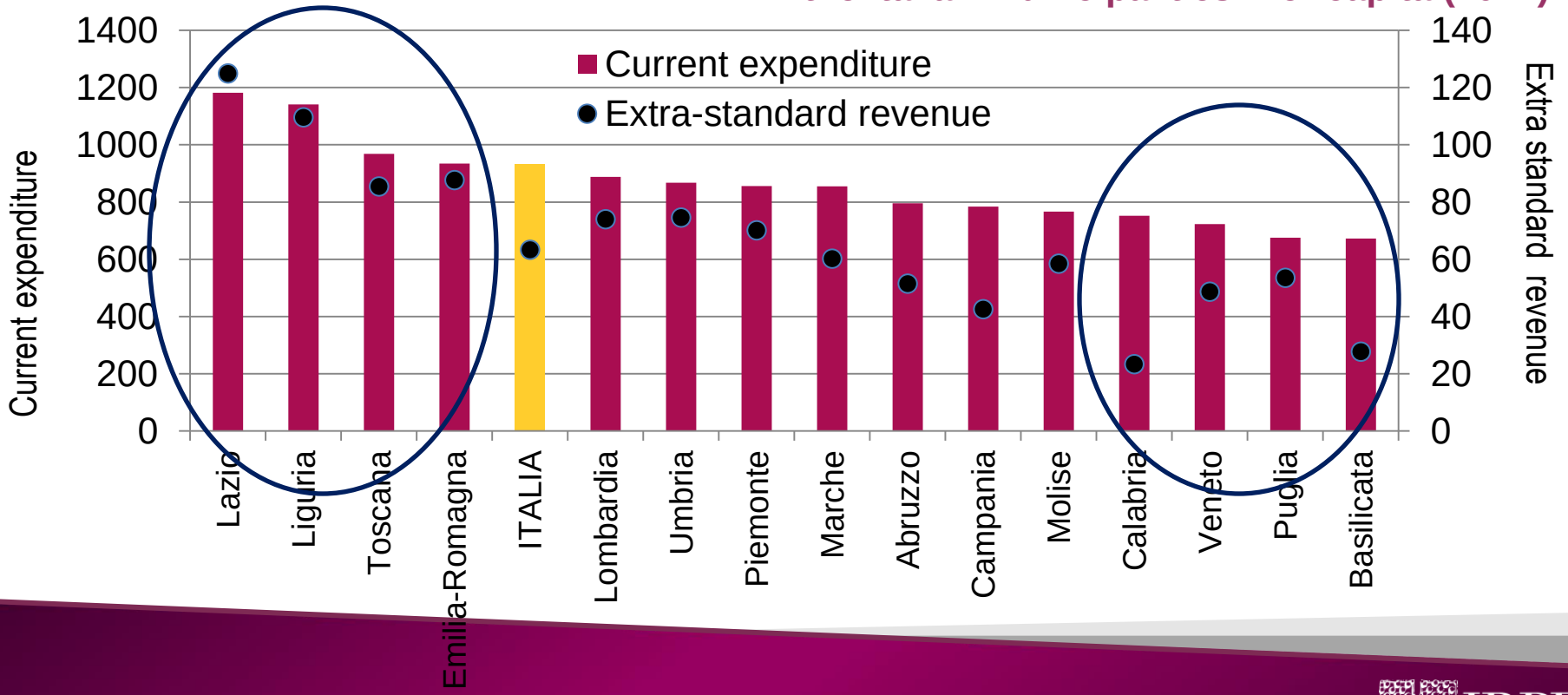
Territorial differences

Municipalities usually chose between two policy models:

i) a high level of tax burden + a high level of expenditure which produces a higher (or a more qualified) number of local services;

ii) a low level of current expenditure + a low tax burden .

Fiscal policy on property tax and current expenditure of the Italian municipalities. Per capita (2014)



