County Fiscal Policy and Entrepreneurship:

The Impact of Occupational License Taxes on Business Startups

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I. Introduction

Entrepreneurship is a vital resource for the development of an economy. A robust entrepreneurial environment full of motivated individuals is a strong indicator of growth. Startups and small businesses constitute an astonishingly high proportion of total economic activity in the United States. In 2011, about 67% (United States Census Bureau, 2011a) of total establishments in the United States were those with annual sales of less than $25,000 and establishments with less than 20 employees comprised about 86% (United States Census Bureau, 2011b) of total establishments. Consequently, state and local governments generally strive to create an amenable business environment for startups and small businesses. However, this often clashes with the aim of governments to raise revenue. While business taxes are a common source of revenue for state and local governments they usually have the unintended consequence of providing a disincentive for entrepreneurs to pursue new business ventures. It is well established in literature that among other reasons individuals become entrepreneurs the financial reward from starting a business is one of the major factors. Therefore, because the financial burden from business taxes diminishes the present value of financial returns from business startups, high taxes can be quite detrimental to innovative activity.

A substantial amount of literature exists studying the influence of business taxes on entrepreneurial activity. However, most literature is focused on location decisions of businesses and/or the effect of state-level business taxes. For example, Fox and Murray (1990) study the effect of public policies on location of firms and find that short-term local business-tax policies discourage entry of small firms into the municipality. In addition, Bartik (1989) shows that state level tax cuts have a significant but modestly positive impact on small business startups only if tax cuts do not result in reductions in business-related public services. Delmar and Davidsson (2000) look at cross-country differences in businesses startups and determine that tax differentials may explain variation in the number of nascent entrepreneurs between the Nordic countries and the US. Our study combines different aspects of these strands of literature and provides new evidence in this area.

The purpose of this study is to examine the effect of county fiscal policy on entrepreneurship. By exploiting variation in county-level business taxes in Kentucky, we examine whether a tax penalty on new businesses discourages entrepreneurs from new venture creation. In Kentucky, counties impose an “occupational license tax” which is either applied to wages paid out by the business, net profits earned by the business, or both. Net profits are defined as gross income less any deduction for state or local tax allowed by the state of Kentucky. Every business started in Kentucky is required to be registered with the respective county in which the business exists. Once registered, the business is responsible for abiding by the regulatory framework of its county. The occupational license tax is due the year following the year of establishment and is imposed annually as a fee for the renewal of the occupational license. In Kentucky, occupational license tax rates range from 0 to 2.25%, with 77 of the total number of 120 counties imposing a non-zero rate. Although there is considerable between-county variation in tax rates, within-county variation in consecutive years is insignificant.

The paper is organized in the following way. Section II provides a theoretical framework for the model constructed in this paper. Section III includes an in-depth discussion of the data used. Section IV consists of the empirical specification of the model. Section V offers an overview of the results from the empirical model and Section VI concludes.

II. Theoretical Framework

Under the standard assumptions of rationality, we model individuals as expected utility maximizers. Then for each individual the decision to start a business relies on whether the expected profit $E(\pi)$ that the business yields is greater than a certain income threshold $\bar{Y}$. $E(\pi)$ is defined as the expected discounted value of the stream of all future profits that are earned from the business. $\bar{Y}$ can be thought of as the opportunity cost of the business startup. For example, for an individual who would have to leave current employment to engage in his/her business venture, $\bar{Y}$ would represent the expected discounted value of income from staying employed in his/her current position. In other words, $\bar{Y}$ represents income forgone from an alternative source as a result of starting a business.

The expected profit from a business startup is directly a function of the fiscal framework of the county. For the purpose of this analysis, we assume that the most important feature of county fiscal policy that influences entrepreneurial decision-making is the occupational license tax τ. Although this may seem to be a strong assumption at first glance, it might be supported by the notion that the occupational license tax is one of the most salient features of the county fiscal environment to entrepreneurs. Using the argument of Chetty *et al* (2009), we infer that similar to the way consumers underreact to taxation that is not salient, the entrepreneurial response is stronger to taxes that are more salient. However, other features of the fiscal environment might also play a role in an individual's valuation of $E(\pi)$. These might be gauged by the individual's perception of the difficulty in navigating government regulations g. Therefore, expected profit valuation for each individual will depend on both occupational license tax and government regulation giving rise to the form $E(\pi(\tau, g))$. Then the following rule describes the decision to start a business:

$$startup = \begin{cases} 1 & if\ E\big(\pi(\tau,g)\big) \geq \bar{Y} \\ 0 & if\ E\big(\pi(\tau,g)\big) < \bar{Y} \end{cases}$$

