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# Jobless capital? The role of capital subsidies

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ABSTRACT

Using tax abatements, financial incentives, and public investments to attract (or retain) firms is the primary economic development tool for many local governments. Often local job creation policies focus on increasing capital through grants, low-interest financing, and other economic development incentives. Theory predicts that capital subsidies induce firm behaviors that limit their job creation effects. This paper employs the Incentives Environment Index, constructed from state constitutional provisions that limit and structure the ability of state and local governmental entities to aid private enterprises, and county panels to test theoretical predictions on county capital expenditure and input mixes as well as industry establishment shares. The results indicate the act of increasing capital subsidy tools is associated with capital-labor substitution, decreased employment density, and changes in local industry mix. Results are robust to alternative empirical specifications and measures of capital subsidy availability.



## 1. Introduction

Responsibility for policies supporting local economic growth and jobs increasingly lies with state and local policymakers. As political polarization and limited federal resources hamper federal responses, demands for state and local officials "to do something about jobs" will likely increase (Bartik, 2012). Often local job creation policies focus on increasing business retention and recruitment through grants, low-interest financing, and other nontax economic development incentives. These nontax incentives effectively subsidize capital rather than labor; yet they are touted as job creation policies.

Despite being featured prominently in public debate on economic development incentives, there are few studies of nontax incentives (cash and near-cash grants, low-interest financing, free land and buildings, and so on). In part, this is due to lack of data on state and local nontax capital subsidies. The few existing studies rely on spending measures, which lump capital subsidies with other types of economic development programming and miss a portion of nontax incentives, or program measures. Studies employing economic development spending tend to find positive effects, while studies using program measures generally find negative or insignificant effects. Both spending and program measures present challenges to identifying the causal effect of capital subsidy incentives. In Patrick (2014a), I develop a measure of nontax capital subsidies based upon state constitutional provisions governing public aid to private enterprises – the Incentive Environment Index (IEI) – and use it to investigate the effects of nontax capital subsidies on jobs. I find that increasing the ability of governments to aid private enterprise has a negative medium-term effect on rural county employment levels and no significant effect otherwise. These results are consistent with program measure-based studies that find that incentives don't support local job creation.

The research herein investigates the potential mechanisms underlying these findings for incentives aimed at subsidizing capital. Theory outlined in this paper predicts that capital subsidies will have two effects. The first effect is capital-labor substitution, whereby firms that can substitute capital for labor adjust their input mix in favor of capital. The theory also predicts that subsidy-induced changes in total costs allow relatively capital-intensive firms to outbid relatively labor-intensive firms for land, causing changes in locations' industry mix. Taken together, these two effects lead to no change or decreases in local employment levels—even if subsidies induce firm location on the margin.

The present paper employs the IEI and five year county panels to test theoretical predictions on county manufacturing capital expenditure and input mixes as well as industry establishment shares. A rich set of control variables and first-differencing helps to isolate the effect of capital subsidy availability. Previous research also suggests rural and urban areas respond differently to job creation stimuli. The paper therefore analyzes rural and urban counties separately. A subset of urban counties located in multi-state MSAs is also examined. The results indicate increasing capital subsidy availability is associated with both capital-labor substitution and changes in local industry mix, limiting the job creation effects of these policies. Consistent with previous findings, urban and rural counties respond differently to an increase in the IEI, and pooling counties masks heterogeneity in the effects for rural and

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urban counties. This suggests that incentive effects may vary with the level of agglomeration. Capital subsidies appear most effective at inducing capital expenditure in urban areas. Capital expenditure per employee increases with capital subsidies, and employment density declines. As predicted by theory, relatively capital-intensive industries increase their establishment shares at the expense of relatively labor-intensive industries with which they compete for land.

The results are robust to an alternative border fixed-effects random trend specification. The sample is limited to counties that share a state border, and the first-differenced equation is estimated with a border-specific fixed effect. This method has the advantage of focusing on within-border-area variation induced by differences in capital subsidy availability. The results are also robust to alternative measures constructed from state constitutional provisions governing public aid to private enterprises.

The paper proceeds in Section 2 by discussing key findings in the literature. Section 3 sketches a simple theoretical model of equilibrium changes under a capital subsidy regime. The data and empirical strategy are described in Section 4. Section 5 discusses the estimation results, and Section 6 explores robustness. Some concluding remarks are provided in Section 7.

