WORKING PAPER

FREEDOM AND ENTREPRENEURSHIP: New Evidence from the 50 States

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Abstract

In this paper, we extend the growing literature on economic freedom as a determinant of entrepreneurship. We employ a new general measure of freedom that encompasses both economic and personal freedoms to test whether general freedom is related to entrepreneurial activity. While we find a positive and statistically significant relationship between overall freedom and entrepreneurship, disaggregating overall freedom into personal and economic freedom shows that economic freedom is driving the relationship. We find that a one standard-deviation increase in a state's economic freedom is associated with over 100 new businesses started per 100,000 residents every month.

Freedom and Entrepreneurship: New Evidence from the 50 States

1 Introduction

Entrepreneurship is the act of exploiting an opportunity for profit.[1] It is the exploitation of profit opportunities in the private sector that drives economic progress forward, which is why so many policy makers at the local, state, and national levels seem to be focused on spurring entrepreneurial activity. While many actions fit into the above definition of entrepreneurship, most policy makers typically think of entrepreneurship as the creation of new businesses. Thus, many empirical studies of entrepreneurship have focused on different measures of new businesses, such as the growth rate of sole proprietorships or the number of new business starts. However, when looking at the determinants of good entrepreneurial growth, it is important to remember that behind each potential organization is an individual who is weighing the costs and benefits of starting the new business. If a potential entrepreneur fears that the returns from starting a new business will not be high enough because of the economy, or that the future is uncertain, or that public policy will raise the cost of operating the business, then the person may go on to do something else, which might not contribute to economic growth and development in the same way that starting a business would. In some cases, such as lobbying, these contributions may actually lead to lower growth.

The link between economic institutions and entrepreneurship was made famous by William Baumol.[2] Before Baumol, there was a tendency among scholars to think of entrepreneurship only in positive-sum terms. Thomas Edison and Garrett Morgan were not just

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[1] Randall Holcombe, *Entrepreneurship and Economic Progress* (New York: Routledge, 2007), 29.
[2] William Baumol, "Entrepreneurship: Productive, Unproductive, and Destructive," *Journal of Political Economy* 98, no. 5 (1990): 893–921.

famous inventors, nor were they businessmen who made their living merely by buying low and selling high. These men were true entrepreneurs, and for Baumol, this focus on the heroic inventor was problematic since it cannot not explain a decline in positive-sum entrepreneurship (i.e., entrepreneurship in which society as well as the entrepreneur is better off), except by suggesting that entrepreneurial energies or innovations are exhausted. Given the very basic human desire to improve one's condition, Baumol argued, one should instead assume that the stock of entrepreneurial energy in society is fixed.[3] Under this assumption, if the amount of positive-sum entrepreneurship changes over time, it must be because entrepreneurs are having their time and attention diverted away from positive-sum entrepreneurship and toward bad (negative-sum) entrepreneurship. According to Baumol, the rules of the game (i.e., economic institutions) have an important effect on positive-sum entrepreneurship—as illustrated by a series of case studies focusing on ancient Rome, early China, and the Middle Ages.[4] The rules of the game that determine the rewards for different types of entrepreneurship have changed over time, and entrepreneurial behavior has changed in response to these changes in the rules of the game. Societies that keep taxes low, do not demonize business, and minimize the amount of resources distributed through the government steer their citizens' entrepreneurial energies toward good entrepreneurship, such as starting a new business, and away from bad entrepreneurship, such as finding a better way to lobby politicians for favors. Over time, the countries that have higher rates of entrepreneurial growth (positive-sum) tend to experience more innovation and higher rates of economic progress.

Many scholars have explored the relationship between economic institutions and various measures of entrepreneurship. However, in order to study the rules of the game, scholars must

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[3] Ibid.
[4] Ibid.

first measure them. A popular measure of institutions in economics literature is economic freedom, which is measured by indices at both the national and state levels.[5] Broadly speaking, economic freedom is present when individuals have the freedom to make private choices, including the freedom to interact with other free individuals, provided that they do not harm others or their property.[6] The indices are designed to measure the quality of a country's or state's formal and informal institutions. Countries and states that protect private property rights while keeping taxes low and refraining from creating barriers to trade and entry into markets have more economic freedom than those that do a poor job of protecting private property or that engage in high levels of taxation or regulation.

At the national level, several studies have found a positive link between economic freedom and different measures of entrepreneurial activity. Some studies have looked at the relationship between economic freedom and the total entrepreneurial activity in a country, as measured by the *Global Entrepreneurship Monitor*.[7] Total entrepreneurial activity is measured as the number of individuals out of every 100 in a country who are in the start-up phase of a new business or are managing a business that has been in existence for fewer than 42 months. There is a positive and statistically significant relationship between the level of economic freedom in a country and that country's total entrepreneurial activity.[8] By disaggregating economic freedom,

