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Taxation, corruption, and growth

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ABSTRACT

We build an endogenous growth model to analyze the relationships between taxation, corruption, and economic growth. Entrepreneurs lie at the center of the model and face disincentive effects from taxation but acquire positive benefits from public infrastructure. Political corruption governs the efficiency with which tax revenues are translated into infrastructure. The model predicts an inverted-U relationship between taxation and growth, with corruption reducing the optimal taxation level. We find evidence consistent with these predictions and the entrepreneurial channel using data from the Longitudinal Business Database of the US Census Bureau. The marginal effect of taxation for growth for a state at the 10th or 25th percentile of corruption is significantly positive; on the other hand, the marginal effects of taxation for growth for a state at the 90th percentile of corruption are much lower across the board. We make progress towards causality through Granger-style tests and by considering periphery counties where effective tax policy is largely driven by bordering states. Finally, we calibrate our model and find that the calibrated taxation rate of 37% is fairly close to the model's estimated welfare maximizing taxation rate of 42%. Reducing corruption provides the largest potential impact for welfare gain through its impact on the uses of tax revenues.

1. Introduction

Is taxation good or bad for growth? A dominant view is that taxation is detrimental to growth. Taxation reduces the reward to entrepreneurial innovation and therefore discourages investments that are important for growth. This perspective emphasizes minimizing the tax burden on successful innovators to encourage more people to try to become successful innovators. An alternative view argues that taxation should not be analyzed independently from the surrounding economic and institutional environment. Taxation, in fact, is central for many aspects of this environment: tax revenues fund public infrastructure, education and schools, legal systems, and much more. Entrepreneurs and innovators often rely heavily on these public goods, and higher taxation can be growth enhancing if it supports the stronger provision of public goods because it raises the expected returns to entrepreneurial efforts.[1]

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[1] Higher taxation and redistribution may help increase investment opportunities in an economy with imperfect credit markets. For example, see Banerjee and Newman (1993), Galor and Zeira (1993), Benabou (1996), and Aghion and Bolton (1997).

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The overall effects of taxation on growth thus depend upon how taxation's incentive effects weigh against the public goods effects. There are two likely corollaries to this statement. First, the relationship of growth to taxation will likely be non-linear, as the marginal incentive effects and public goods effects will differ greatly depending upon existing taxation levels—the former becoming more painful and the latter becoming less effective as taxation continues to rise. Second, while the incentive effects may be unambiguous, the public goods effect rests on a crucial assumption: that taxes are being spent on public goods and not just inefficiently wasted or appropriated. We would thus anticipate that the optimal taxation rate for a very efficient government will be higher than the optimal rate for the most corrupt. The public good effect presumably explains why some Nordic countries manage to innovate and grow at sustained rates with taxes that are high and highly progressive, while other countries suffer.

This paper takes up this task in three steps. In Section 2, we build an endogenous growth model to analyze how corruption and government efficiency affect the relationship between taxation and growth. Modifying the Klette and Kortum (2004) framework, we build a dependence upon public infrastructure and goods into the innovation and entry process. Taxation revenues can support these public goods, but governments vary in their levels of efficiency. The model predicts an inverted-U relationship between taxation and growth, and the interaction between taxation and corruption has a negative impact on growth to the left of the peak.

In Section 3, we provide empirical evidence on the relationships between taxation, corruption, and economic growth using state- and county-level variations within the United States. Our employment and firm count data are primarily from the Longitudinal Business Database (LBD) of the US Census Bureau. We measure corruption through convictions of local public officials (e.g., Glaeser and Saks, 2006), and we collect data on tax revenues from US tax records. Our state-level analysis first considers how lagged tax revenues and corruption influence future growth in state GDP and employment. Over the 1983–2007 period, our panel analysis finds evidence that is consistent with the model's predicted relationships for taxation and corruption on economic growth.

Most important, taxation's marginal impact for growth depends sharply on local corruption. The marginal effect of taxation for growth for a state at the 10th or 25th percentile of corruption is quite positive and robust, and its economic and statistical importance only begins to taper at the upper end of US tax ranges, if at all. On the other hand, the marginal effects of taxation for growth for a state at the 90th percentile of corruption are much lower across the board, and its values are rarely statistically different from zero except at the very lowest levels of initial taxation. Even within the limited range of US state income taxes, we see evidence for negative growth effects of increased taxes for states with very high levels of corruption and taxes. By contrast, we find it more difficult to establish effects of corruption for growth beyond this link with taxes in the US context.

Despite using tight empirical specifications with lagged values that predict future growth, a natural worry is that unmodeled factors by state may be driving the connections that we are seeing among taxation, corruption, and growth. To make further progress on these endogeneity issues, we first perform Granger-style tests by regressing past instead of future growth rates on current tax revenues and their interaction with local corruption, and find that the corresponding regression coefficients become insignificant. Then, we turn to county-level patterns. Picking up on the public goods rationale, we develop a circular ring around each county that is 100 miles in radius for our base case. For some counties, this entire ring is still within the county's home state. For other counties, this ring includes parts of other states. We use this ring to develop a localized taxation and corruption level that is specific to each county by taking weighted averages of state-level values that are included in the ring. Taxations and corruption in neighboring states are more strictly exogenous than the behavior of a county's home state. We find that the interaction of corruption and taxation for growth is stronger with these localized levels. Moreover, the localized interaction effects persist when looking at border counties or counties that draw more than 50% of their weighted taxation and corruption values from states other than their home state. Altogether, these findings give us confidence that the identified link from taxation and corruption to growth is at least partly causal and not the simple product of omitted factors. As we discuss later, our empirical results have important limitations and are far from perfect, but they do shine light on this important question for the United States and emphasize the need for continued study in this area.

Finally, to get a better sense of the importance of corruption on growth and welfare, we calibrate a generalized form of our theoretical model using empirical moments generated from the LBD data. Our list of moments includes key aspects of firm dynamics such as entry, exit, growth, and R&D intensity. The calibration exercise allows us to derive the optimal tax rate. It also allows us to assess the detrimental impact of corruption on growth and welfare. The calibrated model yields an empirical estimate of the taxation rate of 37%, which is fairly close to the welfare maximizing taxation rate of 42%. More interestingly, removing corruption fully from the calibrated solution results in a consumption equivalent gain of more than 20%, which is quite important in size. The calibration strongly suggests that the most substantial growth impacts can emerge from reduced corruption and more efficient government, with optimal tax calibration at our current efficiency levels being second-order.

This paper relates to a whole body of literature on taxation, incentives, corruption, and growth. Representative studies include Helms (1985), Barro (1990, 1991), Mofidi (1990), Barro and Sala-i-Martin (1995), Mauro (1995), Mauro (1998), Fisman and Gatti (2002), Gordon and Lee (2007), Straub (2008, 2011), Hassett and Mathur (2006) and Hauner and Kyobe (2010). The literature on how entrepreneurship and investment are impacted by taxation includes Gentry and Hubbard (2005), Petrescu (2009), Djankov et al. (2010), Rohlin et al. (2010), and Nanda (2011). Public investment and economic growth are discussed by Aschauer (1989), Calderon and Serven (2004), Singhal (2008), and Chakraborty and Dabla-Norris (2011). Tanzi and Davoodi (2010) and Romp and de Haan (2007) provide comprehensive discussions of the interlinkages