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State Fiscal Policy and Small Business Creation

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Promoting entrepreneurship has emerged as a significant policy tool for regional economic growth and job creation (Friar and Meyer, 2003; Laukkanen, 2000; Rosa, Scott, and Klandt, 1996). Indeed, Maillat (1998) argues that economic development policy has shifted to promoting endogenous economic growth via entrepreneurship and away from competitive growth via attracting businesses from elsewhere.[1]

After more than a decade, the evidence is not particularly sanguine for the proposition that small business formation leads to economic growth. Wong, Ho, and Autio (2005) and Friar and Meyer (2003), among others, demonstrate that new growth ventures (as in Allen, 1999) stimulate economies; but new ventures in general do not. Unfortunately, these new growth ventures are not necessarily the sort of businesses the industrial/fiscal policy of the last 20 years has fostered (Friar and Meyer, 2003).

We believe that part of the reason for this disheartening result is that researchers still have only an incomplete understanding of the relationship between fiscal policies and the birth and death of businesses. To help address this issue, we take advantage of the natural policy experiment that exists among the U.S. states. On a state-by-state basis, we study business establishment and business failure as it relates to

[1]Even so, neither the literature, nor policy makers have consistently defined the differences or the overlap between entrepreneurship and small business formation.

categories of state spending and state taxation. This paper parallels other papers which seek to relate "economic freedom" to various measures of economic performance (Kreft, 2003; Clark and Lee, 2005; Kreft and Sobel, 2005; Wang, 2005; Doucouliagos and Ulubasoglu, 2006; Sobel, Clark, and Lee, 2006). However, unlike that stream of research, we do not rely on indices of economic freedom. Instead, we focus on state fiscal policies directly.

Johnson and Parker (1994, 1996) argue that firm births and firm deaths cannot be studied in isolation. Furthermore, if state policy makers' interest lies in "home growing" businesses, then their interest lies in formation of sustainable and sustained businesses, rather than a cycle of rapid start-ups and rapid failures. Lastly, an expansive literature (see, e.g., Hayward, Shepherd, and Griffin, 2006) argues that the dynamics of firm formation are separate and different from the dynamics of firm dissolution. For these reasons, we separately estimate models of firm births and firm deaths. Given the nature of our data set and research questions, fixed effects estimation with correction for heteroskedasticity is the appropriate technique.

We focus on relating changes in firm births and firm deaths to changes in economic conditions and changes in state fiscal behavior. Our results indicate that firm births and firm deaths are very different processes. For firm births, the significant point concerns what makes a state attractive for opening new businesses, that is, what leads to positive perception among would-be entrepreneurs. The decision on where to open a business is all about perception once one decides to open a business. Where do I think will be the best spot? As an entrepreneur, one is looking for a favorable environment for your investment. Because many new firms are sole proprietorships or S corporations, the most significant tax is the personal income tax. One also wants to open where business treatment is favorable. If government spending supports infrastructure then potentially there is a positive business environment. We argue that entrepreneurs interpret highway spending as a proxy for a pro-business stance by a state.

For firm deaths, reality kicks in for the inexperienced entrepreneur. Property taxes are a very real expense for the business that many entrepreneurs may not adequately consider up front. State spending on health and hospital deals with service industry spending, which is the type of industry on which many entrepreneurs focus. If a state is supporting service industries through state expenditure, more new business will tend to survive. As a state cuts service industry spending, more new businesses fail.

Discussion

We seek to illuminate the impact of state fiscal choices on business formation and business deaths. If the goal of a state's legislature or its electorate is to foster and sustain small businesses, then focusing on their birth or death in isolation may lead to misleading conclusions. The solution to this problem is to focus on both business formation and on business deaths. Scaling business activity to the geographic location is a common issue in the firm formation literature (Johnson and Parker 1994, 1996). In order to account for the vast differences of the states' economic sizes and to allow direct comparison across vastly disparate states, we measure business formation as a percentage of each state's number of business establishments. For example, in State *i*:

$$Business_i = business\ births\ /\ total\ businesses_i\ X\ 100$$

We construct an analogous measure for business deaths.