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[5] At the national level see James Gwartney, Robert Lawson, and Joshua Hall, *Economic Freedom of the World Report: 2011 Report* (Vancouver: Fraser Institute, 2011). At the sub-national level there are two indices. The oldest measures economic freedom at the level of US states and Canadian provinces and is published by the Fraser Institute in Canada. The most recent edition is Nathan Ashby, Avila Bueno, and Fred McMahon, *Economic Freedom of North America: 2011* (Vancouver: Fraser Institute, 2011). A recent competitor that measures both personal and economic freedom at the U.S. state level is William Ruger and Jason Sorens, *Freedom in the 50 States: An Index of Personal and Economic Freedom*, 2nd ed. (Arlington, VA: Mercatus Center at George Mason University, 2011).
[6] For more on the definition of economic freedom, see Gwartney, Lawson, and Hall, *Economic Freedom of the World*, 1.
[7] Paul D. Reynolds, William Bygrave, Erkko Autio, and Michael Hay, *Global Entrepreneurship Monitor: 2002 Executive Report* (Kansas City, MO: Ewing Marion Kauffman Foundation, 2002).
[8] See, for example, Russell Sobel, J. R. Clark, and Dwight Lee, "Freedom, Barriers to Entry, Entrepreneurship, and Economic Progress," *Review of Austrian Economics* 20, no. 4 (2007): 221–36.

it is found that access to sound money is positively related to total entrepreneurial activity.[9] A sound and stable currency is important in order for voluntary exchange to occur. Thus, it is useful to measure the extent to which governments provide access to sound money by keeping inflation low and stable and allowing their citizens access to alternative currencies.[10] Other studies have also disaggregated economic freedom, but measured entrepreneurship using self-employment rates. These studies have found that countries with smaller governments, stronger legal systems and rules of law, secure property rights protection, and fewer regulations have higher self-employment.[11]

Similar work has looked at the relationship between economic freedom and various measures of entrepreneurship at the state level. Steven Kreft and Russell Sobel measured entrepreneurship using the growth rate of sole proprietorships from 1996 to 2000 and the index of economic freedom provided in earlier editions of the annual report *Economic Freedom of North America* (*EFNA*).[12] Controlling for other factors that may influence the growth rate of sole proprietorships, Kreft and Sobel found a positive relationship between economic freedom and their measure of entrepreneurship.[13] Following their research, a large number of papers have examined the relationship between the *EFNA* and different measures of entrepreneurship. The *EFNA* measures economic freedom using 10 variables in three areas: size of government, takings and discriminatory taxation, and labor market freedom; and it includes key measures such as

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[9] Christian Bjørnskov and Nicolai Foss, "Economic Freedom and Entrepreneurial Activity: Some Cross Country Evidence," *Public Choice* 134, no. 3 (2008): 307–28.

[10] Gwartney, Lawson, and Hall, *Economic Freedom of the World*.

[11] Kristina Nyström, "The Institutions of Economic Freedom and Entrepreneurship: Evidence from Panel Data," *Public Choice* 136, no. 3 (2008): 269–82.

[12] Steven Kreft and Russell Sobel, "Public Policy, Entrepreneurship, and Economic Freedom," *Cato Journal* 25, no. 3 (2005): 595–616.

[13] Ibid.

total tax revenue as a percentage of gross domestic product, top marginal income tax rates and

the threshold at which they apply, and union density.[14]

Noel Campbell and Tammy Rogers used the index to study the determinants of net

business formation, and in addition to finding a positive relationship between economic freedom

and entrepreneurship, they also noted that increasing economic freedom on net business

formation has "more than twice the marginal effect of a similar increase in commercial lending

and nearly three times the marginal effect of a similar increase in minority percentage."[15] Similar

results on the effect of economic freedom on entrepreneurship have been found in studies

looking at firm births and deaths[16] and the Kaufmann Index of Entrepreneurial Activity (KIEA),

a state-based measure of the number of businesses started by non-business-owning adults during

the past year.[17]

In this paper, we extend the existing literature by exploring the effect of economic

freedom more generally on state-level entrepreneurship in the United States. Recently, political

scientists William Ruger and Jason Sorens developed a state-based measure of overall freedom

for the Mercatus Center called the *Freedom in the 50 States* index, which includes measures of

both personal and economic freedoms.[18] We used their measures of overall freedom, personal

freedom, and economic freedom to deepen our understanding of the relationship between

government intervention and entrepreneurial activity. In addition, their measure of economic

freedom uses a more expansive set of variables than the *EFNA* index does; thus our results also

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[14] For more details on how these variables are measured, see Ashby, Bueno, and McMahon, *Economic Freedom of North America*.

[15] Noel Campbell and Tammy Rodgers, "Economic Freedom and Net Business Formation," *Cato Journal* 27, no. 1 (2007): 33.

[16] Noel Campbell, Tammy Rodgers, and Kirk Heriot, "The Economic Freedom Index as a Determinant of Firm Births and Firm Deaths," *Southwest Business and Economics Journal* 16 (2007–8): 37–50.

[17] Joshua Hall and Russell Sobel, "Institutions, Entrepreneurship, and Regional Differences in Economic Growth," *Southern Journal of Entrepreneurship* 1, no. 1 (2008): 69–96.

[18] Ruger and Sorens, *Freedom in the 50 States*.

act as a robustness check on the previous literature. The most important difference between the *Freedom in the 50 States* index and the *ENFA* index is the sheer number of factors included in the former's measure of economic freedom. Ruger and Sorens broke down each factor into fiscal policy and regulatory policy. In the area of fiscal policy alone they had 10 variables, while regulatory policy contained 38 variables. While, based on their study, we find that overall freedom is positively related to entrepreneurship, we also conclude that the relationship is primarily driven by the influence of economic freedom, rather than by a strong positive relationship between personal freedom and entrepreneurship. However, our results suggest that the findings presented in the previous literature on economic freedom and entrepreneurship, most notably those of Joshua Hall and Sobel,[19] were not strongly influenced by the particular measure of economic freedom that was used.

