



Yardstick competition and fiscal disparities: An experimental study

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HIGHLIGHTS

- Yardstick competition may be biased by the presence of fiscal disparities between local governments.
- By means of a laboratory experiment, we successfully test that equalization transfers may mitigate the yardstick bias.
- Local tax rates play an important role too. For higher tax rates level yardstick competition is more effective.

ARTICLE INFO

Article history:

Received 22 June 2017

Received in revised form 18 July 2017

Accepted 28 July 2017

Available online 5 August 2017

JEL classification:

H71

H76

C91

Keywords:

Yardstick competition

Fiscal equalization

Experiment

ABSTRACT

Recent theoretical research suggest that yardstick competition may be biased by the presence of fiscal disparities between local governments and that fiscal equalization may help in correcting this bias. This paper provides an empirical test of these theoretical predictions by means of a laboratory experiment.

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1. Introduction

The existing research on yardstick competition, that is, the use of comparisons between administrators of adjacent jurisdictions as a benchmark for the local incumbent administrator, usually bases its assumption on the existence of identical or “similar” jurisdictions to be compared.

This idea has been formalized by the seminal paper of [Besley and Case \(1995\)](#), that presents a model of the political economy of tax-setting in a multi-jurisdictional world, where voters compare local administrators to overcome political agency problems. This forces incumbents into a competition in which they care about what other incumbents are doing in order to maximize the probability of re-election.

Similarly, [Besley and Smart \(2007\)](#) study political competition between domestic and foreign administrators of jurisdictions affected by shocks in the cost of provision of local public goods.

If yardstick competition correctly works, that is, if citizens makes comparative performance evaluation across governments

in order to understand the quality (or the honesty) of their politicians, then it would be useful to organize the allocation of functions and resources to local governments so as to maximize this behaviour ([Bordignon et al., 2003](#)).

A number of empirical papers provide evidence about the existence of tax-mimicking behaviour among local governments. Among others, [Besley and Case \(1995\)](#) successfully tested the existence of this phenomenon using US state data from 1960 to 1988. [Bordignon et al. \(2003\)](#), using data on 143 adjacent Italian municipalities, found positive spatial auto-correlation in local property tax rates of jurisdictions where the mayors run for re-election in uncertain contests, while interaction is absent where mayors either face a term limit or are backed by large majorities. More recently, [Buettner and von Schwerin \(2016\)](#), using data about German states and local governments, have provided empirical evidence of the existence of yardstick competition between subnational jurisdictions in the setting of local business tax rates.

Despite the large amount of empirical research on the topic, the effect of fiscal disparities between local jurisdiction on yardstick competition has received little attention.

From a theoretical point of view, this problem has been recently treated by [Allers \(2012\)](#) who underlines that when fiscal

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Table 1

Representative scenario. In each scenario jurisdictions have three inhabitants.

	Jurisdiction A	Jurisdiction B
Total tax base	B_A	B_B
Tax rate	t	t
Transfers from CG	T_A	–
Total benefits from LE	Π_A	Π_B

disparities exist, that is, when local jurisdictions differ in revenue capacities and/or spending need, yardstick competition is likely to be biased. In fact, the key to yardstick competition is transparency and, if administrators' performance cannot be derived from subnational government output and tax rates in a straightforward manner, its correct functioning could be undermined and administrators of richest (in terms of fiscal capacity/expenditure needs ratio) jurisdictions have a strategic advantage. As a consequence, they could extract higher rents than their counterparts take, and still keep a good reputation or re-election probability, simply because their counterparts manage fewer resources and can offer services with lower quality (Di Liddo and Giuranno, 2016). For this reason, fiscal equalization is likely to increase the efficacy of yardstick competition and remove the yardstick bias, providing all administrators the same amount of revenues (Allers, 2012).

