The Economic Freedom Index as a Determinant of Firm Births and Firm Deaths

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Abstract

We investigate the relationship between economic freedom, firm formation and firm deaths in the U.S. states. Economic freedom should be positively and significantly correlated to business formation, and significantly related to firm deaths. We find that policy selection leads to more or less economic freedom; as freedom increases, entrepreneurs start new ventures. Furthermore, more economic freedom leads to more firm failures, as a result of increased competition.

Introduction

Entrepreneurship's role in economic development has been widely established (Sherman & Chappell, 1998). Much of the entrepreneurship literature in the popular and in the academic press focuses on the creation of new ventures to meet the needs of prospective buyers in the market. The creation of these new ventures naturally raises many questions. Among them is the question of what are the determinants of new firm formation. Academics have wrestled with this issue for decades, especially as improvements in statistical software packages have allowed researchers to consider increasingly complex models (Acs & Storey, 2004).

The literature has identified several factors as key determinants of new venture formation (Sutaria & Hicks, 2004, Kreft & Sobell, 2005). These determinants include, but are not limited to, per capita bank deposits, unemployment level (Reynolds, Story, & Westhead, 1994; Ritsila & Tervo, 2002), local market demand (Reynolds, 1994), technology (Shane, 2001), and industrial restructuring (Sutaria & Hicks, 2004), among many others (See Acs & Storey, 2004, Wagner & Sternberg, 2004, Johnson & Parker, 1996). Research has also emphasized the spatial variations in business formation rates (e.g., Johnson, 2004). These variations in business formation rates occur across countries as highlighted by the Global Entrepreneurship Monitor (GEM) Studies (Reynolds, Bygrave, Erkko, & May, 2002), as well as within countries (Reynolds et al., 1994).

The purpose of this paper is to investigate the relationship between economic freedom and new firm formation, also called entrepreneurial activity in the literature (See, e.g., Kreft & Sobell, 2005). Economic freedom is measured as a combination of favorable legal institutions and tax and regulatory policies. First, we briefly describe the literature on determinants of entrepreneurship and economic growth. Then, using the work of Kreft and Sobel (2005) as a point of departure, we evaluate the relationship between economic freedom and firm deaths and firm births for each of U.S. States for the period 1990–2001. In the following section, we describe the results of our analysis.

Literature Review

The past twenty years has seen an explosion in research regarding new firm formation. Clearly, entrepreneurship involves more than simply the study of new venture creation (Acs & Storey, 2004). Yet, new firm formation is the straw that stirs the drink. No other topic seems to capture the interest of scholars, casual readers, and policy makers better than the actual creation of a new business. Rather than attempt an exhaustive review of past research, this section will emphasize selective research relevant to new firm formation.

A summary of our understanding of new firm is a guest editorial paper by Acs and Storey (2004) in *Regional Studies*. They note that new formation has been a subject of great interest to readers of *Regional Studies*, returning to this subject after having evaluated it in special issues in each of the past two decades. They point out that earlier research on new firm formation served to demonstrate that new firms are a source of economic dynamism and job creation and that the distribution of enterprises is spatially uneven. Later research emphasized explaining regional variations in new firm formation using evidence from different countries, and found that urban regions with high rates of in-migration and a high proportion of employment in small firms had high rates of new firm formation. Acs and Storey lament the fact that "key influences were not clearly amenable to policy-makers" (Acs & Storey, 2004, p. 872). In the most recent special issue on new firm formation in *Regional Studies*, new variables were evaluated by some of the participants. Lee, Florida, and Acs (2004) found that new firm formation is impacted by creativity as measured by a "Bohemian Index" that measures the number of authors, designers, musicians, composers, etc, in a region. In the same model they also found that their "Melting Pot Index," a measure of the proportion of the population that is foreign born, was a determinant of new firm formation. It is the recent use of these indices as possible determinants of new firm formation that serves as the catalyst for this study.

Freedom Indices

Among the "economic freedom" indices that have gained researchers' attention are the Economic Freedom of the World indices. These indices have established themselves as fixtures in the social sciences literature, especially in the economic growth literature. (Atukeren, 2005; Berggren & Jordahl, 2005; Gwartney, Lawson & Clark, 2005; Powell, 2005; Gwartney, Holcombe & Lawson, 2004; Nieswiadomy & Strazichich, 2004; Cole, 2003; Gwartney & Lawson, 2003; Gwartney, Block & Lawson, 1996) Researchers have used these indices, or their constituent components, as variables to explain income or income growth rates.