We proceed as follows: Section 2 describes our data, empirical approach, and some additional relevant literature. Section 3 presents a first look at the measures of overall freedom, personal freedom, and economic freedom, and how they relate to entrepreneurship. In Section 4 we present our empirical results, and in Section 5 we conclude.

2   Data and Empirical Approach

One of the greatest difficulties in empirical research on entrepreneurship is how best to measure it. While there are numerous reasons to employ measures such sole-proprietorship growth rates and new business starts, in this paper we follow the work of Hall and Sobel and employ the KIEA, designed and calculated by economist Robert Fairlie and published annually by the Ewing

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[19] Hall and Sobel, "Institutions, Entrepreneurship, and Regional Differences in Economic Growth."

Marion Kauffman Foundation.[20] The KIEA is an important indicator of new entrepreneurial activity at the state level, as it measures new businesses started by current nonbusiness owners. That is, it measures the flow of new individuals into entrepreneurship. In addition, it is derived from current population surveys, not payroll data. This is important, since many new businesses operate without adding employees for some time, and thus their activity is not picked up using payroll data.[21]

For each state, the KIEA measures the monthly percentage of non-business-owning adults who have started a business with more than 15 hours worked per week in the following month. In 2009, Oklahoma's KIEA score was 0.47, the highest in the US for that year. This score translates to 470 out of every 100,000 adults in Oklahoma starting a new business every month. In contrast, Mississippi's score of 0.17 was the lowest in 2009. Montana, Arizona, Texas, and Idaho were also among the five states with the highest KIEA scores in 2009, while Nebraska, Pennsylvania, Alabama, and Minnesota were among the five states with the lowest scores. While the KIEA data goes back as far as 1996, the limited data available on overall freedom confines us to explaining the determinants of entrepreneurship in 2007 and 2009.

In our empirical analysis, we employ three different categories of independent variables that may explain state-level entrepreneurship. The first and most important category is associated with economic freedom. The variables of interest in this category come from the first and second editions of the *Freedom in the 50 States* index.[22] Similar to other measures of economic freedom, this index measures freedom from an individual rights perspective. According to the authors, "Individuals should be allowed to dispose of their lives, liberties, and properties as they see fit,

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[20] Robert Fairlie, *Kauffman Index of Entrepreneurial Activity: 1996–2010* (Kansas City, MO: Ewing Marion Kauffman Foundation, 2011).
[21] Hall and Sobel, "Institutions, Entrepreneurship, and Regional Differences in Economic Growth."
[22] Ruger and Sorens, *Freedom in the 50 States*.

as long as they do not infringe on the rights of others."[23] Recognizing that individual freedom extends beyond the economic sphere, the authors constructed an overall measure of freedom that is the summation of both personal and economic freedom. They gathered data on dozens of variables and calculated a score for each policy variable by measuring how many standard deviations above or below the mean each state was for that variable. Thus, when aggregated into a summary index, scores have a mean of zero and are generally between plus or minus 0.50. In 2009, according to this measure, the freest states in terms of overall freedom were New Hampshire, South Dakota, Indiana, Idaho, and Missouri. The states with the lowest levels of overall freedom were Massachusetts, Hawaii, California, New Jersey, and New York.

Ruger and Sorens calculated personal freedom using data on topics such as education, gun control, marriage and civil union laws, gambling, alcohol regulations, drug laws, etc. The exact weighting given to each of these areas varied depending on the number of people affected by the infringement, as well as on a subjective determination of its overall salience. While a relationship exists between personal freedom and overall freedom—given that personal freedom comprises half the weighting of overall freedom—according to their results, the freest states in terms of personal freedom were not necessarily the freest overall. For example, Oregon had the highest level of personal freedom in 2009, but in terms of overall freedom the state was only eighth, as its ranking of twenty-fifth in economic freedom lowered its overall score.[24]

In constructing their economic freedom index and ranking each state, Ruger and Sorens first created scores and rankings in two separate areas: fiscal policy and regulatory policy. Fiscal policy included data on spending and taxation, while regulatory policy included data on labor

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[23] Ruger and Sorens, *Freedom in the 50 States*, 5.
[24] Ruger and Sorens, *Freedom in the 50 States*. Readers interested in better understanding the data and weighting process are encouraged to read Ruger and Sorens's extremely detailed description of how their index is constructed, which begins on page 60 of their 2011 report.

regulation, health insurance regulation, occupational licensing, land use, etc. Both areas were weighted equally for calculating the overall economic freedom score. According to the results, South Dakota was the most economically free state in 2009, with New Hampshire, North Dakota, Idaho, and Virginia rounding out the top five. By way of comparison, the *EFNA* listed the most economically free states at the subnational level as South Dakota, Delaware, Tennessee, and Virginia.[25] Remember that part of the reason for employing the *Freedom in the 50 States* index of economic freedom is as a robustness check on the previous literature that exclusively employed the *EFNA* index.

One drawback to the *Freedom in the 50 States* index is that it has only been calculated for 2007 and 2009. This limits our analysis to a pooled data set with two observations for each state. We first use the overall freedom index measure in our baseline regressions as our dependent variable. We then disaggregate overall freedom into its personal and economic freedom components to see whether personal or economic freedom is driving the results. Finally, we take an individual look at both fiscal policy and regulatory policy to see which is more important to explaining state-level entrepreneurship as measured by the KIEA.