Though some of the literature focuses on sole proprietorships, we choose to focus on new businesses regardless of organizational structure. Wong, Ho, and Autio (2005) and Friar and Meyer (2003), among others, demonstrate that new growth ventures stimulate economies; but new ventures in general do not. In addition, new growth ventures tend to form around an entrepreneurial *team* with significant industry experience (Friar and Meyer, 2003; Bygrave, 1997; Timmons and Spinelli, 2006). Also, many small businesses may be formed as S

corporations to provide their owners with the limited liability benefits of the corporate form while allowing for the preferential tax treatment of the sole proprietorship. Counting only sole proprietorships may miss the most economically significant entrepreneurship.

To establish a "base line" of net business formation and employment, our estimates include real household income per capita changes, changes in state population, changes in commercial and industrial lending, changes in the average number of employees per firm, changes in the unemployment rate, changes in the combined agricultural and manufacturing percentage of gross state product, the non-Caucasian population percentage, and state median age. These variables are also similar to firm birth and firm death models such as Johnson and Parker (1994, 1996), and as reviewed in Keeble, Walker, and Robson (1993).

We focus on relating changes in firm births and firm deaths to changes in economic conditions and changes in state fiscal behavior. To study the impacts of policies on economic outcomes, one can compare differences in levels across states and times. One can also relate changes in outcomes to changes in conditions and changes in policies. We believe the "changes" approach offers more compelling evidence regarding the impact of state fiscal behaviors on entrepreneurs. Furthermore, our "changes" specifications achieved far superior empirical results.

Though we make few *a priori* predictions about these relationships, each variable has good arguments for its inclusion. Two (perhaps oppositional) ideas warrant the inclusion of real income per capita. First, rising real incomes indicate a growing state economy and growing household expenditures. This rising demand may motivate entrepreneurs to found and then expand small businesses, sometimes referred to as "gazelle entrepreneurship." Second, during difficult economic times, individuals may turn to entrepreneurship and small business formation as their solution to the tough times, sometimes referred to as "survivalist entrepreneurship."

Keeble and Walker (1994), Robson (1994), Black, De Meza and Jeffreys (1996), and Johnson and Parker (1996) include variations in the

amount of net housing wealth per cross-sectional element. The general argument is that housing equity provides collateral to back commercial lending in support of a business start-up. Similarly, as an independent variable, we include the dollar volume of all commercial and industrial loans by all FDIC-insured institutions, by state per year.

Though our models include the Caucasian population percentage, we also observe each state's African American and Latino population percentages. Given that the bulk of each state's population is composed of these three groups, and that the states' ratios of African Americans to Latinos can vary widely, we use the white population percentage to capture any differences in entrepreneurial activity among these groups.

Like personal income, the state's median age may have a positive or negative impact on small business formation and employment. On one hand, a young population may turn to entrepreneurship as its main labor market activity. On the other hand, an older population may embrace lifestyle entrepreneurship.

Despite the econometric difficulties of including both state expenditure and state revenue percentages in the same model, one may wish to do so. In the aggregate, state revenue and state spending may "be basically the same thing;" however, the small differences between them may have impacts on small businesses and small business unemployment. One way to accomplish the objective of simultaneously analyzing revenues and expenditures is to disaggregate spending and revenue into various components; provided the various components of spending and revenue are less correlated with each other than total spending and total revenue are; and also provided that sum of expenditure shares is less than one and the sum of revenue shares is less than one. In such a model, the coefficients on the expenditure or revenue components would be interpreted as relative to the "missing" or "residual" component of revenue or expenditure. An added attraction of this approach is that it allows us to study how specific types of spending and revenue collection differentially affect small businesses. We find it interesting to ask whether

it matters to small business founders *how* states raise their revenue and *how* states spend their money. Indeed, these questions are the principal questions we address.

