



Economic Freedom and Service Industry Growth in the United States

Stephan F. Gohmann
Bradley K. Hobbs
Myra McCrickard

The growth of an economy depends upon entrepreneurial activities leading to the formation of new businesses and the production of new goods and services. In turn, institutions influence entrepreneurial activity. Public policy is an attribute of the institutions under which entrepreneurs operate. One element of the institutional environment is the degree of economic freedom under which entrepreneurs form and operate their business activities. The degree of economic freedom affects not only profit opportunities for entrepreneurs, but also the level and the type of economic activities they pursue. We examine how the entrepreneurial activity and level of employment in U.S. service industries respond to changes in the degree of economic freedom among states. Our findings suggest that the relationship between entrepreneurial outcomes and economic freedom varies significantly by industry. In some industries, such as business and personal services, increases in economic freedom lead to growth in the number of firms and the level of employment. However, the reverse is true for other industries, such as health, social, and legal services.

Introduction

Theoretical and empirical research exploring the causes of economic growth has dramatically increased in recent years. Growth rates vary among countries due to differences in resources or differences in the efficiency with which those resources are used. Economic growth can be explained by the quantity and quality of resources and technological improvements (Lucas, 1993; Romer, 1986; Solow, 1956), geographical and ecological factors (Gallup, Sachs, & Mellinger, 1999; Sachs, 2003; Sachs, Mellinger, & Gallup, 2001), and the institutional environment in which firms and entrepreneurs make decisions concerning the allocation of resources (Barro, 1996; Baumol, 1990; Gwartney, Holcombe, & Lawson, 2006; North, 1990; Scully, 1988; Sobel, in press). Furthermore, interactions among these variables have also been found to be important (Acemoglu, Johnson, & Robinson, 2001; Sachs, 2003).

The institutional environment determines the “rules of the game” that affect entrepreneurial decisions. These rules develop from the interplay of economic, political, and social factors. One element of the institutional environment is economic freedom. This

Please send correspondence to: Stephan F. Gohmann, tel.: (502) 852-4844; e-mail: sfgohm01@louisville.edu, to Bradley K. Hobbs at bhobbs@fgcu.edu, and to Myra McCrickard at mmccrickard@bellarmine.edu.

paper focuses on how economic freedom influences entrepreneurship, and, as a result, economic growth patterns among service industries. Entrepreneurs form new businesses, create new jobs, and produce goods and services, all of which lead to observable economic growth. As North (1990) notes, institutions affect both production and transactions costs. Institutional environments favorable to economic growth provide incentives for efficient production, as well as the investments in physical and human capital that are most conducive to its attainment. In order to determine the effect of the institutional framework on entrepreneurial activity and economic growth, researchers have attempted to document and measure the factors that encourage entrepreneurial activity. The recent development of a number of economic freedom indices quantifying these factors has significantly aided this research (Gastil, 1982; Gwartney, Lawson, & Samida, 2000; Karabegovic, McMahon, & Mitchell, 2005).

The degree of economic freedom captures some of the institutional rules that influence entrepreneurial decisions. Specifically, these rules affect the profit opportunities as well as the level and the type of economic activities entrepreneurs pursue (Baumol, 1990). Studies have used economic freedom indices and found that states with greater economic freedom tend to exhibit higher rates of entrepreneurship and economic growth (Campbell & Rogers, 2007; Kreft & Sobel, 2005). Although this may be expected for the macro-economy, entrepreneurs in some sectors may thrive in an environment with less economic freedom. For example, as tax policies become more complex and extensive in response to legislation such as the Sarbanes-Oxley act, the demand for accounting services may increase. Additionally, the policy environment, including tax treatment, labor laws, legal environment, environmental regulation, and locational allowances, affect both economic freedom and the location decisions of entrepreneurs (Bartik, 1985; Carlton, 1983; Coughlin, Terza, & Arromdee, 1991; Garrett & Wall, 2005).

Garrett and Wall (2005) argue that the gains from reducing government-imposed burdens likely outweigh any benefits from direct intervention aimed at specific businesses. When states develop industrial policies targeting specific industries, these policies affect the level of economic freedom, which may have differential impacts on the location decisions of firms in other industries. To fully understand this, the effect of economic freedom on entrepreneurial decisions *by industry* must be examined. As a consequence, the degree of economic freedom affects the portfolio of industries that develop in a state over time.

Studies of industrial policies have typically focused on manufacturing firms, since attracting these (often large) firms to a state can lead to large gains in employment and additional tax revenues (Bartik, 1985; Carlton, 1983; Coughlin et al., 1991). For example, during the sample period of this study, 1997, manufacturing firms averaged 47 workers, while service firms averaged 12 workers (U.S. Census Bureau, 2004), making manufacturing industry firms more attractive targets for state industrial policy. Furthermore, service firms are less likely to benefit from tax relief, since they typically do not have the large tax liabilities characteristic of manufacturing plants (Rubin & Wilder, 1989).

Although service firms typically hire fewer workers per firm, they represent 25% of all employment and exhibit relatively higher growth rates compared to manufacturing (U.S. Census Bureau, 2004). A significant amount of net new job creation originates from small firms (Birch, 1987; Kirchhoff, Newbert, Hasan, & Armington, 2007). Given their smaller size, service firms may also be less likely to receive the government-sponsored location allowances or subsidies often available to larger manufacturing firms. Finally, because services are often inseparable in production and consumption, location decisions are more likely to be constrained to the geographic area of the population the firm wishes to serve (Bowen & Jones, 1986).