The two remaining categories of explanatory variables in our analysis are relatively straightforward. The first group centers on the overall conditions within a state that may influence entrepreneurship. These variables include the unemployment rate, population density, percentage of service employment, and data on property and violent crime rates per 100,000 persons. Our choice of these economic variables is informed by economic theory and previous literature. For example, some studies have found that entrepreneurship in certain sectors, such as retail and wholesale, is positively related to higher violent crime rates, controlling for other

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[25] Ashby, Bueno, and McMahon, *Economic Freedom of North America*.

factors.[26] There is also a positive relationship between service employment and the growth rate of sole proprietorships.[27] Other studies have showed that a 10 percent increase in population density increased the percentage of people who wanted to become entrepreneurs by 1 percent.[28] In densely populated areas, idea and knowledge creation as well as the flow of goods and services occurs at a higher rate. The dynamism of more densely populated areas leads to more entrepreneurial opportunities being taken by individuals. Finally, a negative relationship between self-employment and the unemployment rate has been found across a sample of Organisation for Economic Co-operation and Development countries.[29] However, there does not appear to be a relationship between unemployment rates and the number of new businesses at the state level.[30]

The final category of control variables in our analysis focuses on the characteristics of entrepreneurs. These variables include the percentage of the labor force that is male and white, the percentage of individuals over the age of 25 with a four-year college degree, and the median age of a person in the state. These are typical explanatory variables in previous literature.[31] For example, according to some studies, men are more likely than women to be entrepreneurs.[32] It has also been found that a positive relationship exists between self-employment and an individual's level of education.[33] While in some cases education may enable people to become entrepreneurs, as in high-tech start-up firms, in most cases education is negatively related to an

[26] Stuart Rosenthal and Amanda Ross, "Violent Crime, Entrepreneurship, and Cities," *Journal of Urban Economics* 67, no. 1 (2011): 135–49.
[27] Kreft and Sobel, "Public Policy, Entrepreneurship, and Economic Freedom."
[28] Yasuhiro Sato, Takatoshi Tabuchi, and Kazuhiro Yamamoto, "Market Size and Entrepreneurship," *Journal of Economic Geography* (forthcoming).
[29] David Blanchflower, "Self-Employment in OECD Countries," *Labour Economics* 7, no. 5 (2000): 471–505.
[30] Martin Carree, "Does Unemployment Affect the Number of Establishments? A Regional Analysis for U.S. States," *Regional Studies* 36, no. 4 (2002): 389–98.
[31] For example, see Kreft and Sobel, "Public Policy, Entrepreneurship, and Economic Freedom," and Hall and Sobel, "Institutions, Entrepreneurship, and Regional Differences in Economic Growth."
[32] Nan Langowitz and Maria Minniti, "The Entrepreneurial Propensity of Women," *Entrepreneurship Theory and Practice* 31, no. 3 (2007): 341–64.
[33] Stephan Gohmann, "Institutions, Latent Entrepreneurship, and Self-Employment: An International Comparison," *Entrepreneurship Theory and Practice* 36, no. 2 (2012): 295–321.

individual's willingness to start a new business. While this may seem counterintuitive, formal education opens numerous opportunities in pre-existing organizations, thus reducing the incentive to invest in a risky start-up business. Table 1 presents summary statistics for all the variables used in our analysis.[34]

Table 1: Summary Statistics

Variable	Mean	StDev	Min	Max
Dependent Variable				
Kauffman Index	307.75	85.41	81.66	471.72
Measures of Freedom				
Overall Freedom	0.00	0.26	−0.75	0.44
Fiscal Freedom	0.00	0.15	−0.48	0.35
Regulatory Freedom	0.00	0.10	−0.24	0.16
Personal Freedom	0.00	0.10	−0.27	0.25
Economic Freedom	0.00	0.22	−0.57	0.47
Other Independent Variables				
Percentage Male	0.53	0.01	0.50	0.57
Median Age	37.75	2.39	28.46	43.40
Percentage White	0.83	0.13	0.20	0.97
Population Density	162.11	201.40	1.03	998.45
Unemployment Rate	6.37	2.59	2.70	13.60
Percentage Service Employment	0.75	0.05	0.67	0.88
Percentage with Bachelor's Degree	0.17	0.03	0.10	0.23
Property Crime Rate	3,052.02	693.22	1,652.30	4,414.00
Violent Crime Rate	394.75	171.14	118.00	788.30

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[34] Precise definitions of our data, as well as sources, are provided in Appendix table 1.

3 Freedom and Entrepreneurship: A First Look

Figure 1 provides some initial evidence in favor of a positive relationship between overall freedom, as measured by the *Freedom in the 50 States* index, and entrepreneurship. The vertical axis shows our entrepreneurship variable—a state's KIEA score measured per 100,000 residents—while the horizontal axis shows the state's overall freedom score. The data in figure 1 includes observations for both 2007 and 2009. While the raw scatter plot does not clearly exhibit a positive relationship, a linear trend line reveals a positive relationship between overall freedom and the KIEA measure of entrepreneurship. Figures 2 and 3 show a similar relationship for personal freedom and economic freedom, respectively. A first look at the data suggests that a positive relationship exists between personal freedom and entrepreneurship. However, a more in-depth examination is warranted, and is covered in Section 4.