Specifically, we disaggregate state spending into its education percentage, hospital percentage, highway percentage, and personal welfare percentage. We disaggregate state revenue into its the property tax percentage, the sales tax percentage, the individual income tax percentage, and the corporate income tax percentage.

Empirical Results

We retrieved our small business data from the website of the U.S. Small Business Administration Office of Advocacy, at http://www.sba.gov/advo/research/data.html. The data derives from the U.S. Census. Our data on state expenditures and revenues also comes from the Census Bureau. We construct a panel that covers U.S. states for 13 years through 2001. Where relevant, all variables are in real, per capita terms. We offer the key to our variables and their descriptive statistics as Table 1 and Table 2. We present selected correlation coefficients between variables in Table 3.

Given our research questions and our data set, we use fixed effects estimation with a dummy variable for each year. This is appropriate given that our unit of observation is the state, and we are studying the effects of state taxes and state expenditures. We argue that with relatively few exceptions, the effects of a state's government and its policies stop at the state's borders, which implies fixed effects estimation. Furthermore, we argue that estimating a fixed effect per state provides a simple way to account for economically significant differences in a state's natural resources, economies of agglomeration, and history of economic development. By also estimating a set of dummies for years, we are able to capture time differing, but nationwide, effects.

Table 4 presents selected estimates of the percentage of new

Table 1. Key to variables

chbrth	Percentage change in firm births, as a percentage of total establishments.
chdth	Percentage change in firm deaths, as a percentage of total establishments.
chypc	Percentage change in real income per capita.
chpop	Percentage change in natural log of population.
chagmfg	Percentage change in the agriculture and manufacturing share of GSP.
chcni	Percentage change in commercial and industrial loans.
chur	Percentage change in the unemployment rate.
chemp	Percentage change in the average number of employees per firm.
chte	Percentage change in total expenditure.
chedexp	Percentage change in real educational expenditures per capita.
chhnhex	Percentage change in real health and hospital change expenditures per capita.
chhwyex	Percentage change in real highway expenditures per capita.
chpwex	Percentage change in real personal welfare expenditures per capita.
chprptx	Percentage change in real property tax revenue per capita.
chslstx	Percentage change in real sales tax revenue per capita.
chinctx	Percentage change in real personal income tax revenue per capita.
chcrptx	Percentage change in real corporate income tax per capita.

Table 2. Summary statistics

Variable	Obs	Mean	St. Dev.	Min	Max
chbrth	588	0.373	9.765	-24.174	26.450
chdth	588	0.488	6.435	-20.423	32.339
chypc	588	-1.509	2.552	-9.711	7.501
chpop	588	0.080	0.086	-0.101	0.760
chagmfg	588	-2.778	7.415	-45.046	67.569
chcni	441	13.843	121.018	-93.780	1945.141
chur	441	-0.972	21.130	-40.000	116.667
chemp	587	0.538	4.428	-100.000	5.895
chte	588	2.765	4.503	-14.085	31.537
chedexp	588	2.500	6.511	-17.928	77.329
chhnhex	588	1.802	9.052	-49.613	76.650
chhwyex	588	1.573	11.631	-37.802	56.563
chpwex	588	6.253	13.959	-51.444	192.136
chprptx	471	267.256	3937.296	-100.000	871.300
chslstx	588	1.273	6.843	-30.456	112.537
chinctx	504	3.563	14.261	-25.425	283.207
chcrptx	540	0.298	23.573	-80.437	316.365