We hypothesize that one element of the institutional environment, economic freedom, affects the level and type of entrepreneurial activity pursued. As entrepreneurial activity within an industry increases, the number of firms and the level of employment per population should rise. For example, Birley (1986) related entrepreneurial activity to the birth of new firms. After examining the difference between births and deaths of new firms, she finds that net employment grows. This study specifically examines how entrepreneurial activity as measured by the number of small and medium firms and level of employment in U.S. service industries is affected by the degree of economic freedom among states. The results suggest that the nature of this relationship varies with the type of service provided. In some industries, the number of firms and employment per population increases with greater economic freedom; however, in other industries, the relationship is negative.

Our paper proceeds as follows. The next section gives an overview of the relationships between institutions and entrepreneurship. The third section develops the empirical analysis and examines how the number of firms and the level of employment in service industries within a state are affected by economic freedom. The final two sections discuss the empirical results and the conclusions.

Theoretical Background

North (1990) provides a framework integrating the evolution of institutions with the development of organizations and their entrepreneurs. Within this framework, the institutional environment determines the “rules of the game in society.” These rules, both formal and informal, place constraints on human interaction and reduce uncertainty by adding a stable, though not necessarily efficient, structure. Exchange behaviors, including entrepreneurial activities, are the result of a wide range of political, economic, and social factors. This rules framework affects the costs of production and exchange and influences the type of economic activities pursued.

Changes in institutional rules alter incentives for entrepreneurs. Baumol (1990) advanced this perspective on entrepreneurial activity and its effects, maintaining that entrepreneurship can manifest itself in productive, unproductive, and destructive forms. Entrepreneurs innovate, discover, or arbitrage to increase efficiency and value for society. However, entrepreneurs might also rationally engage in rent-seeking behaviors that are economically destructive, thereby reducing productivity and efficiency. For instance, in societies where opportunities for rent-seeking exist, entrepreneurs may attempt to affect “the rules of the game” to maintain their market position, particularly when these rules affect economic freedom through the distribution of subsidies, taxes, or barriers to entry. Thus, under some institutional frameworks, the likelihood of unproductive or even destructive entrepreneurship increases.

Baumol’s primary thesis is that the “rules of the game” direct entrepreneurs to engage in productive or unproductive activities. Entrepreneurs are interested in how their actions affect their profits rather than the impact on market efficiency and value creation for society. As a result, the rules of the game become paramount. For entrepreneurs to pursue economic efficiency and value creation, an institutional framework that simultaneously rewards these goals and discourages unproductive behaviors must be maintained. Baumol (1990) states:

Thus clear guidance for policy is provided by the main hypothesis . . . that the rules of the game that specify the relative payoffs to different entrepreneurial activities play a

key role in determining whether entrepreneurship will be allocated in productive or unproductive directions and this can significantly affect the vigor of the economy's productivity growth (p. 918).

Sobel (in press) tests two propositions from Baumol's work: first, that increased economic freedom leads to productive entrepreneurship, and second, that decreased economic freedom leads to unproductive entrepreneurship. He concludes "... the data support predictions from Baumol's theory. Institutional quality is found to be highly correlated with all of the measures and proxies for both the amounts of productive and unproductive entrepreneurship" (p. 14). Institutions determine the rules of the game, and economic freedom indices provide one of the measurable outcomes of these rules. Gwartney and Lawson (2002) argue that the best way to promote entrepreneurial activity is to increase economic freedom. In a market-based economy with high levels of economic freedom, entrepreneurs have incentives to pursue economic profit by meeting consumer preferences. However, when economic freedom is diminished, rent-seeking may yield higher returns than productive activity (Kreft & Sobel, 2005).

We hypothesize that institutions affect the type of entrepreneurial activity pursued in service industries and use economic freedom indices to measure the institutional environment. Generally, these indices are associated with greater levels of entrepreneurship and new business formation. However, when specific service industries in the economy are considered, less freedom may lead to increases in the number of firms. For example, states with relatively complicated or high tax rates may have a greater demand for accounting services. If so, accounting firms have greater incentives to lobby against tax reforms that reduce the demand for their services. Roberts, Dwyer, and Sweeney (2003) find that members of the U.S. House of Representatives who supported the Oxley bill, which benefited public accounting firms, received campaign contributions from the public accounting industry averaging approximately \$33,000 compared with \$17,000 for those representatives who voted against the bill. Alternatively, in the legal services industry, larger government, greater taxation, and more labor laws might result in higher demand for these services. Additionally, since government is a net purchaser of some goods and services, an increase in governmental programs can affect the demand for sectors that provide services to these programs. For instance, the size of social services agencies and health care services may increase in states where government programs require the delivery of these services.

These examples suggest that the effect of economic freedom on entrepreneurial activity may vary by the type of industry. Because services are often produced and consumed in the same place, the number of service firms in a particular state may be more responsive to economic freedom compared with manufacturing firms where the location of the plant may not be directly tied to the location of its consumers. Entrepreneurs will rationally pursue "unproductive" entrepreneurship if it serves to enhance profit (Baumol, 1990). This implies that a negative relationship may exist between economic freedom and the number of firms or employment in some industries.

Data and Methods

Service Industries

The availability of an economic freedom index for each state in the United States permits an examination of the effects of economic freedom on industry growth rates. The 1997 Economic Census Comparative Statistics report shows that in 1997, 32% of all new

establishments in the macroeconomy were in the service sector. From 1992 to 1997, the service sector exhibited the largest increase in establishments measured both in raw numbers as well as percentages (an increase of 13% to 2,077,666 [U.S. Census Bureau, 2004]). Total employment in service industries increased by 31%, the largest percentage increase of all industries. The 25 million employees in the service industries represented 25% of the total workforce. Annual payroll spending in services increased by 52.2% to \$688 billion over the same period, representing the largest percentage increase in payroll for the overall U.S. economy. This service sector growth has continued in recent years (U.S. Census Bureau, 2006).