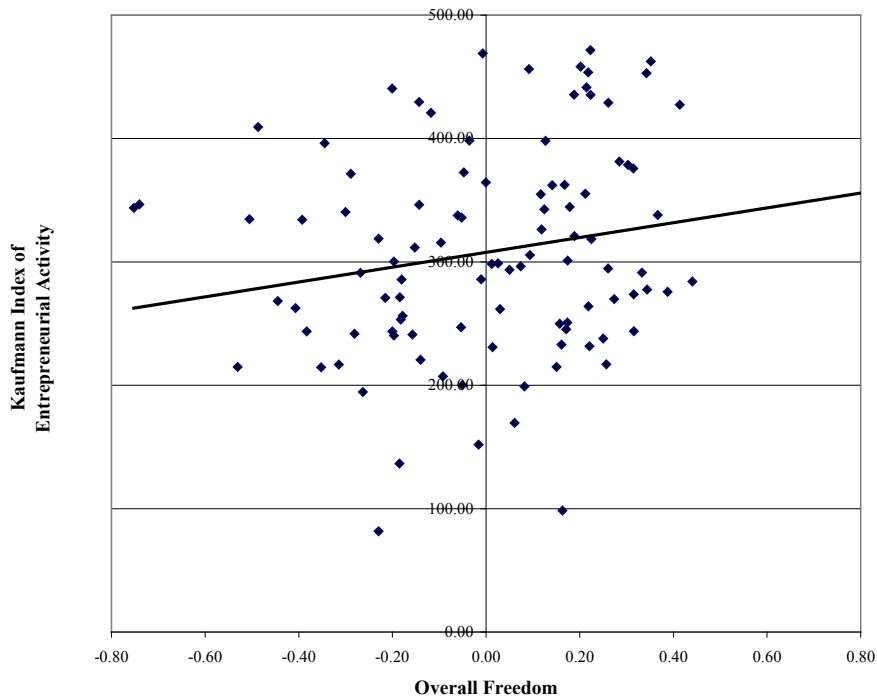Figure 1: A First Look at Overall Freedom and Entrepreneurship

Figure 2: A First Look at Personal Freedom and Entrepreneurship
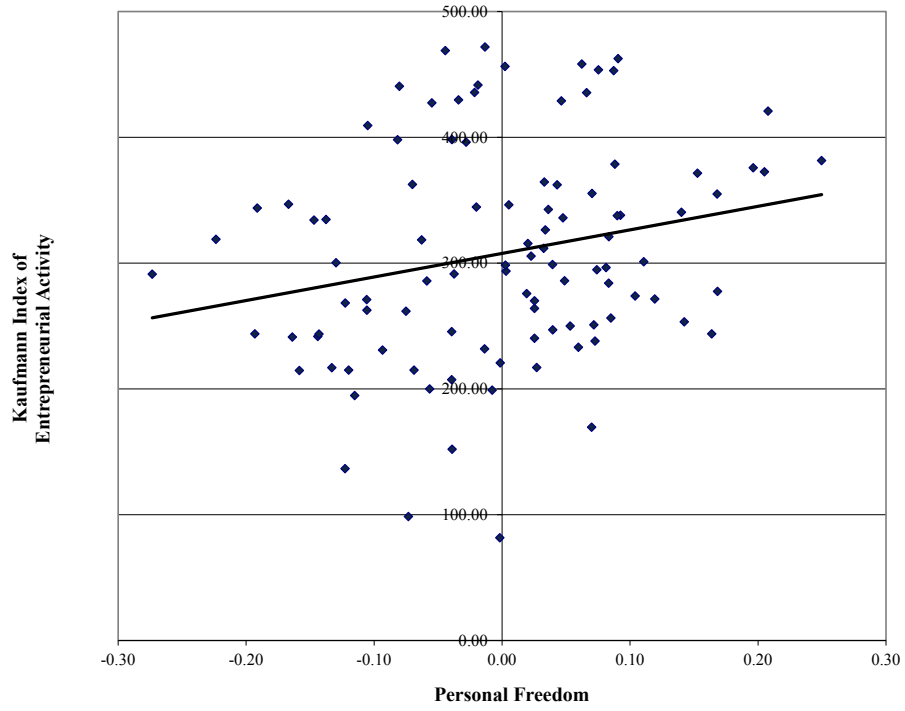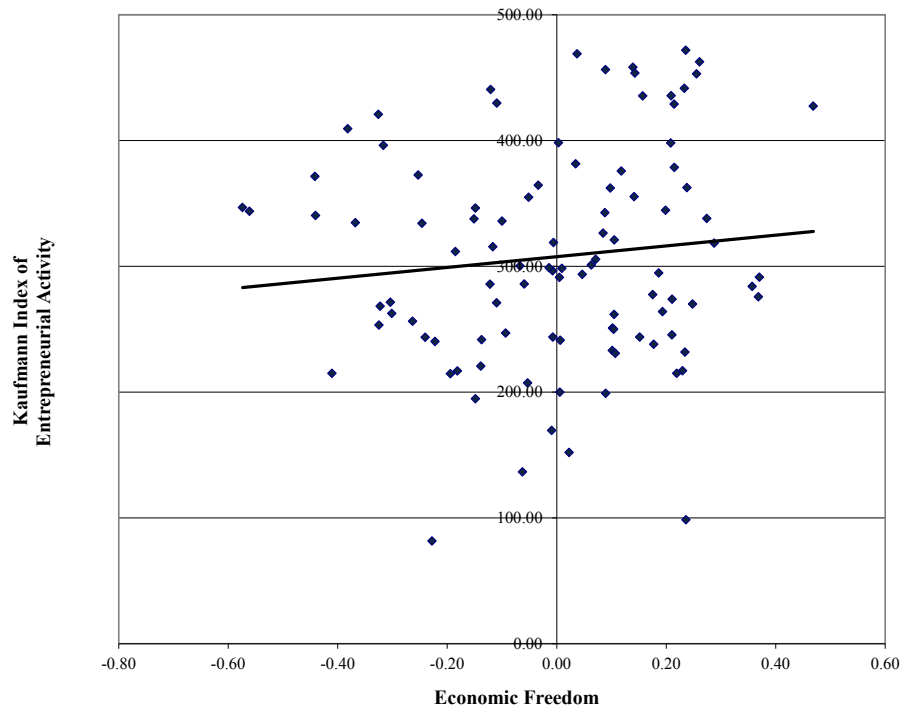