It is straightforward to deduce how each of these parameters affects expected profit.

$$\frac{\partial E\big(\pi(\tau,g)\big)}{\partial \tau}, \frac{\partial E\big(\pi(\tau,g)\big)}{\partial g} < 0$$

Since occupational tax rates have little within-county variation across consecutive years, clearly an increase in the current tax level will not only impose a tax burden on profits at the end of the current fiscal year but it will also affect net profits in the future. Similarly, regulations are often deeply grounded in government policy and therefore complex regulatory structures not only reduce profitability in the current period but also indicate reduced profitability in the future.

Note that since occupational license taxes are imposed on net profits, it may discourage investment in the business. Assuming higher levels of investment lead to higher net profits, the profit maximizing level of investment might be lower in the presence of occupational license taxes than with no tax penalty. However, because the purpose of our model is to examine entrepreneurs on the extensive margin, we ignore any implications of county fiscal policy on intensive margins.

III. Data

We utilize a unique dataset generated by the Kentucky Entrepreneurship Survey conducted by a team of researchers, including but not limited to the authors of this paper. The purpose of the survey was to elicit household responses regarding entrepreneurial self-efficacy. Entrepreneurial self-efficacy is defined as "the strength of a person's belief that he or she is capable of successfully performing the various roles and tasks of entrepreneurship" (Chen, Greene, and Crick, 1998).

The survey sampled 79 counties throughout Kentucky and included 12 rural mining counties, 56 rural farming counties, and 11 urban counties, all selected to obtain a representative sample of Kentucky's population. Of the total number of surveys sent out, about 47% included households with a self-employed household head in management, professional/technical, sales/marketing, clerical, or blue-collar industries. Approximately 17% of the total number of surveys were sent to household heads that are farmers, and the remaining 36% included randomly selected households whose heads are neither self-employed or farmers.

The survey asked a number of questions that are critical to estimate the model constructed in this paper. First, the survey directly asked individuals whether they have ever started a business or a not-profit. For individuals that respond in an affirmative, the survey asked a follow up question to determine the years during which the business was started. These questions allowed us to not only identify entrepreneurs but also to observe the taxes they faced for each year they started a business. Second, for individuals that indicated that they have never started a business, the survey asked each respondent whether he/she has ever thought about starting a business. This set of questions collectively allows us to isolate individuals who have entrepreneurial intent. Because there are many other factors that determine entrepreneurial intent, considering only individuals that have either started a business or thought about starting a business provides for conservative selection of intent entrepreneurs. Therefore, the estimates of this analysis should be treated as such.

Comprehensive county-level tax data is available for years 2009 to 2013. Each individual with entrepreneurial intent is matched with the occupational tax rate faced for each year and for county of residence. The final sample consists of 458 individuals with entrepreneurial intent observed over 5 years for a total sample size of 2195 observations. Note that the researchers observe each individual only in 2013 and the only retrospective question on the survey was regarding year of business startup. Therefore, all other variables (except for age) are treated as time-invariant and the sample is posed as a pooled cross-section. Descriptive statistics for the sample are shown in Table 1 below.

Table 1. Descriptive Statistics

	Mean	Std. Dev.
startup	0.045	0.20657
tax	1.067	0.82512
male	0.396	0.48925
black	0.052	0.22287
high school	0.282	0.45030
some college	0.296	0.45665
college graduate	0.205	0.40380
graduate degree	0.157	0.36405
age	47.979	13.53523
govt: 2	0.284	0.45101
govt: 3	0.264	0.44081
govt: 4	0.269	0.44347
govt: 5	0.098	0.29738
urban	0.531	0.49917
culture	0.690	0.46258
HH income	0.822	0.38233
Observations	2195	