The Census (2004) report shows that within states, the increase in the number of service industry establishments from 1992 to 1997 varies considerably. For example, California and Connecticut experienced a 7.2% increase in the number of service industry establishments, while those in Nevada grew by 31.2%. Similarly, in New York, service employment grew by 17.7% compared with Mississippi, where service employment grew by 66.2%.¹

The Model

We examine the influence of economic freedom on the number of service industry firms and also on the level of service industry employment within states. The empirical models are based upon the following general form:

$$Y_{ijt} = f(\text{economic freedom, control variables})$$

where Y_{ijt} represents either the number of firms with 500 or fewer employees in state i , industry j , and year t , or the log of the level of employment per 100,000 population in state i , industry j , and year t .

Institutions and economic freedom evolve over time. Thus, we use two stock measures—the number of firms and level of employment—as measures of entrepreneurial responses to economic freedom. Since the economic freedom variables are likely to drive changes in entrepreneurship over time, the stock measure is more appropriate than a rate of change measure (Gartner & Shane, 1995). We estimate separate models for each industry. Establishment and employment data were obtained from the Office of Advocacy in the U.S. Small Business Administration. The data are from a cross section/time series for each state over each year from 1991 to 1998 for the two-digit Standard Industrial Classification (SIC) codes.

Since data on the number of firms are count data and skewed to the right, simple linear regression is inappropriate. Poisson regression methods are appropriate if the dependent variable has an equal mean and variance. However, if the variance exceeds the mean, the estimated standard errors will be smaller than their actual values, resulting in inflated significance levels for the estimated coefficients (Cameron & Trivedi, 1986; King, 1988).

1. This analysis excludes Alaska and Hawaii because we use data for contiguous states and excludes the District of Columbia since no economic freedom data is available for the District. Due to the possibility of cross-border location decisions within a given region, states compete for new businesses. The level of relative economic freedom among contiguous states may be a consideration for entrepreneurs, particularly when services are separable from consumption. To account for possible cross-border decisions, we estimated regressions based on a measure of the level of relative economic freedom by calculating the ratio of each state's economic freedom index to the average index of the economic freedom for all contiguous states. Because the results for these measures are similar to those for the individual indices, we do not report them in the paper.

If the conditions for Poisson regression are not satisfied, the negative binomial model is an alternative technique (Stuart & Sorenson, 2003). After estimating both the Poisson and negative binomial models, the likelihood ratio test indicated that the negative binomial was the appropriate model ($\alpha = .01$) in all cases except amusement and recreational services—therefore, we report only the negative-binomial results. The employment model is estimated with linear regression. Each model includes state and year fixed effects.

Economic Freedom Indices

The economic freedom index we use is the Economic Freedom of North America, EFNA (Karabegovic et al., 2005). EFNA includes measures of economic freedom for each state in the United States from 1981 through 2002. Karabegovic et al. note that “The freest economies operate with a minimal level of government interference, relying upon personal choice and markets to answer the basic economic questions such as what is to be produced, how it is to be produced, how much is produced, and for whom production is intended. As government imposes restrictions on these choices, the level of economic freedom declines” (p. 3).

Economic freedom is measured by three distinct indices at both the “all-government” and “subnational” level. The three component indices are: the size of government, takings and discriminatory taxation, and labor market freedom.

The size of government index is measured by general government consumption expenditures as a percent of GDP plus transfers, subsidies as a percent of GDP, and social security. As government grows beyond the provision of pure public goods and the protective functions of the state, economic freedom declines (Gwartney, Lawson, & Block, 1996) and productive entrepreneurial activity is discouraged (Campbell & Rogers, 2007; Kreft & Sobel, 2005). As government goes beyond these basic functions, government moves into the provision of private goods that can be supplied in a free market based on choices by firms and individual consumers. As the government provides more private goods, firms and consumers face fewer choices and entrepreneurs have fewer opportunities—less economic freedom exists.

The size of government index ranges from 1 to 10, with higher values assigned to those states exhibiting lower levels of government spending. As general government expenditures grow, and subsidies and transfers increase, government is engaging in more private activities and policies that reduce economic freedom in the private sector. We expect a positive relationship between the size of government index and businesses engaging in productive entrepreneurship. Alternatively, if government spending and redistribution increase, the returns to political rent-seeking may rise relative to the returns to wealth creating activities (Campbell & Rogers, 2007). As a consequence, unproductive entrepreneurship may increase, yielding a negative relationship between the government index and the number of firms and level of employment.

The takings and discriminatory taxation index is designed to assess the level of takings required to support increased levels of government activity. These tax measures include: the top marginal tax rate and the income level to which it applies, indirect tax revenues as a percent of GDP, and sales taxes as a percent of GDP. Generally, higher values of the tax index indicate lower taxes. Firms prefer to locate in states with lower tax rates (Coughlin et al., 1991; Friedman, Gerlowski, & Silberman, 1992). A higher value of the tax index implies lower tax rates and is expected to be positively associated with the number of firms and the employment level for productive entrepreneurship. However, unproductive entrepreneurship can arise because some firms may benefit from higher taxes (firms with large government contracts) or from complicated tax structures (e.g.,

accounting firms or law firms specializing in taxation) and thrive in states with low values of the tax index.

