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## Higher Education Spending is a Better Job Creator than State Tax Cuts

Aitbek Amatov and Jeffrey H. Dorfman

By estimating employment elasticities of various state-level fiscal policies we find that state tax cuts are inefficient job creators, with an elasticity between 0 and -0.1, and lead to a deterioration in state budgets. In contrast, we find that more state government spending on higher education is approximately self-financing, creating enough additional jobs, and, thereby, tax revenue, to offset the higher spending. This suggests that states competing for business and wealthy cross-state migrants by offering low taxes are pursuing an inferior strategy compared to competing on a well-funded, high-quality state higher-education system.

**Key words:** employment, higher education, jobs, state fiscal policy, taxes

One of the central public fiscal policy debates of the past 50 (or 90) years has been over the impact of tax rates on business growth and, therefore, jobs. A multitude of past research has previously attacked the question of whether lower taxes create jobs, with affirmative answers in the majority. At the national level, Blanchard and Perotti (2002), Lee and Gordon (2005), Romer and Romer (2010), Arnold et al. (2011), and Mertans and Ravn (2012) are some recent examples that find lower taxes create economic growth and, as a result, jobs. A second strand of literature focuses on state-level tax policies. In similar findings, Helms (1985) and Wasylenko (1997) find lower state taxes lead to more economic growth. Bartik (1992) reviewed 84 previous studies and concluded that the elasticity of economic growth with respect to state tax rates was in the range of -0.1 to -0.6. Overall, the literature is quite clear: lower taxes lead to more economic growth and jobs.

However, while the direction of the effect is clear, that is insufficient to settle the fiscal policy question, particularly at the state level. Feldstein (1995) and Feldstein and Feenberg (1996) make clear that state tax cuts are unlikely to be self-financing because the elasticity of job growth with respect to tax rates is too small. Helms (1985), Bania et al. (2007), and Prillaman and Meier (2014) demonstrate that state spending on public infrastructure can create jobs more efficiently than tax cuts. All of this leaves open the question of optimal state fiscal policy in regards to tax cuts versus effective public spending.

To address this question we take a new look at the relationship between state-level tax rates and jobs. We do three things to contribute to the long literature on this topic. First, we examine the impact on jobs in three dimensions, using data on total private jobs, manufacturing jobs, and retail jobs, allowing us to investigate if tax cuts have heterogeneous impacts on jobs in different sectors. Second, we simultaneously look at taxes in three separate dimensions: the top marginal rate for state individual income taxes, the top marginal rate for state corporate taxes, and each state's average property tax burden. Third, we investigate the job-creating benefits of a specific type of state spending—appropriations for higher education—as a new twist on previous research on the benefits of state spending on public infrastructure. Given state spending on physical capital has been shown to be a good job creator and, with the current push for more people to earn college degrees in combination with concerns over rising student loan debt, investigating the benefits of state spending on higher education (which lowers the cost to students) is important.

### **Data and Methods**

Our model is a standard, linear regression with jobs per 1,000 of state population in 2000 as the dependent variable. Dividing jobs by year 2000 population for all years allows us to model states with very different populations on an equal basis while avoiding the introduction of endogeneity by using current population (since job growth could lead to population growth). Explanatory variables fall into three categories: social variables, economic variables, and fiscal policy variables.

Social variables are the violent crime rate (per 100,000) from the Uniform Crime Reporting Statistics of the Federal Bureau of Investigation (FBI) and the poverty rate from the U.S. Census Bureau. Economic variables are a state-average single family housing price index from the Federal Housing Finance Agency constructed from repeat sales or refinancings, state-average commercial electric prices (per kilowatt-hour (kWh)) from the U.S. Department of Energy, the average weekly wage in each state from the Bureau of Economic Analysis, and a self-constructed industrial mix variable. The industrial mix variable is a weighted average of the one-year lagged national employment growth rates in all two-digit North American Industry Classification System (NAICS) industries where the weights are each state's share of employment in each sector. Thus, states with a higher share of jobs in fast-growing sectors have more positive values of the industrial mix variable.

The fiscal policy variables are the top marginal individual income tax rate in each state, the top marginal corporate income tax rate in each state (with both sets of tax rates compiled by the Tax Foundation), the state average property taxes collected per capita, the state minimum wage (with a minimum of the federal minimum wage for states with a

lower one), and state appropriations for higher education collected from the State Higher Education Executive Officers Association.

To complete the model specification, all social and economic variables plus the state appropriations for higher education are lagged one year to ensure causality is directed from those variables to jobs. Annual and state fixed effects are added to the model to capture otherwise unmodeled state heterogeneity and business cycle effects. The data are for all 50 states from 2000 to 2012, giving us 600 observations for estimation after year 2000 is reserved for creating the first set of lagged values. Standard errors are clustered by state to produce better estimates of statistical significance.

