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Yardstick competition and partial coordination: Exploring the empirical distribution of local business tax rates

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ABSTRACT

This paper explores a striking form of tax policy interdependence that can be observed in the German federation. Though municipalities enjoy discretion in setting the local business tax rate, large fractions of municipalities – in some states even the majority – set identical tax rates. Our analysis shows that this tax-rate "bunching" is not the result of federal or state-level institutions. Possible explanations rest on partial coordination and yardstick competition. The role of the former is exemplified by the finding that small jurisdictions and jurisdictions sharing the same county are more likely to engage in "bunching". Yardstick competition seems also relevant since jurisdictions for which strategic tax-setting should be associated with larger gains and lower cost are in fact more likely to set identical tax rates.

1. Introduction

The literature on fiscal decentralization has emphasized that decentralization substantially alters the conditions for public policy. A large body of literature has focused on competition for mobile factors and noted that if the set of available fiscal instruments is limited, local fiscal policies including taxation decisions become interdependent (*e.g.*, Wilson, 1986; Zodrow and Mieszkowski, 1986). If jurisdictions pursue non-cooperative policies, coordination fails and the resulting equilibrium is inefficient. As central government intervention is required to restore efficiency (*e.g.*, Wildasin, 1989), decentralization appears to be self-defeating. Another strand of the literature has emphasized that decentralized policies open up the opportunity to compare local policies and their outcomes between jurisdictions. The role of comparative performance information (Meyer and Vickers, 1997) in a setting with decentralized policies is featured in particular in the literature on yardstick competition (*e.g.*, Besley and Case, 1995; Wrede, 2001; Bordignon et al., 2004). The basic argument is that, since economic shocks are correlated, comparisons between jurisdictions are meaningful, and voters engage in comparative policy evaluation, which limits the ability of the governments to extract rents.

The empirical literature has provided ample evidence that the local fiscal choices such as local tax policies are in fact interdependent. Many papers have considered capital taxation in the presence of mobile investors, and found evidence for spatial

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interdependence in local property or business taxes (*e.g.*, Buettner, 2001; Brueckner and Saavedra, 2001; Bordignon et al., 2003) as well as in taxation of FDI (*e.g.*, Devereux et al., 2008). The empirical literature also shows that governments eager to get re-elected, tend to respond stronger to neighbors' tax policies (*e.g.*, Besley and Case, 1995; Revelli, 2002; Bordignon et al., 2003). However, it has proved difficult to verify whether interdependence results from comparative performance evaluation or from mobility (Revelli, 2005).

An interesting form of tax policy interdependence can be studied in the German federation, where municipalities enjoy the right to set the tax rate of the local business tax (Gewerbesteuer) – a tax on the earnings of corporations as well as partnerships. The local business tax is the single most important own revenue source of municipalities in the German federation. With statutory rates between about 7% and 18%, the tax rate of the local business tax is a key parameter of the effective tax rate. Since investors are confronted with important differences in the tax burden and also risk to be taxed at high rates, the business tax multiplier of each municipality is widely documented and reported by employers associations, municipalities, statistical offices and the media. Empirical research shows that the elasticity of the tax base is large (Buettner, 2003) and that even the location decisions of multinational firms respond to the local tax rate (Becker et al., 2012). Although local jurisdictions in Germany enjoy autonomy in setting the local business tax rate, empirical evidence shows that large numbers of municipalities deliberately choose identical tax rates. Fig. 1 illustrates this phenomenon using data for the about 1100 municipalities in the state of Baden-Wuerttemberg. The figure depicts the distribution of the local multiplier of the basic business tax rate in percent. For instance, if the local municipality sets the multiplier to a level of 400%, the resulting statutory business tax rate amounts to 14% ($= 400\,\% \times 0.035$). The upper panel plots the business tax multiplier of the municipalities ordered by size. There are 464 municipalities, almost half of all municipalities in this state, that have chosen a business tax multiplier of exactly 340%. The kernel density plot in the lower panel highlights the striking density mass at this tax rate.

In Baden-Wuerttemberg as in the other German states, municipalities are small villages or big cities, some of which are located in rural – others in metropolitan areas, and there is usually a large diversity in economic conditions and cultural traditions. Since the jurisdictions differ so much, it seems reasonable to expect differences in preferences and economic conditions to be reflected in a non-trivial distribution of tax rates. Due to tax competition, it would not be surprising if the tax rates are found only within a certain range. However, the example of Baden-Wuerttemberg shows that there is excessive "bunching" at specific tax rates (*cf.* Saez, 2010, for the notion of "bunching"). The important point here is that this is not the result of any regulation.

In this paper we explore this striking form of tax policy interdependence. We review approaches taken in the literature to explain local tax policy decisions and discuss which of these approaches offer possible explanations for tax-rate "bunching". We take a broader perspective and consider a standard tax competition setting, but also yardstick competition and related forms of signaling as well as institutions and partial coordination and highlight differences in the empirical implications of these approaches. Backed with this discussion we provide econometric tests as to whether the deliberate decision of a large number of jurisdictions to set identical tax rates is a consistent pattern among German municipalities. Finally, we explore the characteristics of jurisdictions that take part in tax-rate bunching and test whether some of the theoretical predictions can be confirmed.

The results support tax-rate bunching as a common phenomenon among German municipalities across states and over time. As standard forms of tax competition and institutions can be ruled out as explanations, yardstick competition and partial coordination turn out to be the most convincing explanations. The remainder of this paper is organized as follows. The next section considers various theoretical explanations for bunching. Section 3 discusses different ways to test empirical implications of the different explanations. In Section 4 we get back to the empirical distribution of business tax rates set by local jurisdictions in Germany and provide descriptive statistics by state. Section 5 provides empirical results on the issue whether bunching at specific points of the tax rate distribution is a consistent pattern among German municipalities, whether it is a permanent or transitory phenomenon and whether certain institutional explanations can be ruled out. The characteristics of jurisdictions that engage in tax-rate bunching are explored in Section 6. Section 7 provides a brief summary and concludes.

2. Theoretical explanations of tax-rate bunching

Bunching of tax rates in the sense of a large fraction of jurisdictions setting identical tax rates can be rationalized using various theoretical approaches to tax policy, albeit in some cases only under highly restrictive assumptions. In this section, we discuss different approaches that can be found in the theoretical literature.

2.1. Tax competition

The textbook model in public finance explains the choice of the tax rate in terms of optimal provision of public services. In this approach, pioneered by Samuelson (1954) and Musgrave (1959), the provision of public services exerts benefits but public funding is costly. As the marginal cost of public funds is increasing in the tax rate, the optimal tax rate ensures that the marginal benefit from public service provision is equated with the marginal cost of funds. This framework also applies in a decentralized setting. In the literature on tax competition the standard model (*e.g.*, Zodrow and Mieszkowski, 1986; Wilson, 1986) discusses a tax on a mobile factor, where the marginal cost of funds faced by the individual jurisdiction reflects the adverse effect of a higher tax burden on the location of capital. With higher taxes, for example, other jurisdictions benefit