

# Identifying strategic interactions in Swedish local income tax policies

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## Abstract

This paper uses data on Swedish local governments to test for strategic interaction in local tax setting. We make use of a number of indirect predictions from the theories of tax competition and yardstick competition in order to test for the presence of strategic interaction in these forms. Using such additional predictions of the theories serves a twofold purpose—first it helps us establish if the spatial coefficient is due to strategic interactions or merely reflecting spatial error correlation, and second, it helps identify the source of interaction. The analysis provides strong evidence for spatial correlation in tax rates among Swedish local governments. Moreover, we find weak evidence of tax competition effects in the setting of tax rates.

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## 1. Introduction

The presence of strategic interactions in the tax setting of local governments is an important issue in the organization of the public sector. Such interactions have long been investigated in theoretical economic work (see e.g. Oates, 2002 or Wilson, 1999 for an overview). This has resulted in two main types of theoretical frameworks: tax competition and yardstick competition. In short, the former describes a situation where local governments compete for a mobile tax base whereas in

the latter, tax interaction stems from voters' evaluation of the performance of local politicians, by comparison with the neighboring jurisdictions. This performance evaluation induces the politicians to mimic the neighbors in order to be reelected. It can be shown that both models give rise to similar spatial reaction functions, where the tax rate of a jurisdiction is a function of the tax setting behavior of surrounding jurisdictions, denoted neighboring jurisdictions in the following.

This study tests for strategic interaction in Swedish municipal income taxes. Swedish data is highly suitable for this type of study. The local tax, which is an income tax, constitutes the main revenue source for the local governments. Furthermore, the local governments are responsible for the provision of essential welfare ser-

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vices<sup>1</sup> and have a high degree of autonomy both when it comes to the right to decide on the provision of local public services and the right to set the local income tax rate. The degree to which citizens depend on municipal services along with the heavy reliance on tax revenues hence make tax policy a salient issue in local policy making.

The aggregate evidence from earlier empirical work indicates that spatial interaction processes are present in local tax rates, but there is no consensus on the source (tax or yardstick competition) of interaction.<sup>2</sup> Identification of the source of interaction is however important, since the two theoretical models have different policy implications. While the theory of tax competition predicts that the tax rate in a decentralized setting will be lower than the social optimum, the yardstick competition theory in general predicts increased efficiency of the political system through better informed voters.

In contrast to many studies in this field, we make no a priori assumptions regarding the underlying theoretical framework. Instead, we make use of additional, indirect predictions from the theories of tax competition and yardstick competition to test for the presence of strategic interaction in these forms.<sup>3</sup> Specifically, we use a reform of the central government grants system, which changed the system of tax base equalization of the municipalities, to test for tax competition. The idea is that if we find the degree of interaction to be different after the reform, this can be seen as indirect evidence of tax competition. We also use two empirical implications descending from yardstick competition; namely that yardstick-type interaction is expected to be more prevalent during election years and when the political majority is weak, to test for strategic interaction in the form of yardstick competition.

Given the difficulties in ensuring identification through standard estimation, we believe that using these forms of indirect identification strategies is a fruitful way to proceed, both to separate strategic interactions from potential bias stemming from spatial error correlation and to separate between the different underlying theories.

The main results can be summarized as follows: The analysis provides evidence of spatial dependence in the tax rates among Swedish local governments: a tax cut of on average 1 percentage point in neighboring jurisdic-

tions is correlated with a decrease of about 0.74 percentage points in own taxes, which is of the same magnitude as that found in similar studies on interdependence in tax setting. Furthermore, we find weak evidence for tax competition, while no evidence is found for yardstick competition.

The remainder of the paper is organized as follows. Section 2 presents the data and describes the institutional setting, and Section 3 discusses the methodology and the tax equation specification. In Sections 4 and 5, we present the results and, finally, Section 6 concludes.

## 2. Data and institutional setting

To investigate the existence of horizontal interaction in tax setting, we use data on a panel of 283 Swedish local governments during 1993–2006.<sup>4</sup> Before describing the data, we will briefly comment on the Swedish institutional setting. The Swedish public sector is organized into three layers of government: national, county and municipal level. The local units are responsible for the provision of important welfare services: the Swedish municipalities supply education, child care, social assistance and care for the elderly, while medical care and public transport are organized at the county level.<sup>5</sup> The focus here is on the municipalities.

Swedish municipalities have the constitutional right of self government. The degree of autonomy refers both to the right to decide on the provision of local public services and their right to set the local income tax rate (note that only income is taxed locally—property taxes, for example, are set at the national level). Moreover, they are not limited by borrowing constraints.<sup>6</sup>

Our dependent variable, the local income tax, is a proportional tax rate and generates the main source of the municipalities' own revenues: tax revenue as a fraction of total revenues amounts to about 70 percent.<sup>7</sup> A small proportion, 15 percent on average, consists of central government grants. Personal income is also taxed at the county level. This implies that there may

<sup>1</sup> The municipalities are responsible for the provision of services such as care of the elderly, child care and education.

<sup>2</sup> See e.g. Allers and Elhorst (2005) for a summary of a number of results in recent studies.

<sup>3</sup> These tests will be thoroughly described in Section 5.

<sup>4</sup> Six municipalities, that have either seceded from or merger with another municipality during the time under study, have been excluded from the sample. These are Bollebygd, Gnesta, Lekeberg, Nykvarn, Knivsta and Trosa. Moreover, the island of Gotland is excluded due to the obvious difficulty in identifying neighbors.

<sup>5</sup> In two municipalities, Malmö and Göteborg, the municipalities are also responsible for the county-level tasks.

<sup>6</sup> In 2000, a balanced budget rule was introduced. However, it is not clear that the introduction of a balanced budget rule has had any real effect.

<sup>7</sup> This figure is for 2002, see "Kommunernas Ekonomiska Läge," Svenska Kommunförbundet, April 2003.

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