Figure 3: A First Look at Economic Freedom and Entrepreneurship

4   Empirical Results

We begin our empirical analysis of the effects of overall freedom on entrepreneurial activity by estimating the following equation:

$$KIEA_{it} = \alpha + \sum_{j=1}^{9} \beta_j X_{it}^j + \gamma Freedom_{it} + h_i + \varepsilon_{it} \qquad (1)$$

where $KIEA_{it}$ is an index of entrepreneurial activity, X_{it} is a vector of regressors, $Freedom_{it}$ is the overall freedom as measured by the *Freedom in the 50 States* index, h_i is the fixed-effect estimator, and ε_{it} is the disturbance; the subscripts $i = 1, \dots, 50$ and $t = 2007$ and 2009 represent the states and years, respectively. The regressors X_{it} include the other explanatory variables previously discussed in Section 2. The results of this pooled cross-section are presented in table 2.

The first column of table 2 includes only a constant term and overall freedom in order to get a sense of the baseline relationship between overall freedom and KIEA. As expected based on the scatter plots presented in Section 3, the relationship is positive and it is statistically significant. The second column in table 2 introduces the control regressors related to the characteristics of potential entrepreneurs: gender, age, race, and education. In this specification, the sign on overall freedom is still positive, but is not statistically significant at the 10 percent level. Among the personal characteristics of male, median age, percentage white, and bachelor's degree, all had the expected signs, but only age is statistically significant at conventional levels.

Finally, in the third column of table 2 we present our complete specification as discussed in equation 1. Here, we introduce the control regressors representing external state-level influences on entrepreneurship, including population density, unemployment rate, the size of the service sector, and violent and property crime rates. The first important thing to note is that overall freedom is both positive and statistically significant at the 10 percent level. The

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coefficient of 275.56 on overall freedom suggests that if a state increases its overall freedom score by one standard deviation (0.26) it should experience an increase of approximately 72 (275.56 × 0.26) new businesses started for every 100,000 non-business owners. That is nearly 85 percent of one standard deviation in the KIEA index.[35]

Table 2: Determinants of Entrepreneurial Activity (Overall Freedom)

Variables	Model 1		Model 2		Model 3	
Dependent Variable: Kauffman Index of Entrepreneurial Activity						
Constant	307.75	***	−596.34		−2,153.63	
	(56.55)		(0.36)		(1.01)	
Overall Freedom	282.72	*	241.73		275.56	*
	(1.77)		(1.46)		(1.82)	
Percentage Male			1,180.26		2,887.94	
			(0.61)		(1.54)	
Median Age			18.83	**	1.10	
			(2.32)		(0.05)	
Percentage White			−756.43		−1,294.13	
			(0.62)		(1.04)	
Percentage with Bachelor's Degree			1,145.74		665.59	
			(0.51)		(0.31)	
Population Density					9.09	**
					(2.11)	
Unemployment Rate					10.72	
					(1.11)	
Percentage Service Employment					−411.05	
					(0.49)	
Violent Crime Rate					0.93	***
					(2.70)	
Property Crime Rate					0.08	
					(1.39)	
R^2 Adjusted	6.01%		19.24%		43.19%	

Note: * indicates significance at the 10% level, ** at the 5% level, and *** at the 1% level. Absolute t-statistics in parentheses.

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[35] For example, if the state with the lowest entrepreneurship rate in 2009, Montana, increased its economic freedom score by one standard deviation, it would increase the number of new businesses started per month by approximately 70.

All the other explanatory variables had the expected signs, except for the service sector variable, which was expected to be positive based on the previous literature.[36] The signs for both crime variables are positive, which is also consistent with the literature, and the violent crime variable is statistically significant at the 1 percent level.[37] At first glance, this relationship may seem puzzling. However, in the face of high violent crime rates that deter potential customers, we should expect to see less entry from risk-averse large corporations and more entry from mom-and-pop enterprises. With the exception of population density, no other explanatory variables are statistically significant. Overall, the model explains 43 percent of the variation in KIEA scores across the states.

In tables 3 and 4, we run the same specifications as in the third column of table 2, with one exception. Recall that overall freedom consists of two separate measures: personal freedom and economic freedom. While the full specification in table 2 suggests a positive and significant relationship between overall freedom and entrepreneurship, that relationship could be largely driven by economic freedom. This would not be surprising given the large body of research finding such a relationship between economic freedom and entrepreneurship. Therefore, we replace overall freedom with personal freedom in table 3, and with economic freedom in Table 4. The regressions in these two tables show that the relationship between overall freedom and entrepreneurship observed in table 2 is likely driven by economic freedom. While the coefficient on personal freedom is positive, it is not statistically significant, and the economic magnitude is relatively small. However, the coefficient on economic freedom from the third column of table 4 is positive and statistically significant at the 5 percent level. Following from this coefficient of 482.99, a state that increases its economic freedom score by one standard deviation (0.22) could

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[36] See, for example, Kreft and Sobel, "Public Policy, Entrepreneurship, and Economic Freedom."
[37] Rosenthal and Ross, "Violent Crime, Entrepreneurship, and Cities."

expect an increase of 106 per month in the number of new businesses started per 100,000

persons (482.99 × 0.22). That is more than a one standard deviation increase in KIEA scores

across our sample.