The labor market freedom index includes three components. First, the index reflects whether states have minimum wage laws that are high relative to per capita GDP. High relative minimum wages restrict the freedom of firms and individuals to trade in the labor market. Second, it includes the amount of government employment as a percentage of total employment. The final component uses the percent of workers unionized to proxy for labor market laws and regulations. Each component in the index is related to higher labor costs. A reduction in any of these measures increases the labor index and indicates more labor market freedom. Consequently, as the labor market freedom index increases, we expect more firms and greater levels of employment in industries engaged in productive entrepreneurship. As the state provides more labor market freedom, entrepreneurial activity should increase because entrepreneurs can more easily and cheaply acquire the necessary human resources. Firms engaged in unproductive entrepreneurship may grow with less labor market freedom. For example, as labor unions become more powerful within a state, the number of membership organizations will grow. Unions are likely to lobby for laws that will reduce labor market freedom.

Economic freedom depends upon these three indices, hereafter referred to as government freedom, tax freedom, and labor freedom. Each index is measured at two broad levels of government, each capable of enacting policies that affect economic freedom. These are the “all-government” and “subnational” levels. The all-government index draws upon local, state, and federal measures, and the subnational index focuses solely on state and local measures. Because the national and subnational indices are highly correlated, we estimate separate sets of regressions for each index. We examine both indices, since for some industries, the ability of interest groups to control and respond to state level policies may be greater, while in other industries, federal policies may have differential impacts across states.

We are interested in the effects of policy, as captured in economic freedom indices, on two measures of entrepreneurial activity: the number of service industry firms and the level of their employment. If *increased* economic freedom leads to an increase in the number of firms and employment in an industry, it indicates that this industry is engaged in what Baumol (1990) has identified as *productive* entrepreneurship. However, if *decreased* economic freedom leads to an increase in the number of firms and employment in an industry, it indicates that this industry is engaged in what Baumol has identified as *unproductive* or even *destructive* entrepreneurship.

Control Variables

Measures of control variables are based on annual observations for each state. Empirical studies of firm location typically include measures of taxes, wages, the labor force quality, and market access (Goetz, 1997; Guimaraes, Figueiredo, & Woodward, 2000, 2003; Herzog & Schlottmann, 1991; Papke, 1991; Wasylenko, 1997). We exclude taxes from our model, since the economic freedom index includes a tax index.

Labor costs are often measured by wages or real earnings (Gabe & Bell, 2004; Goetz, 1997; Herzog & Schlottmann, 1991). We use real earnings of workers measured in 1998 dollars. Human capital is a key to economic growth because it affects labor force quality (Lucas, 1993; Romer, 1986). Acs and Armington (2004) find that firm formation increases with the percentage of college graduates in an area. As a proxy for human capital and labor quality, we use the percent of the population with a bachelor's degree. In a recent article, Kirchhoff et al. (2007) found that increases in university research and development

expenditures are positively related to new firm formation. Knowledge intensive business services include firms that have high knowledge demands on either the provider (accounting, legal, and medical services) or on clients, or both (technical services, R&D services) (Freel, 2006). Freel's findings indicate that these firms tend to be more innovative than other service firms. As a proxy for the effects of innovation on service firms, we use the number of patents per 100,000 in population.

Market access through transportation networks is likely to be more important in manufacturing firm location decisions, since these firms must have the ability to easily transport inputs and outputs. However, for many services, local transportation is essential to reach the customer (or vice versa), particularly when the service is inseparable. Ihlanfeldt and Raper (1990) argue that the distance between the firm and its support services, as well as the distance to customers, are important in office location decisions. We use the number of roadway miles per square mile to measure market access.

To examine the sensitivity of the economic freedom index coefficients to the inclusion of these independent variables, we estimated regressions which separately excluded the variables measuring the percent with a bachelor's degree, patents, and roadway miles, and found little change in the results. The model estimating the number of service firms also includes the size of the population. Data for the control variables are from the Statistical Abstract of the United States (various years).

We ignore the effect of location and relocation subsidies, tax breaks, and enterprise zones because most of these policies have targeted manufacturing firms. As noted earlier, Rubin and Wilder (1989) found that service firms are less likely to benefit from these policies since they are generally smaller and less subject to large tax liabilities. Additionally, when states implement enterprise zone policies, about 74% of the employment in these zones occurs in manufacturing (Erickson & Friedman, 1990; Peters & Fisher, 2002).

Knowledge of how firms and employment in service industries respond to overall economic freedom is useful in predicting where future firm and employment growth will occur and how it is affected by economic freedom. Our interest lies in determining how economic freedom affects the portfolio of industries that develop over time in a state. While targeted industrial policy is good for the targeted industry, the costs to other firms and industries are likely to outweigh these benefits, particularly since all subsidies and tax concessions are likely to be covered from other state revenue sources, such as taxation (Garrett & Wall, 2005). The generalized effects of targeted industrial policy, both negative and positive, are likely to be captured in the economic freedom indices we use. We expect government policies to affect economic freedom, and in turn, to influence the portfolio of industries choosing to operate within a given state.

Results

Tables 1 and 2 show the descriptive statistics for the dependent and the independent variables. The sample size for the firm data for each industry is 384 after accounting for missing values and omitting Hawaii, Alaska, and Washington, DC. Sample size varies for the employment data. The Small Business Administration did not obtain employment data for particular services in all states during some years, and no data were available for 1998. All three economic freedom indices have values ranging from 1 to 10, with higher values indicating more economic freedom. The government freedom index ranges from 4.8 in West Virginia to 9.1 in Delaware. The tax freedom index ranges from 3.8 (Maine) to 8.1 (Delaware). The labor freedom index ranges from 5.2 (West Virginia) to 8.0 (North Carolina).