Karabegovic, Samida, Schlegel and McMahon (2003) provide a similarly derived index featuring differences between U.S. states and Canadian provinces, rather than the difference between nations. Hereafter, we refer to the various editions of the Karabegovic, et al, index as "the freedom index." Similar to the world freedom indices researchers, Karabegovic, et al, argue that economic freedom of the states—proxied by their index—will be positively related to income levels and income growth. They use their index to explain income differences among the U.S. states and Canadian provinces, offering evidence that the freedom index is significantly, positively related to state levels of income and growth of economic activity. Various researchers have established the

freedom index (e.g., Kreft & Sobel, 2005; Doucouliagos & Ulubasoglu, 2006) as an effective means to evaluate income determination.

Karabegovic, et al., choose to group ten variables—usually expressed as ratios of GDP—into three categories: size of government; takings and discriminatory taxation; and labor market freedom. For *size of government*, the authors measured general consumption expenditures by government as a percentage of GDP, transfers and subsidies as a percentage of GDP, and Social Security expenditures as a percentage of GDP. For *takings and discriminatory taxation*, the authors measured total government revenue from own source as a percentage of GDP; top marginal income tax rate and the income threshold at which it applies; indirect tax revenue as a percentage of GDP; and sales taxes collected as a percentage of GDP. They rate top personal income tax rates by the income thresholds at which they apply, where higher thresholds result in a better score. Karabegovic, et al., surmount the criticism that they are a double counting by using both sides of the government balance sheet by examining sub-national jurisdictions. Due to extensive and unequal intergovernmental transfers, the link between taxation and spending is broken. For *labor market freedom*, the authors measure minimum wage legislation, government employment as a percentage of total state employment, and union density. A number of factors affect union density, notably laws and regulations, size of government employment, and manufacturing density. Government employment is excluded, and the effect of government employment is held constant in calculating the variable. The size of the manufacturing sector has an insignificant effect on union density. Please see Karabegovic, McMahon, and Mitchell, (2005) for a discussion of why these variables were included and others excluded.

Karabegovic, et al., construct a scale from zero to 10 to represent the underlying distribution of the 10 variables in the index, with higher values indicating higher levels of economic freedom. Thus, the freedom index is a relative ranking of economic freedom across jurisdictions and across time. In the final construction each area was equally weighted and each variable within each area was equally weighted.

In much of this literature, the relationship between freedom and entrepreneurship is not fully specified. Kreft and Sobel (2005) address this issue, albeit using a different methodology than do we. They argue "that a state's underlying economic freedom is an essential determinant of the state's ability to create and attract entrepreneurial activity. Put simply, an environment of low taxes, low regulations, and secure property rights (as measured by the economic freedom index) is what is necessary to encourage growth in entrepreneurial activity" (Kreft & Sobel, 2005, p. 608). Their research supports their contention that the economic freedom index is significantly related to entrepreneurial activity for the years of their study (1996 – 2000). While their research represents an important step in evaluating whether economic freedom will lead to more entrepreneurial activity, we believe their dependent variable may understate the relationship. In particular, they do not measure firm creation, but rather use annualized growth rate in sole proprietorships as their independent variable. We use a more conventional measure of entrepreneurial activity, the births and deaths of businesses. In addition, we propose to study the relationship over a longer period of time, an improvement suggested by Acs and Storey (2004).

Model, data and variables

Thus, rather than apply the freedom index to the question of income determination, we choose to apply it to the question of new firm formation as did Kreft

and Sobel (2005). Specifically, we ask whether the governmental, judicial, and social activities observed in the index are significantly related to the formation of new businesses. Karabegovic, et al., (2003) argue that their index measures economic freedom in states; furthermore, they argue that greater economic freedom results in higher income levels for state residents. The underlying argument is that greater economic freedom consists of greater opportunity to seek and exploit economic opportunities; that is, to pursue entrepreneurial activity. We argue that such freedom also should be positively and significantly correlated to business formation, especially the birth of new firms. The birth of a business is the key expression of entrepreneurial activity, a key element of economic development and growth.

This discussion leads to the following testable hypothesis:

H1: *Firm Births, by state, will be positively related to economic freedom.*

We believe the literature has predominantly focused on the formation of new firms. However, we recognize that our primary independent variable, economic freedom, may have implications for the long-term success of a newly-formed or existing business. More importantly, the literature distinguishes between the determinants of firm births and the determinants of firm deaths (Lussier, 1995; Finnerty & Krzystofik, 1985). Initially, one could argue that small businesses will be easier to sustain in an economically free environment. Therefore, economic freedom should be negatively and significantly related to firm deaths. However, operating from the Schumpeterian view of entrepreneurial creative destruction, an economically free environment is also consistent with wide-open competition for the consumer's dollar. As a result of this competition, many entrepreneurial ventures will not survive. If so, then economic freedom should be positively and significantly related to firm deaths. This discussion leads to the following testable hypothesis:

H2: *Firm Deaths by State will be (positively or negatively) significantly related to economic freedom.*

In our first pass at the data, we evaluate firm formation using the following generic model:

Births = f(Freedom, Deaths, Income, Ag-Mfg, Age, Minority, C & I, Pop Den, U Rate, Emplyee).