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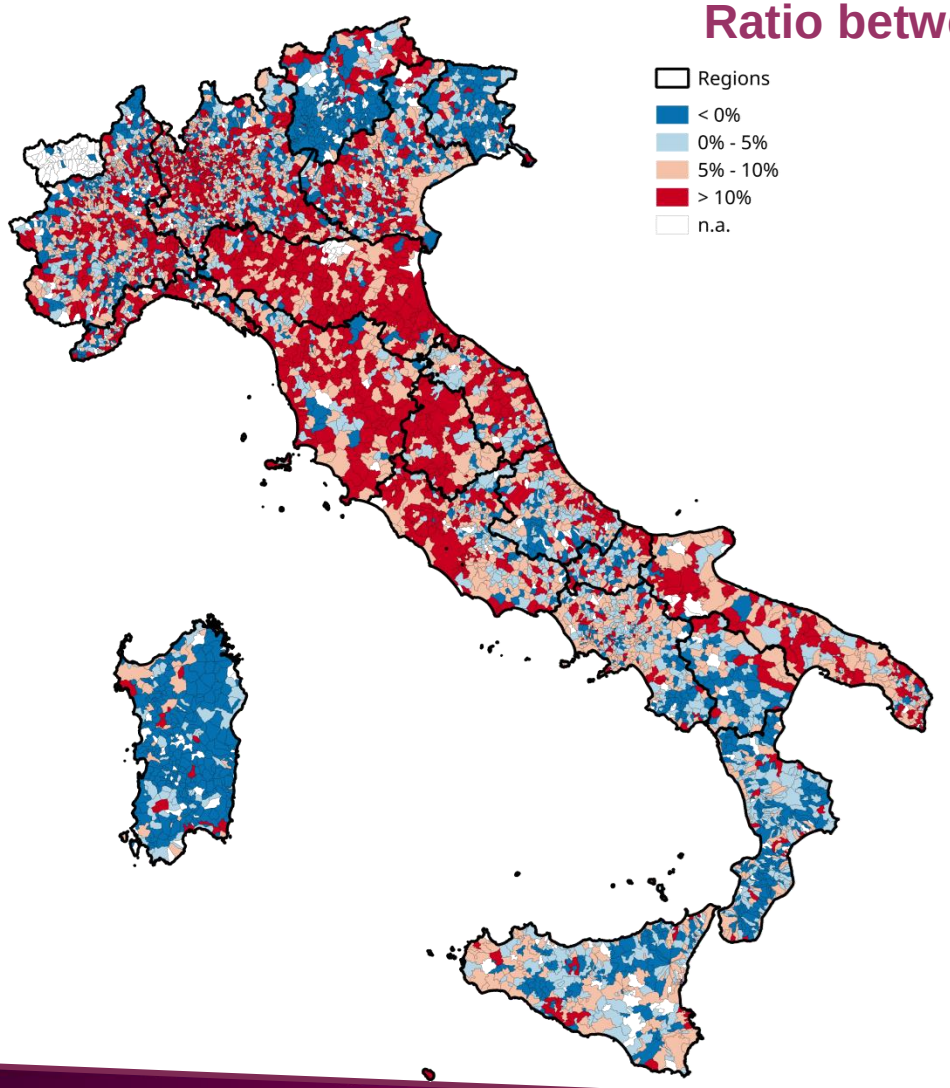
Study variable



Ratio between property tax extra-standard revenue and total tax revenue in 2014.

This variable indicates the percentage of the municipal total tax revenue due to the fiscal policy on real property.

It shows a clear spatial distribution, with homogeneous areas in which the municipalities adopt similar behaviors

Moran I	p-value
0,248	0,000

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Data description

Concerning the possible determinants of fiscal policies which we could include in our analysis, we consider a set of possible variables classified into three groups: variables regarding the balance sheet, variables about the tax base and variables on territorial and political contest.

Balance sheet variables:

- Current expenditures per capita (Euros)
- Net tax burden per capita (Euros)
- Total transfers per capita (Euros)
- Poor financial health (dummy)
- Internal Stability Pact (dummy)
- High additional income tax rate (dummy)

Tax base variables:

- Property tax base per capita (Euros)
- Average real estate prices (Euros/m2)
- Secondary homes per capita
- Employees per capita

Territorial and political contest variables:

- Municipal size
- Population
- Elderly population (%)
- Toddler population (%)
- Bed places per capita
- Tourist vocation (dummy)
- Urbanized land (%)
- South (dummy)
- Income per capita (Euros)
- Mandate of the mayor (dummy)
- Election year (dummy)
- Party affiliation (categorical)

Methodology

Spatial lag regression model (Anselin, 1999) which assumes that the spatial pattern is due to a spatial auto-regressive process in the dependent variable

the municipal fiscal policies on property tax are determined both by the explanatory variables and by the tax choices of adjacent municipalities (*tax mimicking*)

$$\boldsymbol{y} = \rho \boldsymbol{W} \boldsymbol{y} + \boldsymbol{X} \boldsymbol{\beta} + \boldsymbol{\varepsilon}$$

where ρ is the spatial correlation coefficient and W is the spatial matrix.

Estimation can be made via ML or IV techniques (S2SLS)

NB: due to the term ρWy, it is necessary to base interpretation of the estimated model on the **impact measures** define as (LeSage and Pace, 2009)

$$M(r)_{direct} = n^{-1} tr((\boldsymbol{I}_n - \rho \boldsymbol{W})^{-1} \boldsymbol{I}_n \beta_r) \qquad M(r)_{total} = n^{-1} \mathbf{1}_n' (\boldsymbol{I}_n - \rho \boldsymbol{W})^{-1} \boldsymbol{I}_n \beta_r \mathbf{1}_n$$

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Results (1)

Variables	Parametres		Overall Impact	
Current expenditures per capita (x1000)	4.443	***	5.954	***
Net tax burden per capita (x1000)	-5.577	***	-7.474	***
Transfers per capita (x1000)	-2.798	***	-3.75	***
Internal Stability Pact (dummy)	1.76	***	2.358	***
High additional income tax rate (dummy)	1.574	***	2.109	***
Property tax base per capita (x1000)	-0.016	***	-0.021	***
Secondary homes per capita	0.428	*	0.573	*
Municipal size (log)	0.608	***	0.815	***
Elderly population (%)	0.057	***	0.076	***
Bed places per capita (log)	0.285	**	0.381	**
Urbanized land (%)	-1.386	*	-1.857	*
South (dummy)	-1.229	***	-1.647	***
Income per capita (log)	2.817	***	3.774	***
Mandate of the mayor (dummy)	-0.477	**	-0.64	**
Intercept	3.714	***		
Spatial parameter	0.254	***		
Moran *I* test on residuals	-0.003			