Table 3. Correlation coefficients

	chbrth	chdth	chypc	chpop	chagmfg	chcni	chur	chemp	chedexp	chhnhex	chhwyex	chpwex	chslstx	chinctx	chcrptx
chbrth	1														
chdth	0.554	1													
chypc	-0.222	-0.255	1												
chpop	0.031	0.042	0.048	1											
chagmfg	0.063	0.034	-0.130	0.099	1										
chcni	-0.091	-0.097	0.069	-0.020	-0.023	1									
chur	0.192	0.459	-0.121	0.003	-0.153	-0.038	1								
chemp	-0.088	-0.098	0.174	0.290	0.064	0.011	-0.164	1							
chedexp	-0.087	-0.018	0.126	0.025	-0.023	-0.013	0.032	0.085	1						
chhnhex	-0.010	-0.106	-0.058	0.054	0.041	-0.017	0.024	0.040	0.001	1					
chhwyex	-0.044	-0.063	0.109	-0.037	-0.028	-0.042	0.041	0.106	0.012	0.086	1				
chpwex	0.011	0.019	-0.088	-0.030	-0.044	-0.033	0.163	-0.010	0.056	0.054	-0.050	1			
chslstx	-0.17	-0.16	0.01	-0.15	0.01	0.06	-0.16	0.09	0.14	0.07	0.07	-0.03	1		
chinctx	-0.156	-0.078	0.239	-0.131	-0.023	0.045	-0.069	0.115	0.042	-0.044	0.081	-0.042	0.075	1	
chcrptx	-0.120	-0.178	-0.030	0.065	0.182	-0.003	-0.243	0.152	-0.012	-0.043	-0.051	-0.038	0.171	0.102	1

Table 4. Estimates of business births

Dep. Var.: Percentage change in births

All models estimated in clusters with robust standard errors

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*
chypc	0.051						
SE	*0.156*						
chpop	-2.838	-2.455	-0.983	-1.113	-1.772	2.561	3.422
SE	*5.047*	*4.855*	*4.315*	*5.063*	*5.125*	*5.515*	*5.538*
chagmfg	0.031						
SE	*0.035*						
chcni	0.001	0.001	0.001	0.001	0.001	0.002 ***	0.002 ***
SE	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*
chur	-0.029 *	-0.030 **	-0.030 **	-0.032 **	-0.032 **	-0.019	-0.025
SE	*0.016*	*0.015*	*0.015*	*0.014*	*0.014*	*0.020*	*0.016*
chemp	0.003						
SE	*0.013*						
medage	0.422						
SE	*0.417*						
mnrtypct	-0.106						
SE	*0.187*						
chte			0.118 **				
SE			*0.052*				
chedexp				-0.012			
SE				*0.034*			
chhnhex				0.021			
SE				*0.032*			
chhwyex				0.040 *	0.040 *		0.044 **
SE				*0.022*	*0.021*		*0.020*
chpwex				0.015			
SE				*0.011*			
chprptx						2.18E-06	
SE						*1.32E-05*	
chslstx						-0.014	
SE						*0.037*	
chinctx						-0.080 **	-0.065 *
SE						*0.039*	*0.035*
chcrptx						-0.011	
SE						*0.027*	
constant	-8.973	9.460 ***	8.837 ***	9.237 ***	9.439 ***	1.552 *	8.989 ***
SE	*15.124*	*0.917*	*0.941*	*0.895*	*0.915*	*0.863*	*0.942*
R-sq	0.813	0.818	0.820	0.821	0.820	0.829	0.829
F	84.17	145.72	132.38	114.61	138.38	157.52	158.28

* Significant at 90% level ** Significant at 95% level ***Significant at 99% level

businesses formed in the states.[2] The traditional measures of fit are good, with R-squared statistics above 0.80 and F-statistics between 84 and 158. Our most consistent result is the negative and significant impact of changes in the unemployment rate on firm formation. As the unemployment rate falls, entrepreneurs form more new firms. Would-be entrepreneurs are more sensitive to changes in the unemployment rate than they are to changes in income per capita. This indicates that entrepreneurs rely more on the unemployment than output as their cue for current or expected business conditions, despite the common finding that unemployment is a lagging indicator of business conditions. Nevertheless, this finding provides evidence for the "gazelle" theory of entrepreneurship. As the economy expands, entrepreneurs discover more economic opportunities become more willing to accept the risk attendant upon launching a new venture. After all, should the venture fail, there is a strong labor market the entrepreneurs could re-enter. In some specifications, the change in commercial and industrial loans was positively and significantly related to business births. We interpret this result to mean that easier access to credit spurs new firm formation.