Similarly, we evaluate firm deaths by estimating the following model:

Deaths = f(Freedom, Deaths, Income, Ag-Mfg, Age, Minority, C & I, Pop Den, U Rate, Emplyee).

Where:
Births = business births by state as a percentage of total firms in a state.
Deaths = business deaths measured similarly.
Freedom = the Economic Freedom Index.
Income = natural log of real personal income per capita.

Ag-Mfg = Combined percentage of gross state product accounted for by
      agriculture and manufacturing.

Age = natural log of median age of the state's population.

Minority = combined percentage of African Americans and Latinos in the state's
      population.

C & I = natural log of commercial and investment lending per firm

Pop Den = natural log of population density

U Rate = state unemployment rate.

Emplyee = natural log of average number of employees per firm.

Table 1 presents summary statistics and correlation coefficients for these variables.
      To capture the full potential relationship between the freedom index and new firm formation, we use the number of business births as a percentage of total businesses by state. Observing cross-sectional differences in firm births and deaths, Johnson and Parker discuss the need to scale the dependent variable to account for differences in the economies of the cross-sectional units. For example, directly comparing the number of firms formed in North Dakota with the number of firms formed in California would be inappropriate due the vast size differences of these states' economies. Johnson and Parker (1994, 1996) also demonstrate that researchers cannot study firm births and firm deaths in isolation. They argue that firm births (or deaths) may create spill-over effects, such as when a new retail business in a strip shopping center decreases the likelihood of other firms in the center failing. They also argue that firms directly compete with one another, and the arrival of a new competitor often means the demise of an incumbent firm. Lastly, they argue that nearly all firms have a finite life-span: a firm is formed, possibly it thrives for a while, but then the same firm dies. *A priori*, they are agnostic as to which effect will prevail, but they are adamant that firm births and firm deaths be studied together.

      Otherwise, our model is an amalgam drawn from the economic freedom literature and the firm formation literature. On the one hand, it is essentially a derivative of traditional growth models (e.g., Solow, 1956) applied in a different context. Such growth models are common in the literature on freedom indices (e.g., Dawson 1998, 2006; Gwartney, Lawson, & Holcomb 2004, 2006). Similar to those models, we include income and population density (a proxy for the labor force) as explanatory variables. Also similar to those models, we include capital investment via a proxy measure, the volume of commercial and industrial loans in a state. We also include the unemployment rate, and the average number of employees per firm, as well as the combined percentage of GSP accounted for by agriculture and manufacturing. These variables are also similar to firm birth and firm death models such as those of Johnson and Parker (1994, 1996), and as reviewed in Keeble, Walker, and Robson (1993).

      Similar to factors identified in Keeble, Walker and Robson (1993), we include the median age of each state's population, and the combined percentage of African Americans and Latinos in the state's population. Keeble and Walker (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.

      Dawson (1998, 2006) and Gwartney, Holcombe, and Lawson (2004, 2006) discuss the direct versus the indirect effects of economic freedom on economic outcomes.

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Suppose one argues that income growth depends on labor force growth, capital growth, and economic freedom. Capital formation, itself, is likely to be a function of economic freedom. We argue that in addition to the "total" or "direct" effect that economic freedom has on creating economic opportunities and allowing individuals to pursue those opportunities through entrepreneurship, economic freedom may also have an "indirect" impact on labor productivity (changes in income) and capital productivity (proxied by our commercial and industrial loans variable). To account for this "jointness" in determination, we present instrumental variable models.

We draw our data from a variety of sources. Freedom index data are from the Fraser Institute website (www.freetheworld.com) while firm and employment data are from the Small Business Administration Office of Advocacy (www.sba.gov/advo/research), and all other data are from the census and the FDIC. We construct a panel using the U.S. states as our cross-sectional element, covering the years 1990 through 2001. Given our data set and research question, we estimate "fixed effects" models fitting an intercept adjustment for each state. The essential structure of a fixed effects model is that variation across groups (such as across states) is captured in shifts of the regression function, by calculating a separate adjustment to the intercept for each group (state). In each model include dummy variables for the observation years, to capture nationwide, time-varying effects. In all estimates we correct for the heteroskedasticity commonly found in data sets such as ours.

