



# Federal competition and economic growth<sup>☆</sup>

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## ABSTRACT

This paper exploits exogenous variation in the natural topography of the United States to estimate the causal impact of inter-jurisdictional competition on income growth. We find that doubling the number of county governments in a metropolitan area leads to a 17% increase in the average annual growth rate of earnings per employee over 1969–2006, and a 10% increase in 2006 income per employee. Decomposing income effects using 2000 Census worker-level data, we find that approximately half of the effect stems from making workers more productive, while the other half comes from changing the composition of the workforce and inducing workers to work more hours. We also present evidence that inter-jurisdictional competition leads local governments to raise more in taxes, spend more, and issue more debt (per capita), but does not help them obtain more inter-governmental transfers. However, the additional cost from this increase in expenditures to a median-wage employee is much smaller than the increase in that employee's wages due to greater inter-jurisdictional competition.

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## 1. Introduction

Decentralization is a key component of institutional reform around the world. Dillinger (1994) reports that all but twelve of the world's seventy-five largest countries claim to be devolving political power to local governments, motivated by the goals of economic growth and a higher standard of living. However, the economic effects of such devolution of power are hotly debated.<sup>1</sup> Most empirical work on decentralization is comprised of cross-country studies, and faces at least two methodological problems: first, defining a measure of decentralization that can be consistently measured for all cross-sectional units, and second, addressing the endogeneity of institutional choice to economic outcomes like growth. As a result, previous work has not reached firm conclusions.<sup>2</sup>

In this paper, we consider how inter-jurisdictional competition—a defining feature of decentralization—affects economic growth. The presence of inter-jurisdictional competition is perhaps the most important difference between local and national policymaking environments: local governments, much more than national governments, face competition for investment and residents. We study metropolitan areas (MSAs) in the United States and use the number of county governments in them as our central measure of the degree of inter-jurisdictional competition. We find that such competition is a powerful determinant of growth. Specifically, doubling the number of county governments in a MSA—such as by going from one to two—leads to an approximate 0.15 percentage point increase in the average annual growth rate of earnings per employee over 1969–2006. This effect is relatively large and meaningful, amounting to an average annual growth rate in earnings per employee that is 17% higher than average. These results are robust to controlling for county founding years as well as pre-period values of income, population, and racial composition.

There is a large theoretical literature on the effects of decentralization on growth. First, Hayek (1945) argues that local officials have better information on optimal provision levels, and thus supply publicly-provided goods more efficiently. Similarly, Tiebout (1956) argues that having many jurisdictions allows individuals to sort by taste, leading to more efficient provision. Second, work by Besley and Case (1995) and Seabright (1996) on “yardstick competition” suggests that having many jurisdictions allows voters to measure outcomes against those in similar jurisdictions, facilitating monitoring of political agents. Finally, several scholars have emphasized the effects of competition for resources like residents and investment. Brennan and Buchanan (1980) emphasize the ability of inter-jurisdictional competition to restrain the power of monopoly local governments over citizens,

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<sup>1</sup> Kim et al. (1995), Huther and Shah (1998), Akai and Sakata (2002), Stansel (2005) and Hammond and Tosun (2006) find a positive effect of decentralization on growth, while Davoodi and Zou (1998) and Zhang and Zou (1998) find a negative effect. See Bowday and Shah (2009) for a summary of this literature.

<sup>2</sup> See the discussion of Oates (1993), Ebel and Yilmaz (2002), and Rodden (2004) below.

while [Zodrow and Mieszkowski \(1986\)](#) argue that inter-jurisdictional competition may yield a “race to the bottom” whereby productivity-enhancing goods are under-provided by sub-national governments attempting to attract taxable but mobile factors of production.<sup>3</sup> [Hatfield \(2010\)](#), by contrast, provides a model where competition for capital drives districts to provide productive public goods at levels which maximize economic growth.<sup>4</sup> This debate motivates our empirical analysis.

The empirical literature on decentralization and growth can be roughly divided into two categories. The first is cross-country analysis, where economic growth is regressed on a measure of decentralization such as local revenue share or local expenditure share. The findings are mixed, as [Kim et al. \(1995\)](#), [Huther and Shah \(1998\)](#), and [Iimi \(2005\)](#) find a positive effect of decentralization on growth, while [Davoodi and Zou \(1998\)](#) find a negative one, and [Woller and Phillips \(1998\)](#) do not find any significant relationship. However, these studies face some methodological concerns. For instance, [Rodden \(2004\)](#) shows that a unidimensional measure of federalism cannot quantify how the relationship between local and national governments varies across countries.<sup>5</sup> The second category studies outcomes in one country, considering growth as a function of inter-jurisdictional competition within a sub-national unit. By concentrating on one country, we can more confidently measure competition the same way across localities. For example, [Stansel \(2005\)](#) considers inter-jurisdictional competition in the U.S., and finds a positive effect on growth.

However, all empirical work in this area faces a significant challenge to identification, described by [Oates \(1993\)](#): “Is decentralization a ‘cause’ or an ‘effect’ of economic development?”<sup>6</sup> Causality has not been well-established by the existing literature. Some papers, such as [Panizza \(1999\)](#), even estimate the effect of income (among other factors) on decentralization, rather than considering income to be determined by the level of decentralization.<sup>7</sup> There are also several possible sources of omitted variable bias that might downward-bias any growth or income benefits of inter-jurisdictional competition. For example, being racially heterogeneous or having poor weather and mountainous terrain might make an MSA both poor and slow to grow, but also more likely to have more jurisdictions.