Table 1

Means of the Dependent Variables

	Number of firms				Employment per 100,000 population				
	Mean	SD	Min	Max	Mean	SD	Min	Max	N
Hotels (SIC 70)	976.35	850.97	123	5,243	798.88	1,521.96	225.47	11,599.23	336
Personal services (SIC 72)	3,597.47	3,679.90	353	18,073	474.69	76.62	321.62	685.83	336
Business services (SIC 73)	6,410.48	7,589.58	430	48,083	2,157.13	763.48	698.20	4,019.48	336
Automotive repair, services, parking (SIC 75)	3,269.01	3,448.68	372	20,154	361.25	67.92	192.58	580.97	333
Miscellaneous repair services (SIC 76)	1,372.36	1,324.53	169	7,098	157.73	30.39	89.22	284.96	326
Motion pictures (SIC 78)	658.93	1,177.21	61	8,410	135.03	82.81	56.91	700.55	306
Amusement and recreational services (SIC 79)	1,777.42	1,871.17	248	11,261	501.99	235.37	148.88	2,370.37	331
Health services (SIC 80)	8,692.02	10,279.37	716	58,035	4,020.15	716.28	2072.49	5,903.42	336
Legal services (SIC 81)	3,222.88	3,802.06	264	20,801	321.51	88.12	177.24	598.12	265
Educational services (SIC 82)	818.05	951.31	49	5,890	730.77	423.31	117.98	2,435.62	328
Social services (SIC 83)	2,325.53	2,272.47	316	14,508	849.74	224.81	396.96	1,477.19	336
Museums, art galleries (SIC 84)	82.34	77.11	10	442	28.68	21.40	4.56	161.62	268
Membership organizations (SIC 86)	4,912.60	4,116.25	616	16,992	799.47	165.84	358.09	1,227.96	307
Engineering and management services (SIC 87)	5,109.97	6,007.26	369	36,720	928.64	350.56	363.64	1,925.23	334
Miscellaneous services (SIC 89)	322.32	442.50	14	3,177	34.49	16.22	6.45	80.29	259

Sample size for the firm data for each SIC code is 384. Observations are from the 48 contiguous states from 1991 to 1998. SD, standard deviation; Min, minimum; Max, maximum; SIC, Standard Industrial Classification.

Table 2

Means of the Independent Variables

	Mean	SD	Min	Max
Government freedom (all-government)	7.17	.78	4.80	9.10
Tax freedom (all-government)	5.82	.74	3.80	8.10
Labor freedom (all-government)	6.81	.52	5.20	8.00
Government freedom (subnational)	7.22	.90	4.30	8.90
Tax freedom (subnational)	6.81	.77	4.80	8.50
Labor freedom (subnational)	6.67	.82	4.90	8.80
Real earnings (1998 dollars)	28,312	4,776	20,516	52,473
Roadway miles per square mile	3.46	1.89	.60	8.91
Percent of population with bachelor's degree	22.08	4.39	11.40	34.00
Population	5,462,900	5,797,252	459,260	33,000,000
Patents per population	20.12	12.79	3.81	75.98

SD, standard deviation; Min, minimum; Max, maximum.

Table 3

Negative Binomial Exponent of the Coefficients for Number of Firms and Estimates for the Log of Employment per 100,000 Population for the Size of Government Index

Economic freedom measure: size of government	Number of firms		Log employment	
	All-government	Subnational	All-government	Subnational
Hotels, rooming houses, camps, and other lodging places	1.013	.973**	.032	-.061**
Personal services	1.019*	1.016***	.031*	.013
Business services	1.046**	1.013	.060**	.015
Automotive repair, services, and parking	1.009	.987**	.020	.020**
Miscellaneous repair services	1.037	nc	.028	.014
Motion pictures	nc	1.036***	.098*	.060**
Amusement and recreational services	1.015	nc	-.023	-.064
Health services	.986	.978***	-.037*	-.020
Legal services	1.018	.986**	-.062***	-.021*
Educational services	1.027	.983	-.060***	-.034**
Social services	.954***	.959	-.038*	-.037***
Museums, art galleries, botanical and zoological garden	1.035	nc	-.181*	-.177***
Membership organizations	.984	.978***	-.043**	-.039***
Engineering and management services	1.041**	1.002	-.005	-.025
Miscellaneous services	.933	.917***	-.153	.006

* $p < .10$; ** $p < .05$; *** $p < .01$

Coefficients in gray indicate that at least one of the coefficients shows a positive influence from the index on either the number of firms or employment with no significant negative coefficients. Boldfaced indicate that at least one of the coefficients shows a negative influence from the index on either the number of firms or employment with no significant positive coefficients. For the negative binomial, the significance level is for the test that the exponent of the coefficients is different from one.

nc, Model did not converge.

Because we examine the effect of each index on numerous service industries, we show the empirical results for government, tax, and labor freedom separately in Tables 3–5.² For the negative binomial, a one-unit change in the independent variable will increase the dependent variable by a factor equal to the exponent of the coefficient. This value is reported in the tables to ease interpretation. For example, in Table 3, the exponent for government freedom “number of firms—all-government” regression was estimated to be

2. Due to space limitations, the remaining independent variables are excluded from the tables and are available upon request. Generally, in the firm negative binomial regressions, the coefficient on real earnings, population, and patents per population were positive, and the coefficients on highway miles and percent of the population with a bachelor's varied in sign by industry, but were mostly insignificant. For the employment regressions, the coefficients on real earnings, patents, and bachelor's degree were positive, and the highway coefficients varied in sign by industry. The Wald chi-square statistic for the negative binomial regressions tests the hypothesis that all coefficients are jointly equal to zero and ranges from 102 to 4,553 with all p -values $< .0001$. R-squared values in the log employment regressions ranged from .06 in personal services to .86 in business services.