Empirical Results

Table 2 reports our regression results for Freedom and Income. The standard goodness-of-fit measures indicate the models are generally well-specified. To address the issue of freedom's direct effects versus indirect effects, in the first column we regress income on freedom and a vector of ceteris paribus variables, while in the second column we regress freedom on income and the same vector of control variables. These models indicate an endogenous relationship between freedom and income, despite the low correlation between freedom and income. Ordinarily such endogeneity calls for instrumental variable methods.

Table 3 present our firm births models, and Table 4 present our estimates of firm deaths. By standard measures we obtain estimates that fit the data well, although much of the explanatory power in the model derives from the state fixed effects and year effects. In general, our firm birth models are somewhat better specified than our firm death models. Model 1 in each table is a baseline model fitted without income or freedom, and without using instrumental variable estimators. We fit Models 2 and 3 in both tables using two-stage least squares for panel data, and we instrument for both Freedom and Income for the sake of comparison. We observe that population density and the average number of employees per firm have a correlation coefficient of 0.6. Due to this high correlation between regressors, we fit Models 2 and 3 with the *Emplyee* variable and use *Pop Den* solely as an instrument for *Freedom* and *Income*.

These models support previous research which finds that firm births and firm deaths follow different dynamics. As predicted by Johnson and Parker (2004, 2006), firm deaths have a significant impact on firm births, and vice versa. In the Johnson and Parker parlance, the "multiplier effect" predominates in our sample; that is, spillovers are more significant than direct competition. Firm births are conditioned on the population's minority percentage. *Ceteris paribus*, more racially mixed states experience more business venturing. The minority effect may represent a tendency for minority

populations to patronize minority businesses. As the minority percentage grows, small business owners may have a larger market for their business. Firm deaths are conditioned on the state's unemployment rate. Higher unemployment rates, an indicator of state economic conditions, are associated with more business failures.

As hypothesized, more economic freedom leads to more business venturing. Freedom has a positive and significant impact on firm births. However, observation of Models 2 and 3 in Table 3 and combined with the evidence in Table 2 indicates that Freedom has both a direct and an indirect effect on business venturing. The direct effect of Freedom is that more economic freedom is directly related to greater business venturing activity. This is consistent with the Kreft and Sobel (2005) argument that greater economic freedom permits would-be entrepreneurs to more easily identify and act upon potential market opportunities. Economic freedom also has an indirect impact on business venturing through its impact on income. Consistent with the general body of the literature, economic freedom has a positive impact on income. In turn, higher incomes spur more business venturing.

Also as hypothesized, economic freedom has a significant impact on business dissolution as well. Over our sample, the coefficient on Freedom was positive and strongly significant. That is, as economic freedom increases, there are more business failures as well as more business births, *ceteris paribus*. As we argued might be possible, operating from the Schumpeterian view of entrepreneurial creative destruction, an economically free environment is consistent with wide-open competition. As a result of this competition, many existing firms or entrepreneurial ventures do not survive.

Concluding Remarks

Our findings support the hypothesis that state governments' policy selection leads to more or less entrepreneurial activity within a state; as economic freedom increases due to favorable government policies, entrepreneurs are more likely to start new ventures over the eleven-year period of our study (1990–2001). Furthermore, more economic freedom leads to more firm failures, as a result of increased competition.

These findings also support the contention that where one chooses to start a new business venture may have a profound impact on whether one is successful. (Sorenson & Audia, 2000) Given the relative spatial immobility of entrepreneurs (Wagner & Sternberg, 2004), entrepreneurs would be wise to carefully consider whether they are starting a new business venture in a state that has the economic freedoms necessary to initiate the business. We also suggest that it is incumbent upon state-level public policy makers to consider the impact their policies will have on economic freedom, as economic freedom is one determinant of the ability of nascent entrepreneurs to start a new firm or for existing entrepreneurs to thrive in their state.

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Table 1: Summary Statistics and Correlation Coefficients

Variable	Obs	Mean	SD	Min	Max
Births	650	12.044	1.848	8.029	21.279
Deaths	650	10.643	1.256	7.899	15.033
Freedom	650	6.916	0.695	5.100	8.400
Income	650	5.119	0.715	4.628	10.264
Ag-Mfg	650	18.852	7.035	2.774	33.873
Age	650	3.534	0.061	3.266	3.671
Minority	601	16.672	11.997	0.979	49.766
C & I	500	4.308	0.789	1.432	7.723
Pop Den	650	4.243	1.363	-0.192	6.880
U Rate	500	4.817	1.472	1.600	10.500
Emplyee	649	2.781	0.154	2.284	3.079