To overcome these empirical difficulties, we focus on one nation—the United States—and consider how variation in the number of competing jurisdictions across metropolitan statistical areas (MSAs) affects growth. To address threats to identification, we implement an instrumental variables strategy inspired by [Hoxby \(2000\)](#): we use the total miles of small streams in an MSA to instrument for its number of county governments. We argue that, while small streams are unlikely to directly affect growth in the modern era, more streams increased the number of natural “break-points” between counties at the

time of an MSA’s founding, leading to more counties and thus more inter-jurisdictional competition.<sup>8</sup>

We also investigate whether our finding that inter-jurisdictional competition enhances growth may be due to MSAs with many county governments having relatively low incomes in the 1960s; if this were true, then our results might be due to conditional convergence. By contrast, we find that doubling inter-jurisdictional competition is associated with a 1969 income per employee that is 5% higher, but with a 2006 income per employee that is 10% higher. Greater inter-jurisdictional competition was already associated with higher incomes in 1969, and the disparity only grew over the next 37 years.

Investigating the causes of these different outcomes, we find that approximately one-third of the effect comes from the fact that MSAs with more competition attract more productive workers. Areas with more competition also induce workers to work longer hours: approximately one-fifth of the effect is due to this factor. The remaining portion comprises the direct effect of competition on hourly wages for a given worker: doubling inter-jurisdictional competition leads to 5% higher wages. We also show that MSAs with more competition have a greater percentage of economic activity in more remunerative industries like finance, insurance, real estate, management, and information, and a smaller percentage in less remunerative industries like entertainment, recreation, and retail trade. Finally, we show that MSAs with more competition raise more revenues via taxes, have greater expenditures, and issue more debt, but do not receive more transfer payments from state and federal governments. However, the additional costs to a median-wage employee from additional taxes (and debt) are much smaller than the associated increase in that employee’s annual wages due to greater inter-jurisdictional competition.

The paper is organized as follows. [Section 2](#) describes the dataset and our empirical approach. [Section 3](#) presents the main empirical results; [Section 4](#) presents a variety of robustness checks. [Section 5](#) investigates possible causal channels. Finally, [Section 6](#) concludes.

## 2. Empirical strategy

We investigate the effect of inter-jurisdictional competition on economic growth using data from Metropolitan Statistical Areas (MSAs) and Consolidated Metropolitan Statistical Areas (CMSAs) in the United States. We refer to the collection of MSAs and CMSAs as MSAs. MSAs are comprised of an urbanized nucleus with a population of at least 50,000 and the collection of adjacent communities that have a high degree of integration with that nucleus (as evidenced by commuter patterns).<sup>9</sup> Geographically, MSAs are defined by the set of counties of which they are comprised.<sup>10</sup> See the Appendix for more information on MSAs.

We address identification and the measurement of economic growth and inter-jurisdictional competition within an MSA below, in [Section 2.1](#). For now, assume that these variables are accurately measured and that all variation in inter-jurisdictional competition is exogenous. We estimate the following empirical specification:

$$g_i = \beta_0 + \beta_N \log(N_i) + \gamma \mathbf{X}_i + \alpha_j + \varepsilon_i \quad (1)$$

<sup>3</sup> [Wilson \(1984\)](#) and [Wildasin \(1987\)](#) provide similar insights. [Wilson \(1999\)](#) summarizes this literature.

<sup>4</sup> Similarly, [Brueckner \(2006\)](#) provides a model where inter-jurisdictional competition enhances incentives to invest in human capital, which boosts economic growth. [Weingast \(1995\)](#) and [Hatfield and Padró i Miquel \(2012\)](#) argue more generally that inter-jurisdictional competition can enhance incentives for long-term productive investments. [Montinola et al. \(1995\)](#) apply these ideas to China’s recent economic growth.

<sup>5</sup> [Ebel and Yilmaz \(2002\)](#) additionally point out that the International Monetary Fund’s Government Finance Statistics—frequently used in this line of empirical work – poorly measure the degree of decentralization. They do not differentiate between discretionary and non-discretionary spending by local governments, fail to capture great variance in the level of local borrowing authority enjoyed by sub-national units, and fail to capture differing beliefs over whether debts are, in the end, the responsibility of the national government.

<sup>6</sup> A similar point is made in [Bardhan \(2002\)](#).

<sup>7</sup> Recent work by [Calabrese et al. \(forthcoming\)](#) approaches this identification issue by instead using parameters estimated from a computational model to assess the welfare implications of one facet—Tiebout sorting—of the effect of having multiple competing jurisdictions.

<sup>8</sup> Our analysis circumvents criticisms related to measuring streams and using them as an IV (see, e.g., [Rothstein, 2007](#)) by using GIS data to ensure objective and consistently-applied definitions of streams.

<sup>9</sup> MSAs and CMSAs are mutually exclusive entities. CMSAs are relatively larger than MSAs and contain multiple urbanized nuclei (called Primary Metropolitan Statistical Areas, or PMSAs). Since PMSAs are integrated with one another, MSAs and CMSAs are our units of analysis (as opposed to MSAs and PMSAs).

<sup>10</sup> An exception is New England, where MSAs cross county boundaries and contain only portions of some counties. As data on many of our covariates are not available at more disaggregated levels than the county, we exclude New England MSAs from our analysis. Additionally, we had to exclude three other MSAs for which the boundaries of the counties within them changed over time, preventing the collection of comparable data over time. In total, we have 222 MSAs in our sample for which we have data on all of our covariates.

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