## 2. Background on nontax capital subsidies and job creation

Despite decades of research on economic development incentives, there is relatively little research on the effects of nontax incentives. Yet these types of incentives (cash and near-cash grants, low-interest financing, free land and buildings, etc.) feature prominently in the public debate because this type of incentive most closely resembles the legalized bribery of companies and because it often makes up the bulk of incentives packages (Bartik, 2012; Patrick, 2014a). Consider, for example, the state and local incentives in Google's recent selection of North Carolina. Morgan (2009) estimates the tax incentive portions of the package (credits, exemptions, and refunds) totaled $91.6 million, compared to the $170 million grant portion of the package. Although comprehensive data on state and local economic development incentives are not available, some evidence suggests these incentives may account for as much as three-quarters of state and local resources devoted to economic development (Bartik et al., 2003). One survey of state economic development programs reports that “the percentage of businesses receiving more than $50,000 through nontax programs significantly exceeded that percentage for tax programs” (Council for Community and Economic Research, 2013, p.19). Patrick (2014a) analyzes the incentive packages contained in the Good Jobs First megadeals subsidy database from 1985 to 2000 and finds that the reported value of the nontax portion was 1.7 times greater than the value of the tax incentives.[1]

The few studies of nontax incentives yield mixed results, in part because of differences in measures of incentives and methodologies. This line of research generally relies upon state measures of economic development expenditures or programs. These measures pose challenges for identifying the causal effect of nontax incentives (that effectively subsidize capital) on jobs. For example, de Bartolome and Spiegel (1997) and Goss and Phillips (1997) find a positive relationship between state economic development spending and job growth. However, it is difficult to interpret these results as the causal effect of nontax incentives on job creation, for a variety of reasons. Critically, state economic development spending does not capture local resources. These data are not generally available, but research suggests local spending is at least as much as state spending in some places, and much greater in others.[2] State economic development spending is likely endogenous to state economic conditions. Furthermore, economic development spending confounds the effects of different types of incentive programs and nonincentive activities. It is reasonable to expect that economic development activities such as marketing, technical assistance, and workforce training will have different effects from cash, grants, loans, site development, and low-interest financing. Economic development spending bundles all these activities together, and even detailed budget data doesn't readily allow for separation.[3]

Rather than spending, other researchers employ program measures. O hUallachain and Satterthwaite (1992) use tax rate measures, industrial revenue bond (IDB) financing, and program dummy variables. They find only the dummy variables for enterprise zones and university research parks have a positive statistical relationship with employment growth. Recognizing the limitations of their empirical approach, O hUallachain and Satterthwaite are careful not to claim causation. Goetz et al. (2011) create measures of the share of all possible programs available in states and characterize programs in terms of race-to-the-top (RTT) and race-to-the-bottom (RTB) policies. They find tax incentive and financial assistance programs may harm growth rather than help. However, even their classification does not distinguish between the effects of capital subsidization and other policies. For example, RTT policies include capital subsidy programs targeted at innovative firms. RTB policies include capital subsidy programs aimed at traditional industries.

Like spending, program variables may also be endogenous to economic conditions. In fact, the policy literature indicates economic development policy does react and evolve based upon economic conditions (Greenbaum et al., 2010). Empirical evidence is inconclusive with regard to the direction of bias, though. Both distressed and growing locations have been found to be more likely to use economic development incentives and create programs in response to local economic conditions.

Incentive offers reflect local economic conditions, incentive packages offered by competing localities, and the “rules of the game” as dictated by federal and state constitutions. Patrick (2014a) overcomes some of the aforementioned challenges by creating the Incentives Environment Index (IEI) from state constitutional provisions governing state and local government aid to private enterprise. These state constitutional provisions originated in the mid-to-late nineteenth century in response to state and local government financial crises caused by participation in economic development projects (via railroads, canals, ferries, etc.). The types of programs available in locations across the United States are a direct reflection of the limits placed by these constitutional provisions. As detailed below, the IEI measures the ability of government to use public monies, credit, and property in the aid of private enterprise. It is not a measure of other types of economic development programming, such as human capital investments, amenities, tax breaks, or direct jobs programs. However, the availability of programs

[1] Details are available in the online appendix of Patrick (2014a). The total value of nontax incentives was $2,925,800,000, compared to $1,750,120,000 for tax incentives, based upon the author's calculations. These values are exclusive of worker training incentives when possible. Another $95,000,000 was classified as “other.” Incentives classified as “other” were unspecified in the source data. Analysis is available upon request from the author.

[2] For example, Thomas (2011) reports the local/state subsidy ratio for Missouri—one of the few states for which he determined reliable data could be obtained—was 7:1. Thomas estimates total state and local spending by extrapolation and the assumption that most local subsidies equal state subsidies.

[3] For example, The Council for Community and Economic Research's State Economic Development Expenditures Database contains totals for U.S. states' economic development expenditures by functional category. These categories do not differentiate between different types of incentives and other economic development activities. For example, marketing activities are included in International Trade and Investment, Domestic Recruitment, Tourism and Film, and Program Support. Multiple categories also include expenditures for capital subsidies (e.g., cash, loans, grants, site development), which makes determining total expenditure on these programs unfeasible even at the state level. Capital subsidies for private enterprises are included in the following functional categories: Business Finance, Strategic Business Attraction Fund, Domestic Recruitment, Technology Transfer, Entrepreneurial Development, Minority Business Development, and Community Assistance.