IV. Model

The theoretical framework and the available data lends itself to the following empirical specification:

$$startup_{ijt} = \beta_0 + \beta_1 tax_{ijt} + \beta_2 govt_i + \beta_3 urban_{ij} + \beta_4 culture_j + \beta_5 X_i + \varepsilon_i$$

where the dependent variable $startup_{ijt}$ is dichotomous and equals 1 if individual i started a business in county j in year t and equals 0 otherwise. Since we observe the startup decision of each individual in each of the 5 years specified, the $startup$ variable can take on values of 1 for the same individual multiple times. However, we do not observe if an individual started more than one business in the same year. As a result, the dependent variable will record only each individual's decision to start a business regardless of how many businesses they started in the year. This does not pose an issue for our analysis. First, recall that within-county variation in occupational license taxes across consecutive years is insignificant. As a result, whether an individual starts one business or multiple businesses, the decision to conduct a startup will be the result of the same tax rate in the same county. Second, we are more concerned with what causes an entrepreneur to start a business than the effect on the entrepreneurial effort once the business has been started. Multiple startups in one year can be thought of as an indication of high entrepreneurial effort and can therefore be ignored.

Among the independent variables, our primary variable of interest is tax_{ijt}. The variable measures the tax rate faced by individual i who registers a business in county j in year t. As

mentioned earlier, for a startup registered in year t the tax rate will be applied to net profits in year $t+1$. Since the individual in our model maximizes expected utility, the decision to start a business will be influenced by taxes paid in the future. We expect the coefficient on this variable to be negative. The second variable of interest, $govt$, measures the individual's perception of the extent of the local government's efforts to support small and local businesses through financial assistance, encouragement, and other forms of support. This variable is meant to proxy for the difficulty an entrepreneur will expect to face in dealing with government regulations when starting a business or after the business has been started. The variable is measured on a 5 point scale with 1 being the lowest and 5 being the highest ranking of the individual's perception of local government support. Clearly, the greater the individual's ranking of $govt$, the higher the likelihood of him/her starting a business. Therefore, this variable is expected to have a positive coefficient. The third variable $urban_{ij}$ is a binary variable which equals 1 if county j that individual i resides in is an urban or rural county. The underlying assumption in this measurement is that county j is considered urban if it lies in a metropolitan or a micropolitan area. By this definition, the state of Kentucky consists of 35 counties that are considered urban. The variable $culture$ is a dichotomous variable that gauges whether the county has an entrepreneurially supportive culture. We use a proxy for county culture by a survey question that asks each individual whether they perceive their county to be supportive of entrepreneurs or not. This is critical in our analysis as there is a concern for potential endogeneity with tax rates and county culture. County governments may set occupational tax rates in accordance with the residents' general attitude towards entrepreneurship. Counties that are particularly conducive to entrepreneurs may try to encourage startups by setting lower taxes relative to counties that do not value entrepreneurship as much, leading to severely biased estimates. The perception of each individual towards his/her county's support for entrepreneurship will provide an indication of the county's culture and the inclusion of this variable will alleviate endogeneity issues. Finally, X_i is a vector of demographic variables including age, gender, race, household income, and education, and ε_i is the error term.

We are interested in determining the effect of our independent variables on the likelihood that a representative individual starts a business. The preferred choice of specification is then Probit estimation as given by the following equation:

$$\Pr(startup = 1) = \Phi(\beta_0 + \beta_1 tax_{ijt} + \beta_2 govt_i + \beta_3 urban_{ij} + \beta_4 culture_j + \beta_5 X_i)$$

where Φ is the cumulative density function of the normal distribution.