Results (2)

- The coefficient of spatial autocorrelation is equal to 0.25 which means that there is a positive horizontal interdependence in the fiscal policies (an increase of one percentage point in the variable of the neighbours of *i* can generate, *ceteris paribus,* an increase of 0.25% in the same revenue of municipality *i);*
- The jurisdictions of the southern regions show a low tax burden on property tax (may actually be due to a different choice of policies but it can be also attributed to a greater tax evasion);
- Observing the level of additional income tax rate, it's possible to highlight that the local policies on property tax are not complementary to those imposed on the income, since the municipalities with high additional income tax rates apply also high rates in property tax;

Results (3)

- Municipalities under the Internal Stability Pact exhibit a higher level of extra-standard revenue (they respond to the imposed budget constrains);
- The number of secondary homes per capita have a positive relationship with the fiscal choices on property tax (the higher tax burden is poured on non residents);
- The higher tax rate can be explained by the need to ensure a higher level of expenditures: in the centres with high management costs like the urban areas (congestion effect), in the municipalities with an elevated elders rate or in the jurisdiction with a low urbanized land.
- The municipalities in which the mayor was elected twice exploit with lower intensity the room for manoeuvre probably because of a better planning of revenue and expenditure policies.

Sources of tax mimicking (1)

Which of the possible sources of the imitative behaviour is the more plausible? Literature offers three explanations for the tax mimicking:

1. the expenditure spill-over: the benefits or detrimental effects of public expenditure (and therefore of tax revenues) spread over the administrative boundary of one jurisdiction;
2. the Tiebout model on tax competition: policy-makers may mimic the tax policies of their neighbours from a fear of tax-base mobility;
3. the political yardstick competition: imperfectly informed voters about costs and local fiscal policies infer the quality and reliability of their own politicians comparing other governments' performance as benchmark. Rational politician will mimic the neighbouring tax policies in order to capture the voters preferences and have a chance to be re-elected.

Sources of tax mimicking (2)

We investigate theories 1 and 3 by modifying the previous regression with the inclusion of a specific interaction term.

Yardistick competition model: $\boldsymbol{y} = \rho \boldsymbol{W y} + \delta(\boldsymbol{mandate} * \boldsymbol{W y}) + \boldsymbol{X\beta} + \boldsymbol{\varepsilon}$

Hp: we expect to find a negative relation between the neighbours fiscal policies and the political variable because a mayor which cannot be re-elected should not be concern with the voters choice

Spill-over effect model: $\boldsymbol{y} = \rho \boldsymbol{W y} + \delta(\log(\boldsymbol{population}) * \boldsymbol{W} y) + \boldsymbol{X\beta} + \boldsymbol{\varepsilon}$

HP: small neighbour municipalities show a larger spatial interaction while bigger ones are less influenced by the fiscal choices of their neighbours (big city hardly react to changes in the policies of adjacent municipalities).

Sources of tax mimicking (3)

	Yardstick competition		Spill-over	
Current expenditures per capita (x1000)	4.414	***	4.385	***
Net tax burden per capita (x1000)	-5.504	***	-5.334	***
Transfers per capita (x1000)	-2.732	***	-2.577	***
Internal Stability Pact (dummy)	1.722	***	1.781	***
High additional income tax rate (dummy)	1.502	***	1.435	***
Property tax base per capita (x1000)	-0.016	***	-0.018	***
Secondary homes per capita	0.468	**	0.507	**
Municipal size (log)	0.565	***	0.813	***
Elderly population (%)	0.054	**	0.059	***
Bed places per capita (log)	0.279	**	0.265	*
Urbanized land (%)	-1.461	*	-1.434	*
South (dummy)	-1.011	***	-0.872	***
Income per capita (log)	2.655	***	2.537	***
Mandate of the mayor (dummy)	0.098		-0.486	**
Wy * Mandate of the mayor	-0.091			
Wy * Population (log)			-0.044	.
Intercept	2.873	***	2.644	***
Spatial parameter	0.383	***	0.426	***

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Conclusions

Results show that policy decisions are determined both by balance sheet variables and political and socio-economic features and by the neighbouring municipalities behaviour. More in details:

1. the higher is the level of expenditure, the higher is the tax burden (North-centre regions, older population, lower urbanization);
2. the higher are the net revenues or transfers, the lower is the tax burden;
3. the tourist vocation of the area (secondary homes and bed places) and the political stability of the administration influence the tax burden as well;
4. neighbouring governments tend to adopt similar behaviour;
5. this imitative behaviour among municipalities is probably determined by spill-over effects and the negative relationship between fiscal policies and demographic size highlights that a more populated municipality is less sensitive to the changes in tax policies in the neighbouring municipalities, because there are negligible spill-over effects on its residents.

Contact information

Thanks for the attention!

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