Table 4

Negative Binomial Exponent of the Coefficients for Number of Firms and Estimates for the Log of Employment per 100,000 Population for the Takings and Discriminatory Taxation Index

Economic freedom measure: takings and discriminatory taxation	Number of firms		Log employment	
	All-government	Subnational	All-government	Subnational
Hotels, rooming houses, camps, and other lodging places	1.029**	.999	-.006	-.035
Personal services	1.006	1.015**	-.007	.008
Business services	1.023**	1.031***	-.017	.002
Automotive repair, services, and parking	1.006	1.012*	.028**	.025***
Miscellaneous repair services	1.013	nc	.016	-.026*
Motion pictures	nc	1.024*	.039	.064**
Amusement and recreational services	1.003	nc	.001	-.013
Health services	1.005	1.001	.024	-.008
Legal services	.998	1.004	.002	-.026**
Educational services	1.035***	1.019	.062***	.023
Social services	1.027***	1.020***	.012	.010
Museums, art galleries, botanical and zoological garden	.787	nc	.053	.041
Membership organizations	1.018**	1.005	.028**	.000
Engineering and management services	1.024**	1.024***	-.001	.040**
Miscellaneous services	1.048	1.013	.043	.112

* $p < .10$; ** $p < .05$; *** $p < .01$

Coefficients in gray indicate that at least one of the coefficients shows a positive influence from the index on either the number of firms or employment with no significant negative coefficients. Boldfaced indicate that at least one of the coefficients shows a negative influence from the index on either the number of firms or employment with no significant positive coefficients. For the negative binomial, the significance level is for the test that the exponent of the coefficients is different from one.

nc, model did not converge.

1.046. This implies that a one-unit increase in the government freedom index leads to a 4.6% increase in the number of firms.

In the regressions for the number of firms, an exponent of the coefficient *greater than one* indicates Baumol's *productive* entrepreneurship, whereas a value of *less than one* indicates *unproductive* entrepreneurship. For the log of employment regressions, a coefficient *greater than zero* indicates Baumol's *productive* entrepreneurship, whereas a value of *less than zero* indicates *unproductive* entrepreneurship.

To facilitate interpretation of the Tables 3–5, those service firms that have at least one significant coefficient indicating a *productive* entrepreneurship response to economic freedom and no significant coefficients indicating an *unproductive* response are highlighted in gray. Firms with at least one significant coefficient indicating an *unproductive* response to economic freedom and no significant productive responses are boldfaced.

Government Freedom Index

Recall that the government freedom index ranges from 1 to 10, with higher values associated with smaller government size and greater economic freedom. The results in

Table 5

Negative Binomial Exponent of the Coefficients for Number of Firms and Estimates for the Log of Employment per 100,000 Population for the Labor Market Freedom Index

Economic freedom measure: labor market freedom	Number of firms		Log employment	
	All-government	Subnational	All-government	Subnational
Hotels, rooming houses, camps, and other lodging places	1.013	.972	.196***	.029
Personal services	1.021	1.003	.025	.013
Business services	1.044**	1.017	.105***	.086***
Automotive repair, services, and parking	1.015	.987	-.007	.015
Miscellaneous repair services	1.029	nc	.001	-.023
Motion pictures	nc	.923***	.128**	.060
Amusement and recreational services	1.021	nc	.328***	-.066
Health services	1.006	.996	.024	-.014
Legal services	.988	.964***	.066***	.073***
Educational services	1.018	.962*	.025	.018
Social services	1.063***	.991**	.036	.007
Museums, art galleries, botanical and zoological garden	.939	nc	-.056	-.078
Membership organizations	.991	.953***	.016	-.037**
Engineering and management services	1.010	.984	.079*	-.039
Miscellaneous services	1.101	.997	-.038	.030

* $p < .10$; ** $p < .05$; *** $p < .01$

Coefficients in gray indicate that at least one of the coefficients shows a positive influence from the index on either the number of firms or employment with no significant negative coefficients. Boldfaced indicate that at least one of the coefficients shows a negative influence from the index on either the number of firms or employment with no significant positive coefficients. For the negative binomial, the significance level is for the test that the exponent of the coefficients is different from one.

nc, model did not converge.

Table 3 show that four service industries exhibit productive entrepreneurship because smaller government leads to more firms or greater levels of employment. These industries are personal services, business services, motion pictures, and engineering and management services. A one-unit increase in the government freedom index increases the number of firms in these industries from 1.6% (personal services, subnational) to 4.6% (business services, all-government). The statistically significant employment coefficients show that employment increases from 3.1% (personal services, all-government) to 9.8% (motion pictures, all-government).

Overall, the increase in the number of firms and employment in personal and business services in response to more economic freedom indicates productive entrepreneurship. Note that both personal and business service industries tend to be quite diverse in their makeup. Consequently, unproductive entrepreneurship by one subindustry, such as detective, guard, and armored car services, is likely to have little effect on the results for the entire industry. Overall, these findings show that personal and business services are more likely to engage in productive entrepreneurship when government freedom increases.

Eight industries respond negatively to the increases in the government freedom index. Hotels, health, legal, educational, social, museums, membership organizations, and miscellaneous services all contract as the government freedom index rises, indicating the potential for unproductive entrepreneurial behaviors. Many of these industries experience greater demand for their services with larger government. As the government index increases, the number of firms falls from 1.4% (health services, all-government) to 8.3% (miscellaneous services, subnational). Employment falls from 2.1% (legal services, subnational) to 18% (museums, art galleries, botanical and zoological gardens, all-government). Five of these eight industries exhibit reductions in both the number of firms and employment—hotels, health services, legal services, social services, and membership organizations.