Among the expenditure variables, only the change in highway expenditures is ever significant. No other expenditure variable, or combination of variables, is ever significant. Changes in highway expenditure are never significant in conjunction with any other expenditure variable. Infrastructure spending may create more new entrepreneurial opportunities compared to other types of state spending; or business founders interpret infrastructure spending as a signal of business supportiveness of the state's institutions. For the births, the story is about what makes a state appear attractive for opening new businesses. Highway spending is a possible proxy for pro-business stance by state. One wants to open where business treatment is favorable. If government spending supports infrastructure, then there is a positive

[2]A full set of regressions is available from the authors upon request.

business environment potentially.

Turning to the tax variables, only the changes in personal income tax is generally significant. As one might expect, the coefficient is uniformly negative. *Ceteris paribus*, heavier personal income tax burdens depress economic activity. The decision on where to open a business is all about perception once you decide you do want to open the business. As an entrepreneur, one is looking for a favorable tax environment for your investment. Personal income tax rates, rather than corporate tax rates for example, loom large because of the impact the personal income tax has on sole proprietors or owners of S corporations.

Table 5 presents selected estimates of the percentage change in business deaths, and tells a rather different story than Table 4.[3] Apparently state government policies differently affect the formation of businesses and the deaths of businesses. Again the models are reasonably well-specified. R-squared values range between 0.61 and 0.65. The F-statistics range between 84 and 160.

The significant results for changes in income and changes in the unemployment rate are straightforward. As business conditions improve, income rises, the unemployment rate falls, and fewer businesses fail. Similarly, the result for industry mix has a simple interpretation. Most new businesses are service businesses, which are likely to be less capital intensive than agriculture or manufacturing. Therefore, as a state's economy turns away from agriculture and manufacturing, more firms survive. Our results also indicate that as the average sized firm in a state gets smaller, firm deaths occur at a faster rate. We believe that this relates to the capitalization of existing firms. We hypothesize that smaller firms are likely to have lower capitalization in general, and are less able to survive the vicissitudes of market competition.

Ex ante, one could argue that a rising population could have either a positive or negative effect on business failures. On the one hand,

[3]A full set of regressions is available from the authors upon request.

Table 5. Estimates of business deaths

Dep. Var.: **Percentage change in deaths**

All models estimated in clusters with robust standard errors

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*
chypc	-0.345 **	-0.342 **	-0.336 **	-0.332 **	-0.492 ***	-0.366 **	-0.352 **
SE	*0.152*	*0.141*	*0.143*	*0.143*	*0.175*	*0.164*	*0.167*
chpop	14.620 ***	12.839 ***	11.803 ***	12.184 ***	5.840	10.413 ***	10.034 ***
SE	*4.182*	*3.864*	*3.842*	*3.827* *	*4.292*	*3.387*	*3.386*
chagmfg	0.049 *	0.043 *	0.041 *	0.042	0.055 *	0.031	0.031
SE	*0.027*	*0.026*	*0.025*	*0.025*	*0.028*	*0.033*	*0.032*
chcni	0.000						
SE	*0.001*						
chur	0.040 **	0.039 **	0.039 **	0.038 **	0.052 **	0.048 **	0.047 **
SE	*0.016*	*0.015*	*0.016*	*0.015*	*0.022*	*0.020*	*0.021*
chemp	-0.096 ***	-0.090 ***	-0.091 ***	-0.093 ***	0.549 *	-0.088 ***	-0.091 ***
SE	*0.013*	*0.015*	*0.015*	*0.015*	*0.307*	*0.016*	*0.016*
medage	-0.088						
SE	*0.205*						
mnrtypct	-0.470 *						
SE	*0.237*						
chedexp			0.028				
SE			*0.032*				
chhnhex			-0.039 *	-0.039 *			-0.036 *
SE			*0.020*	*0.020*			*0.022*
chhwyex			-0.002				
SE			*0.023*				
chpwex			-0.015				
SE			*0.012*				
chprptx					6.34E-05 ***	6.41E-05 ***	0.000062 ***
SE					*1.14E-05*	*9.47E-06*	*9.22E-06*
chslstx					0.027		
SE					*0.044*		
chinctx					0.009		
SE					*0.044*		
chcrptx					0.011		
SE					*0.020*		
constant	10.448	-0.786	-0.866	-0.798	-1.879 *	-0.578	-0.640
SE	*8.760*	*0.818*	*0.789*	*0.803*	*1.040*	*0.913*	*0.909*
R-sq:	0.622	0.615	0.621	0.619	0.645	0.609	0.613
F	51.25	67.1	70.91	64.8	86.92	59.79	88.95