Table 3: Determinants of Entrepreneurial Activity (Personal Freedom)

Dependent Variable: Kauffman Index of Entrepreneurial Activity						
Variables	Model 1		Model 2		Model 3	
Constant	307.75	***	−743.23		−2,634.10	
	(55.46)		(0.45)		(1.20)	
Personal Freedom	297.48		338.34		95.83	
	(1.07)		(1.21)		(0.34)	
Percentage Male			1,412.70		3,534.92	*
			(0.74)		(1.78)	
Median Age			22.00	***	9.68	
			(2.77)		(0.42)	
Percentage White			−685.33		−1,137.59	
			(0.56)		(0.88)	
Percentage with Bachelor's Degree			240.95		−89.48	
			(0.45)		(0.04)	
Population Density					7.81	*
					(1.76)	
Unemployment Rate					9.20	
					(0.91)	
Percentage Service Employment					−332.98	
					(0.38)	
Violent Crime Rate					0.94	
					(2.55)	**
Property Crime Rate					0.07	
					(1.16)	
R^2 Adjusted	2.28%		18.07%		38.68%	

Note: * indicates significance at the 10% level, ** at the 5% level, and *** at the
1% level. Absolute t-statistics in parentheses.

While not exhaustive, these results suggest that more personal freedom is not related to

entrepreneurship as measured by the KIEA. This should not be taken to suggest that the

individual rights embodied in this measure of personal freedom are not important. Rather, it is

just a confirmation that personal freedom is not directly related to entrepreneurship.

Table 4: Determinants of Entrepreneurial Activity (Economic Freedom)

Variables	Model 1		Model 2		Model 3	
Dependent Variable: Kauffman Index of Entrepreneurial Activity						
Constant	307.75	***	−986.89		−2,029.28	
	(55.93)		(0.61)		(0.98)	
Economic Freedom	286.56		199.01		482.99	**
	(1.41)		(0.93)		(2.32)	
Percentage Male			1,706.72		3,297.56	*
			(0.90)		(1.85)	
Median Age			19.01	**	−12.52	
			(2.25)		(0.55)	
Percentage White			−634.84		−1,417.70	
			(0.51)		(1.16)	
Percentage with Bachelor's Degree			1,163.76		1,311.31	
			(0.49)		(0.61)	
Population Density			−986.89		10.62	**
			(0.61)		(2.46)	
Unemployment Rate					14.46	
					(1.51)	
Percentage Service Employment					−688.64	
					(0.83)	
Violent Crime Rate					1.06	***
					(3.15)	
Property Crime Rate					0.10	
					(1.67)	
R^2 Adjusted	3.90%		17.00%		45.80%	

Note: * indicates significance at the 10% level, ** at the 5% level, and *** at the
1% level. Absolute t-statistics in parentheses.

The finding that personal freedom is not directly related to entrepreneurship is somewhat

surprising given that at least some research has shown that educational choice—a type of

personal freedom—is positively related to youth entrepreneurship.[38] However, at the same time these results are in agreement with the previous literature on the positive relationship between economic freedom and entrepreneurial activity. This is important to note, as our findings are the first to employ the *Freedom in the 50 States* measure of economic freedom.

Finally, in table 5 we again ran the full specifications from the third column of table 2. However, this time we split economic freedom into its two component parts: fiscal policy and regulatory policy.

Table 5: Determinants of Entrepreneurial Activity (Fiscal and Regulatory)

Dependent Variable: Kauffman Index of Entrepreneurial Activity

Variables	Fiscal		Regulatory	
Constant	−2,397.38		−2,361.02	
	(1.16)		(1.08)	
Measure of Freedom	583.12	**	379.29	
	(2.19)		(0.98)	
Percentage Male	3,994.51	**	3,230.53	
	(2.23)		(1.67)	
Median Age	−11.55		4.61	
	(0.50)		(0.20)	
Percentage White	−1,063.06		−1,407.19	
	(0.87)		(1.08)	
Percentage with Bachelor's Degree	1,714.90		−147.51	
	(0.77)		(0.07)	
Population Density	8.80	**	9.49	**
	(2.09)		(2.04)	
Unemployment Rate	13.33		11.16	
	(1.39)		(1.12)	
Percentage Service Employment	−741.03		−391.01	
	(0.88)		(0.45)	
Violent Crime Rate	0.90	**	1.09	***
	(2.67)		(2.94)	
Property Crime Rate	0.10		0.08	
	(1.66)		(1.25)	
R^2 Adjusted	45.08%		39.95%	

Note: * indicates significance at the 10% level, ** at the 5% level, and *** at the 1% level. Absolute t-statistics in parentheses.

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[38] Russell Sobel and Kerry King, "Does School Choice Increase the Rate of Youth Entrepreneurship?" *Economics of Education Review* 27, no. 4 (2008): 429–38.