Legal services operate primarily within a state and at the subnational (state and local) level. The subnational government freedom index has a negative and significant effect on both the number of firms and employment level. A decline in the government freedom index is likely to increase the opportunity for both legitimate legal action as well as rent-seeking litigation. This result is consistent with that of Sobel and Garrett's (2002) finding that relatively greater percentages of legal services and membership organization firms are located in state capitals. Negative results also hold for industries that provide services that are heavily subsidized by government, such as social services and health services. Both of these industries show a decrease in the number of firms and employment in response to at least one of the two measures—either the all-government or subnational measures.

Tax Freedom Index

Higher values of the tax freedom index indicate lower overall takings and discriminatory taxation. Table 4 shows that in all cases, the number of firms either grow or do not change with greater tax freedom, indicating that higher tax freedom leads to either productive entrepreneurship or has no effect. Nine industries show positive and significant responses in either the number of firms or employment. The growth in the number of firms in response to a one-unit increase in the index ranges from 1.2% (automotive repair services, subnational) to 3.5% (educational services, all-government).

An increase in the tax freedom index leads to an increase in employment ranging from 2.5% (automotive repair, subnational) to 6.4% (motion picture services, subnational). Only two services, miscellaneous repair services and legal services, have a significant reduction in employment. For both, the reduction is 2.6%, and it occurs for the subnational index. These findings imply that the tax policies of a state are critical in encouraging productive entrepreneurial activities that lead to the development of firms and jobs.

Labor Freedom Index

The results in Table 5 suggest that greater labor market freedom tends to have a positive effect on hotels, business services, and amusement and recreational services. The business services industry is the only highlighted industry that has an increase in the number of firms at 4.4% in the all-government index.³ The increase in employment resulting from an increase in the labor freedom index ranged from 8.6% (business services) to 32.8% (amusement and recreational services).

3. The results for social services are mixed with the all-government measure showing an increase in the number of firms by 6.3% and the subnational measure showing a reduction of .9%.

Greater labor freedom reduces the number of firms for educational services (3.8%) and membership organizations (4.7%) at the subnational level. Also, the level of employment falls for membership organization firms by 3.7%. These results for membership organizations are not surprising, since the labor index includes the number of unionized workers. As states become more unionized, the labor freedom measures decline, while the number of membership organizations increases.

The results for the labor freedom index are more mixed relative to the other indices. For example, in motion pictures and legal services, greater labor market freedom leads to fewer firms but increases in employment. In legal services at the subnational level, the number of firms falls 3.6% but employment increases by 7.3%. This may be due to an anomaly in the data. Many of the observations for employment in legal services were missing, and most missing values were in states with low values for the labor freedom index. It may also be the case that larger legal services firms are more prevalent in states with greater labor freedom.

Overall Impact of Economic Freedom

The results in Tables 3–5 show that the effects of government, tax, and labor freedom on the number of firms and employment levels vary by industry. Some industries grow, yet others decline with increased economic freedom. This supports our hypothesis that the portfolio of industries that develop within a state over time depends upon how entrepreneurs respond to government policies.

To measure the total impact of economic freedom on service industries, we calculate the effect of a one-unit increase in each of the indices on both the total number of firms and the overall employment level.⁴ For each index, these values are shown for industries engaged in productive entrepreneurship, unproductive entrepreneurship, and the net change. Using the all-government measure, Table 6 shows that for industries engaged in productive entrepreneurship, states experience an increase of 573 firms in response to a one-unit increase in the government freedom index. For industries engaged in unproductive entrepreneurship, states will lose 107 firms. This implies a net increase in the number of service firms within a state of 466 in response to a one-unit increase in the government freedom index.

None of the coefficients on the tax freedom index were less than one. Therefore, a one-unit increase in the tax freedom index is predicted to increase the number of firms by 478. Likewise, an increase in the labor freedom index always results in increases in the number of firms and leads to a net increase of 429 firms.

Applying a similar methodology to the all-government employment regressions, a one-unit increase in the government freedom index leads to 127 fewer jobs per 100,000 workers. A one unit increase in the tax freedom index increases employment by 78 jobs, and a one-unit increase in the labor freedom index increases employment by 660 jobs.

The results for the subnational measures tend to be lower. Changes in the subnational government freedom index indicate that the net number of firms falls by 359, and employment falls by 132. The tax freedom index results indicate that the net number of

4. For example, to examine the impact from a change in the government freedom index, we include only those industries with significant coefficients in Table 3. For each industry with a significant coefficient, we multiply one minus the exponent of the coefficient by the mean number of firms in a state for that industry to get the change in the number of firms. We calculate these values separately for firms that respond positively and negatively to each of the three economic freedom indices.

Table 6

Overall Impact of Economic Freedom Indices on the Average Number of Firms and Employment per 100,000 Population in a State

	Size of government index		Takings and discriminatory taxation index		Labor market freedom index	
	All-government index	Subnational index	All-government index	Subnational index	All-government index	Subnational index
Reduction in firms (unproductive entrepreneurship)	-107	-440	0	0	0	-450
Increase in firms (productive entrepreneurship)	573	81	478	477	429	0
Net number of firms	466	359	478	477	429	-450
Reduction in employment (unproductive entrepreneurship)	-284	-148	0	-12	0	-30
Increase in employment (productive entrepreneurship)	157	15	78	55	660	209
Net employment	-127	-132	78	42	660	179

firms rises by 477 and employment increases by 42. The labor freedom index results indicate that the number of firms declines by 450 and employment increases by 179.