V. Results

The results from the model are shown in Table 2. As expected, the coefficient on the variable tax is negative, indicating that an increase in the occupational tax rate decreases the probability of a business startup. However, the coefficient is statistically insignificant in the model. The variable measuring difficulty in dealing with government regulations, $govt$, also seems to show expected results although most values are insignificant in the model. As the values of the scale increase from 2 to 5, the probability of starting a business falls. Individual who indicated a value of 4 on the scale are about 3.1% less likely to start a business than other individuals. The variable

Table 2. Probit Regression on Business Startups

	Coefficient	Marginal Effect
tax	-0.0373809	-.0034712
	(0.0636473)	(0.0058959)
male	.0930185	.0086378
	(0.0970364)	(0.0089736)
black	-0.0613768	-.0056995
	(0.2175942)	(0.020199)
high school	.0390164	.0036231
	(0.3174643)	(0.0294671)
some college	0.1747975	.0162319
	(0.3158145)	(0.0292665)
college graduate	.2608386	.0242219
	(0.3214965)	(0.0298186)
graduate degree	0.411223	.0381868
	(0.3168915)	(0.0293235)
age	-.0102204***	-.0009491***
	(0.0035973)	(0.0003345)
govt scale: 2	0.1401685	.0173928
	(0.1879295)	(0.0218787)
govt scale: 3	-.1837081	-.0178551
	(0.2028583)	(0.0214306)
govt scale: 4	-0.3748058*	-.0314319
	(0.2227244)	(0.0216105)
govt scale: 5	-.1735619	-.0170011
	(0.2438801)	(0.0244588)
urban	.1416676	.0131555
	(0.1266826)	(0.0116881)
culture	0.2516906**	.0233724**
	(0.1232674)	(0.011379)
HH income	-.26378**	-.024495**
	(0.1149936)	(0.010748)

***significant at the 1% level

** significant at the 5% level

* significant at the 10% level

$urban$ shows that individuals that live in counties within metro areas are more likely to start a business; however, the estimates are imprecise. The dichotomous variable $culture$ is highly significant in the model and it confirms that individuals who live in counties with entrepreneur-conducive culture are more likely to become entrepreneurs. Individuals who reside in these counties have a 2.3% higher probability of starting a business than individuals who live in other counties in Kentucky.

Among other statistically significant variables, individuals that have a household income of greater than $100,000 are about 2.4% less likely to start a business than individuals with lower household income. This result makes sense because individuals with a high household income may experience a smaller "push" effect compared to individuals with low household income who might become entrepreneurs to improve the financial situation of their household. Furthermore, the variable age is highly significant in the model although it has a modest effect. An additional 10 years of age lead to a decrease in the probability of starting a business of approximately 0.95%. Education, gender, and race do not seem to play a significant role in the probability of individuals establishing a startup.

Although most estimates from the model show what we expected, some variables lack significance. The coefficient on our variable of interest, tax, shows that occupational license taxes do not significantly discourage entrepreneurs from starting a business. While this result is revealing on its own, it is worth addressing a possibility that might have caused this insignificance. In addition to the regulatory framework and the culture of the county, the level of entrepreneur-specific infrastructure provided by the local government might play an important role in an individual's decision to start a business. If counties that charge high occupational license taxes also provide a generous amount of incentives for entrepreneurs, then residents of those counties might be more inclined to start business relative to residents of low-tax counties. The rationale behind is notion is straightforward. If counties provide a higher level of entrepreneur-specific incentive programs to each individual than the amount collected from occupational license taxes, then all else equal an individual might experience a net gain from public services. In this case, it will be beneficial for entrepreneurs to start businesses in high tax counties. This effect in the opposite direction might have undermined the coefficient on the tax variable leading to insignificant results. While we capture some of this effect in the $govt$, $urban$, and $culture$ variables, an explicit measure of entrepreneur-specific infrastructure is needed for each county.

VI. Conclusion

We created a model of business startup decisions by utility maximizing individuals to determine the impact of county fiscal environments on entrepreneurship. We utilize a unique dataset generated by the Kentucky Entrepreneurship Survey which allows us to observe personal traits of entrepreneurs, each year a startup was established, and the entrepreneurs' perception of the entrepreneurial culture of each county. Controlling for relevant factors, we find that county-level occupational license taxes do not significantly impact the decision of entrepreneurs to start a business. We do find strong evidence of the influence of county supportiveness of entrepreneurs on business startups. Even though the results are modest, the do have implications for county

governments to encourage entrepreneurship. While occupational license taxes do not significantly influence entrepreneurial decisions, there are many other facets which counties can use as policy tools. Counties that foster a robust and rewarding environment for entrepreneurs have a strategic advantage relative to other counties. Some ways to achieve this may include relaxing the regulatory framework for startups and rallying community support to spur innovation.

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