One advantage of the *Freedom in the 50 States* measure of economic freedom is that because it focuses solely on the United States, its formulators are able to incorporate measures of regulation into their definition of economic freedom. Regulatory policy comprises 50 percent of their economic freedom measure. This should allow researchers to better study the impact of regulatory policy on entrepreneurship, building off work done at the international level.[39]

The regressions in table 5 point to fiscal policy being most important to entrepreneurship, with the coefficient on fiscal policy both positive and statistically significant at the 5 percent level. While regulatory policy (more regulatory freedom) is positively related to KIEA scores, it is not statistically significant. Given the large number of regulatory policies included in the regulatory policy index, it is possible that regulations in some areas are more relevant to entrepreneurship than others, which would be a great exercise for future scholars.

5   Conclusion

Entrepreneurship is important for at least two reasons. At the individual level, the opportunity to pursue one's dreams has value, regardless of how others in the marketplace might value what is produced. In the aggregate, entrepreneurship is valuable because it leads to economic growth and progress.[40] Over the past decade, a large body of empirical research has confirmed this relationship.[41] Previous findings have given researchers a better understanding of the determinants of entrepreneurship. Many have identified economic freedom as an important factor

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[39] For example, see Leora Klapper, Luc Laeven, and Raghuram Rajan, "Entry Regulation as a Barrier to Entrepreneurship," *Journal of Financial Economics* 82, no. 3 (2006): 591–629.

[40] See Holcombe, *Entrepreneurship and Economic Progress*, and David Audretsch, Max Keilbach, and Erik Lehmann, *Entrepreneurship and Economic Growth* (New York: Oxford University Press, 2006).

[41] See Donald Bruce, John Deskins, Brian Hill, and Jonathan Rork, "Small Business Activity and State Economic Growth: Does Size Matter?" *Regional Studies* 43, no. 2 (2009): 229–45; and Daniel Berkowitz and David DeJong, "Entrepreneurship and Post-Socialist Growth," *Oxford Bulletin of Economics and Statistics* 67, no. 1 (2005): 25–46.

in creating the conditions under which positive-sum entrepreneurship can occur.[42] In this paper we extended the findings of previous literature to look at freedom more broadly, using a new index of freedom at the US state level.[43] While we find that the overall measure of freedom is positively related to entrepreneurship as measured by the KIEA, disaggregation of overall freedom into both personal and economic freedom shows that economic freedom is driving the relationship. Controlling for other relevant factors, we found that an increase of one standard deviation in economic freedom is associated with an increase of over one standard deviation in entrepreneurship. To put it simply, if the average state increased its economic freedom score by 0.22 points this would translate to 106 additional new businesses started per month. For a state such as Ohio, with an economic freedom score of −0.11 in 2009, an increase in its economic freedom score to 0.11 would likely increase the number of new businesses started per month from 270 to over 370! This finding confirms and supports the previous literature showing a positive relationship between economic freedom and entrepreneurship.

However, perhaps even more important is that fact that our findings are the first to show that the *Freedom in the 50 States* measure of economic freedom leads to results consistent with those of previous economic freedom literature, which used the *EFNA* index. Given the differences in methodology and coverage, this finding is important because it creates the opportunity for more research in the area of regulatory policy. In addition, interested researchers will benefit from having access to a different measure of economic freedom for robustness checks and to ensure proper coverage.

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[42] Hall and Sobel, "Institutions, Entrepreneurship, and Regional Differences in Economic Growth."
[43] Ruger and Sorens, *Freedom in the 50 States*.

Appendix Table 1: Data Descriptions

Variable	Definition	Source
Kauffman Index	Number of entrepreneurs per 100,000 people	*Kauffman Index of Entrepreneurial Activity*
Overall Freedom	Overall Freedom Index Score	*Freedom in the 50 States: Index of Personal and Economic Freedom*
Fiscal Freedom	Fiscal Freedom Index Score	*Freedom in the 50 States: Index of Personal and Economic Freedom*
Regulatory Freedom	Regulatory Freedom Index Score	*Freedom in the 50 States: Index of Personal and Economic Freedom*
Personal Freedom	Personal Freedom Index Score	*Freedom in the 50 States: Index of Personal and Economic Freedom*
Economic Freedom	Economic Freedom Index Score	*Freedom in the 50 States: Index of Personal and Economic Freedom*
Percentage Male	Percentage of the labor force that is male	Bureau of Labor Statistics, *www.data.bls.gov*
Median Age	Median age of the total population	US Census Bureau, *www.census.gov*
Percentage White	Percentage of the labor force that is white	Bureau of Labor Statistics, *www.bls.gov/gps/*
Population Density	Persons per square mile of land area	US Census Bureau, *www.census.gov*
Unemployment Rate	Percentage of the labor force that is unemployed	Bureau of Labor Statistics, *www.data.bls.gov*
Percentage Service Employment	Percentage of the labor force that is employed in the service sector	Bureau of Labor Statistics, *www.bls.gov/gps/*
Percentage with Bachelor's Degree	Percentage of the population over 25 that has at least a bachelor's degree	US Census Bureau, *www.census.gov/compendia/statab/*
Property Crime Rate	Number of property crimes per 100,000 people	Federal Bureau of Investigation, *Uniform Crime Reports*, *www.fbi.gov/about-us/cjis/ucr/ucr*
Violent Crime Rate	Number of violent crimes per 100,000 people	Federal Bureau of Investigation, *Uniform Crime Reports*, *www.fbi.gov/about-us/cjis/ucr/ucr*

Note: All data at the state level is for the years 2007 and 2009, except for percentage with bachelor's degree, which is for the years 2007 and 2008.