* Significant at 90% level ** Significant at 95% level ***Significant at 99% level

[1] Even so, neither the literature, nor policy makers have consistently defined the differences or the overlap between entrepreneurship and small business formation.

[2] A full set of regressions is available from the authors upon request.

[3] A full set of regressions is available from the authors upon request.

growing populations mean growing markets—more business. As population expands, businesses should thrive in the expanding markets. On the other hand, growing markets are also likely to attract new firms into the market, or allow additional economies of scale. These new entrants may be extremely efficient national chains. Less efficient "Mom and Pops" will lose out to more efficient rivals or be consolidated into fewer, larger firms. Our results support the latter scenario.

Turning to the expenditure effects, we observe that only the change in health and hospital expenditures is ever significant. No other expenditure variable, or combination of variables, is ever significant. Changes in health and hospital expenditures are never significant in conjunction with any other expenditure variable. We hypothesize that state spending on health and hospital deals with service industry spending, which is the type of industry on which many entrepreneurs focus. If a state is supporting service industries through state expenditure, more new business will tend to survive. As a state cuts service industry spending, more new businesses fail.

We now turn to the impacts of taxation on firm deaths. Only the changes in property tax are generally significant. No other tax variable, or combination of variables, is ever significant. Changes in property tax revenues are never significant in conjunction with any other tax variable. As one might expect, the coefficient is uniformly positive. *Ceteris paribus*, heavier property tax burdens leads to more business failures. One wants to open where business treatment and taxation are favorable. We have seen that entrepreneurs focus on personal income taxes. However, reality kicks in for the inexperienced entrepreneur. Property taxes are a very real expense for the business that many entrepreneurs may not adequately consider up front. Property taxes are also very difficult for a firm to avoid. If the firm has a real property location, it tends to be taxed. In contrast, one often observes numerous ways to shift revenues and expenses through time, reducing the impact of income taxes.

Conclusions

If we could collect any data we might wish for without cost, we would have chosen to execute our empirical program differently. We would prefer to execute hazard models over time. That is, we would like to uniquely identify a firm at its creation, then follow that firm for a period of time, and calculate the hazard of failure. However the data we have does not allow us to do that. Instead, we relate aggregate births within a state and aggregate deaths within a state to various economic and fiscal policy variables.

We do not estimate whether a small government or whether lower regulatory burdens are "good for business." In this sense, our approach is different from that of researchers using the various economic freedom indices. In short, we do not test whether economic freedom—state institutional settings presumed to promote income growth—promotes business formation or diminishes business failures. Instead, we test whether the particular patter of state spending and state taxation has an impact on firm births and firm deaths. We find that, indeed, it does. Furthermore, as expected, we find that the dynamics of firm formation are rather different from the dynamics of firm deaths.

Fiscal policy conclusions are not easy to draw because different processes determine firm births and firm deaths. Would the state rather encourage more businesses to form? Would the state rather preserve the existing businesses? Or would the state prefer to jointly optimize along both margins? Our results indicate that as states spend *more* on highways, health care, and hospitals, and *less* on other education, personal welfare, and other functions, *ceteris paribus*, more firms are formed and fewer firms fail. Our results also indicate that as states rely *less* on personal income taxes and property taxes for their revenues, *ceteris paribus*, more businesses form and fewer businesses fail. Therefore, both spending and taxation patterns within the state are significant policy variables when pursuing ongoing economic development through small business growth and survival.

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