Entrepreneurs may have greater ability to change government policies at the subnational level. For example, lobbying at the state level may provide higher marginal value for smaller service firms. Lobbying at the federal level is likely to be more costly and less productive.

Overall, these findings indicate that the general effects of all three indices—government, tax, and labor freedom—on the number of firms is positive. The one exception is the net number of firms in the subnational measure. The effects on employment are negative for increased government freedom, but positive for both tax freedom and labor freedom. This result is not surprising, since some of these service industries supply services to government programs and typically grow with greater government. From a policy perspective, more economic freedom as measured by the tax and labor freedom indices leads to more firms and greater employment.

Conclusions

Our results indicate that some service industries exhibit firm and employment growth as economic freedom rises, while other service industries grow as economic freedom declines. Business services and personal services grow as economic freedom increases. Health services, social services, legal services, and membership organizations grow as economic freedom declines.

Business and personal services firms tend to be relatively small. They are less likely than larger firms to achieve economies of scale when complying with government regulations. States with greater economic freedom typically have fewer regulations that lower the relative costs for these small firms. Consequently, entrepreneurs are more likely to establish, operate, and grow these services. Our findings suggest that the effects on both industries are particularly strong for the government freedom and tax freedom indices.

On the other hand, legal services grow in response to increases in government regulation. We find that the number of legal services firms is most affected by government and labor market freedom. As government intervention increases and labor market freedom declines, firms affected by these policies increase their demand for legal services. Similarly, health services and social services respond to demand generated from government programs and tend to grow as the size of government grows.

Entrepreneurs respond to government policies and the level of economic freedom in ways that improve their profitability (Murphy, Shleifer, & Vishny, 1991). In this study, the three areas of economic freedom analyzed were: the size of government, takings and discriminatory taxation, and labor market freedom. As state policies change, the degree of economic freedom changes. This in turn influences the portfolio of industries that entrepreneurs choose to develop within a state.

This has an important implication for policy makers. Policies that encourage growth in some industries may discourage growth in others. For example, if a state government increases health care coverage for uninsured citizens, then the size of government will grow. Although this leads to greater demand for health services, it may produce a secondary effect of reducing the likelihood that entrepreneurs in business services will locate in that state. Our empirical work focuses on the specific type of service industries that develop in response to changes in economic freedom. Our results are consistent with previous studies that find that the geographic pattern of entrepreneurship is influenced by policy differences (Garrett & Wall, 2005; Kreft & Sobel, 2005) and that rent seeking firms tend to grow in areas where political influence has the greatest potential (Sobel & Garrett, 2002).

Policy makers should consider both the spillover effects of targeted policies as well as the direct effects of changes in economic freedom on entrepreneurial decision making. These decisions have important consequences for the portfolio of industries in their state. One of the main implications from the results in Table 6 is that greater tax freedom at both the all-government and the subnational level will lead to growth in both the number of firms and level of employment in the services industries. Also, at the all-government level, greater labor market freedom will increase the number of firms and employment level.

Many entrepreneurs have realized that their profit opportunities increase with government intervention. Special interest legislation is often aimed at protecting specific industries. Sobel, Clark, and Lee (2007) note that in countries where political action is valuable as a tool to block entry, the rate of entrepreneurship may fall as government intervention grows. This occurs as established industry interests capture the political process and use it to eliminate or reduce competition. As Baumol (1990) points out:

If entrepreneurship is the imaginative pursuit of position, with limited concern about the means used to achieve the purpose, then we expect changes in the structure of rewards to modify the nature of the entrepreneur's activities, sometimes drastically. The rules of the game can then be a critical influence helping to determine whether entrepreneurship will be allocated predominantly to activities that are productive or unproductive and even destructive (p. 909).

As government functions become more extensive and economic freedom declines, the returns to productive and unproductive entrepreneurship change. If this is the case, the type of entrepreneurial activity will respond to these changing incentives. Rent seeking is, after all, one form of entrepreneurship. Kirzner's (1997) concept of entrepreneurship as spotting and acting on previously undiscovered opportunity can be applied to the use of rent-seeking in government. For example, as government intervention grows, additional opportunities exist to manipulate entry barriers. This activity can provide long-lasting rents that would not exist without government regulatory protection, as in the case of the airlines under the regulatory guidance of the Civil Aeronautics Board or taxi cabs in cities with license restrictions. Labor unions also engage in rent seeking. As labor laws become more restrictive, opportunities for legal remedy grow, increasing the demand for legal services.

Future research might examine how all industries, rather than just service industries, are affected by economic freedom and determine which industries are more likely to engage in productive or unproductive entrepreneurship. These studies can also provide insight on how specific industry sectors influence political behavior through campaign contributions and whether the level of contributions is correlated with the response of those industries to economic freedom. Other studies may examine the direction of causality between industry location and economic freedom. In particular, studies examining specific industries at the six-digit North American Industry Classification System (NAICS) level may yield important insights about certification and licensing requirements and the growth of these industries. Finally, since the portfolio of firms and employment changes with economic freedom, the effect of the amount of employment in productive and unproductive entrepreneurship on state GDP could be instructive in determining the overall effect of economic freedom on GDP.

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Stephan F. Gohmann is a Professor of Economics in the Department of Economics, University of Louisville, Louisville, Kentucky.

Bradley K. Hobbs is a Professor of Economics in the Department of Economics, Florida Gulf Coast University, Fort Myers, Florida.

Myra McCrickard is a Professor of Economics in the Department of Economics, Bellarmine University, Louisville, Kentucky.

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