	Births	Deaths	Freedom	Income	Ag-Mfg	Age	Minority	C & I	Pop Den	U Rate	Emplyee
Births	1										
Deaths	0.778	1									
Freedom	0.275	0.221	1								
Income	-0.095	-0.014	0.046	1							
Ag-Mfg	-0.317	-0.464	0.142	-0.238	1						
Age	-0.206	-0.035	-0.113	0.079	-0.071	1					
Minority	0.376	0.432	0.193	0.067	-0.228	-0.178	1				
C & I	-0.337	-0.303	-0.087	0.127	0.074	-0.005	-0.08	1			
Pop Den	-0.256	-0.142	0.125	0.219	0.14	0.261	0.18	0.372	1		
U Rate	0.154	0.225	-0.421	-0.157	-0.082	-0.169	0.14	-0.081	0.017	1	
Emplyee	0.033	0.078	0.412	0.19	0.213	0.062	0.23	0.311	0.598	-0.151	1

Table 2: Income and Freedom

Dep. Var:	Freedom		Income	
Freedom			0.029	***
			4.46	
Income	1.286	***		
	3.84			
Ag-Mfg	0.010		-0.001	
	1.48		*-0.84*	
C & I	0.032	**	0.002	
	2.53		*0.82*	
Pop Den	0.781	***	-0.021	
	3.16		*-0.42*	
U Rate	-0.061	***	-0.0004	
	-5.23		*-0.19*	
Emplyee	-0.120		0.512	***
	-0.23		*4.9*	
Constant	-2.763		3.682	***
	-1.33		*10.64*	
R-sq:	0.52		0.90	
F-stat	31.64		302.54	

All models estimated with year effects and robust standard errors; t-statistics in italics
*-Significant at 90%, **-Significant at 95%, ***-Significant at 99%

Table 3: Birth Models

Dep. Var: Births						
	Model 1		**Model 2**		**Model 3**	
Freedom			0.939	*		
			1.82			
Income					9.469	*
					1.87	
Deaths	-0.258	***	-0.200	***	-0.291	***
	-3.58		*-3.32*		*-3.9*	
Ag-Mfg	0.009		0.007		0.015	
	0.45		*0.4*		*0.8*	
Age	-0.482		-0.511		-0.149	
	-0.44		*-0.47*		*-0.13*	
Minority	0.026		0.053	**	0.053	**
	0.89		*2.43*		*2.28*	
C & I	0.055		-0.009		0.002	
	0.96		*-0.16*		*0.03*	
Pop Den	2.342	*				
	1.71					
U Rate	-0.053	88%	0.011		0.020	
	-1.59		*0.25*		*0.41*	
Emplyee	-0.508		-0.912		-4.334	89%
	-0.3		*-0.62*		*-1.61*	
Constant	6.841		10.552	*	-21.621	
	0.840		*1.76*		*-1.05*	
Instrmntd:			Freedom		Income	
Instrmnts:			Income		Freedom	
			Pop Den		Pop Den	
R-sq:	0.76		0.75		0.72	
F-stat	64.59		71.25		63.37	

All models estimated with year effects and robust standard errors; t-statistics in italics
*-Significant at 90%, **-Significant at 95%, ***-Significant at 99%

Table 4: Death Models

Dep. Var: Deaths						
	Model 1		**Model 2**		**Model 3**	
Freedom			2.418	***		
			3.64			
Income					1.493	
					0.38	
Births	-0.174	***	-0.247	***	-0.154	***
	-3.43		*-3.83*		*-3.73*	
Ag-Mfg	-0.021		-0.032		-0.011	
	-1.29		*-1.51*		*-0.77*	
Age	-1.544		-1.752		-1.699	*
	-1.38		*-1.38*		*-1.85*	
Minority	-0.039	*	0.015		-0.007	
	-1.93		*0.57*		*-0.38*	
C & I	0.036		-0.101	88%	-0.016	
	0.71		*-1.57*		*-0.37*	
Pop Den	3.829	***				
	4.64					
U Rate	0.126	***	0.294	***	0.165	***
	4.02		*5.49*		*4.88*	
Emplyee	0.191		-1.127		0.208	
	0.12		*-0.65*		*0.1*	
Constant	1.250		4.924		9.172	
	0.18		*0.71*		*0.56*	
Instrmntd:			Freedom		Income	
Instrmnts:			Income		Freedom	
			Pop Den		Pop Den	
R-sq:	0.70		0.35		0.68	
F-stat	55.19		25.12		49.78	

All models estimated with year effects and robust standard errors; t-statistics in italics
*-Significant at 90%, **-Significant at 95%, ***-Significant at 99%