## Results

All three models fit quite well, with  $R^2$  values of 0.949 or higher, and all pass Pesaran's test for cross-sectional dependence, suggesting that the model is well-specified. The total private jobs equation has six statistically significant variables out of the 11 social, economic, and fiscal variables, while the retail jobs equation only has two, and the manufacturing jobs equation has four (Table 1).

The top marginal individual income tax rate is negative and statistically significant at the 0.01 level in the total private jobs regression. Converting the parameter into state-specific elasticities finds a range of -0.040 (Colorado) to -0.106 (Hawaii) for the elasticity of total private jobs with respect to the state's top marginal personal income tax rate. The population-weighted average elasticity is -0.053. This is in keeping with the lower end of the range found in Bartik (1992). Individual income tax rates are statistically insignificant in the regressions for manufacturing and retail jobs. In all 50 states, it is clear that cutting state taxes will not produce enough new jobs to offset the lost tax revenue which would require an elasticity in the neighborhood of -1.0. Corporate taxes and property taxes are insignificant in all three regressions; thus, we find no support for lowering state or local taxes as efficient state fiscal and economic growth policies. The state minimum wage also had no significant effect on employment.

In contrast, state spending on higher education is positive and statistically significant at the 0.01 level in all three regressions. The population-weighted average elasticity of jobs with respect to state appropriations to higher education is 0.09 for total private jobs, 0.19 for manufacturing jobs, and 0.08 for retail jobs. In 2011, 10.1% of total state spending went to higher education (National Association of State Budget Officers, 2015), suggesting that, on average, state higher education spending is roughly self-financing. That is, a 10% boost in higher education spending would increase state spending by 1%, yield roughly 1% more jobs, and produce approximately 1% more tax revenue.

The industrial mix variable is negative and statistically significant in the manufacturing jobs model, suggesting that manufacturing employers may seek out states with less favorable prospects to locate new facilities.

**Table 1. Regression Results**

Variable	Dependent Variable		
	All Private Jobs	Retail Jobs	Manufacturing Jobs
Violent crime rate per 100,000	0.074** (0.034)	0.005 (0.005)	0.013 (0.008)
Poverty rate	-0.777* (0.435)	-0.078 (0.088)	0.054 (0.172)
Higher Education Appropriations per FTE (thousands)	6.006*** (1.201)	0.705*** (0.199)	1.038*** (0.369)
Housing price index	0.086* (0.050)	0.011 (0.007)	0.028** (0.013)
Commercial electricity price per kw/h	-0.540 (0.780)	-0.088 (0.128)	0.159 (0.183)
Corporate income tax rate	-0.334 (1.718)	0.037 (0.234)	0.216 (0.414)
Individual income tax rate	-3.831*** (1.185)	-0.237 (0.154)	-0.564 (0.369)
Average weekly wage	0.178*** (0.080)	0.011 (0.008)	0.038** (0.014)
Minimum wage	-0.780 (2.115)	0.055 (0.314)	-0.456 (0.540)
Property tax per capita	0.000 (0.117)	-0.022 (0.020)	-0.060 (0.037)
Industrial mix	1.945 (1.980)	-0.329* (0.169)	-1.616** (0.664)
R <sup>2</sup>	0.949	0.979	0.981

\*\*\* significant at 1% level, \*\* significant at 5% level, \* significant at 10% level

Note: Standard errors in parentheses below each coefficient estimate. Year and state fixed effects parameters not shown in the table. Standard errors are clustered by state. N = 600.

## Implications and Conclusions

State individual income tax cuts will increase total private sector jobs, but only by a small amount. Other state taxes have no statistically significant effect on jobs, either total or in the manufacturing or retail sectors. The empirical results are clear that states cannot

increase their total tax revenue by lowering their top marginal income tax rates; the jobs generated by tax cuts are insufficient to offset lost revenue from existing revenue sources. However, state higher education spending can deliver enough additional jobs to produce new tax revenue in an amount that roughly offsets the additional spending. Thus, similar to spending on public infrastructure, we find support for specific types of government spending; in this case, on the creation of human capital.

While we did not specifically address tax incentives for new business attraction, the results on top marginal income tax rates and on property tax suggest that states competing among themselves for large-scale employers may be overemphasizing tax breaks and should spend more time on workforce skills and their commitment to funding higher education.

Finally, these results are another data point that public colleges of agriculture and state land grant universities, in general, can use to persuade state legislatures that funding for public higher education is a wise investment.

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