To the best of our knowledge, there is still a lack of empirical research aimed to test the existence of the yardstick bias caused by fiscal disparities. The aim of the paper is to fill the gap in the literature studying – by means of a laboratory experiment – yardstick competition (Besley and Case, 1995) and the effect of equalizing grants on the yardstick bias (Allers, 2012). To be more precise, we will address the two following research questions:

RQ1 – might fiscal disparity among jurisdiction bias yardstick competition?

RQ2 – might central government (CG) transfers improve yardstick competition among local jurisdictions?

The rest of the paper is organized as follows. In Section 2 we report the experimental design, in Section 3 the empirical analysis and its results are presented. Finally, Section 4 concludes. Descriptive statistics on data used in our regressions are reported in Appendix.

2. Experimental design

We recruited students from the University of Bari via a mailing-list system. They were presented with a set of pairwise choice

questions; each pairwise choice is composed of two scenarios, labelled "Jurisdiction A" and "Jurisdiction B", of the kind depicted in Table 1. Each subject has to report his/her vote/preference between the two administrators of A and B on the bases of the ratio between benefits from local expenditure (LE) and taxation in each jurisdiction.

The experiment was conducted at the ESSE laboratory of experimental economics at the University of Bari and programmed in *z-Tree* (Fischbacher, 2007). An overall number of 40 students attended two separate sessions composed by 20 subjects each.

Participants were presented with the same 20 pairwise choices corresponding to the 20 scenarios reported in Table 4 in Appendix. The time taken to complete the experiment varied between sessions, treatments, and also across subjects, since participants were explicitly encouraged to proceed at their own pace.

On average, the experiment lasted 15 min. The incentive mechanism was that the chosen scenario would be played for real. Specifically, in each section subjects are characterized by an individual tax base and, at the end of each session, for each subject, one question was randomly selected and played out for real. Subjects' pay-off (benefit) was calculated applying Eq. (1) to the subjects' individual tax base. In this way, participants to the experiment have incentive to detect the less rent-seeker administrator independently to the amount of benefit reported in the various scenarios.

The average payment made to the 40 subjects was 5.50 Euro. Consequently, the average payment was around 22 Euro per hour spent doing the experiments. This is well above the marginal wage rate of the subjects performing the experiment.

The payoff in each administration, i.e. the benefits from local expenditure, is calculated by the following function:

$$\Pi = N\alpha (tB_i - \rho_i + T_i), \quad i \in \{A, B\} \quad (1)$$

where B_i is the per capita tax base in the administration and N the number of inhabitants ($N = 3$), t is the tax rate, ρ_i is the per capita rent extracted by the administrator, T_i is the eventual vertical equalizing transfer to the poorest jurisdiction, and α is the marginal per capital return (MPCR) that measures the individual marginal gain in moving an incremental unit of wealth to public goods provision. That is, the MPCR measures how much the individual gets back from public good provision. Clearly it is less than one (Isaac and Walker, 1988). To be more precise, in our experimental set-up the MPCR measures the transformation rate of local expenditure in individual local benefits. Subjects are informed that t , α and N , are constant across administrations.

Table 2

Coefficient point estimates. Panel probit – random effect – std. errors robust to intragroup correlation. Dependent variable: vote for the less rent-seeker administrator (binary).

Variables	1	2	3	4	5
Difference in tax base (%)	–0.0179** (0.00312)				–0.0239*** (0.00413)
Tax rate (%) A = B		0.00188 (0.00362)			0.0111** (0.00452)
Difference in benefits (%)			0.000972 (0.00132)		0.00703*** (0.00241)
Equalization degree (%)				0.00131 (0.000939)	0.00910*** (0.00188)
Constant	0.284* (0.159)	–0.454*** (0.111)	–0.451*** (0.0836)	–0.470*** (0.0735)	–0.336 (0.282)
Observations	800	800	800	800	800
Number of Subject	40	40	40	40	40
Log pseudolikelihood	–480.6	–510.9	–510.8	–510.0	–462.5

Robust standard errors in parentheses.

* $p < 0.1$.** $p < 0.05$.*** $p < 0.01$.

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