Regional Institutional Quality and Job Creation among Early Startups in the United States

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Abstract

This study investigates the relationship between institutional quality, as proxied by economic freedom, and job creation by early startups in the United States. Entrepreneurship is an important source of employment and hiring, but few studies have addressed how the regulatory environment affects new job creation. To address these relationships, a cluster-robust regression model and a double-selection post-LASSO method are used to analyze the correlation between government spending, taxes, and labor market regulations on Startup Early Job Creation. Data on economic freedom is collected through the Economic Freedom of North America, and Early Startup Job Creation was provided through the Kauffman Foundation. The results imply that policymakers should focus on encouraging job creation within entrepreneurial activities by reducing barriers to labor markets, as opposed to changes within government spending or taxes.

Keywords: economic freedom, job creation, entrepreneurship, model selection JEL Classification: H70, H73, K20

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1 Introduction

Encouraging entrepreneurship through institutional quality changes has long been suggested by policy-makers as a way to create jobs. Simultaneously, some researchers have addressed that the job creation of new entrepreneurial ventures may be driven by attracting new innovation-focused workers in exchange for lower rates of initial pay and that these firms are heavily affected by policy changes. Using new observations of early startup job creation, provided through the Kauffman Foundation, we empirically test how job creation for early first-year startups is affected by the regulatory environments. These results aim to provide information to policymakers on strategies for encouraging job creation among new early-stage startups.

We utilize both a cluster-robust regression model and a double-selection post-LASSO method to control for any possible spurious relationships to address the relationship between economic freedom and early startup job creation. Our economic freedom measures consist of both the overall composite measure and the three separate subcategories: government spending, taxation, and labor market regulations. We find consistent positive effects of increases in labor market freedom on early startup job creation. Simultaneously, we find negative or inconclusive impacts of government spending and taxation.

Understanding these relationships is crucial for policymakers because it presents a hierarchy of policy interventions to consider when encouraging job creation and hiring among new entrepreneurial firms. Our results imply that changes in hiring and firing regulations, minimum wage, and union density to reduce barriers of operation for entrepreneurs would be the most effective policy interventions for encouraging job creation. These policies should be considered before making similar changes in expenditures, subsidies, and taxes until more information is known on what these funds are spent on. If taxes and government spending partially funds business-development programs, then reducing taxes or spending may have competing effects on entrepreneurs.

The paper proceeds as follows: Section 2 reviews the relevant literature. Section 3 discusses the data sources. Section 4 extends the empirical methodology to incorporate estimation assumptions and a double-selection post-LASSO correction. Section 5 presents the results. Section 6 discusses and concludes.

2 Literature Review

Entrepreneurship has a long history of being linked to economic development (Kibly, 1971; Kirzner, 1997; North, 1990; Schumpeter, 1934) and growth (Carree and Thurik, 2003; Romer, 1986; Wennekers and Thurik, 1999). Historically, entrepreneurship has been praised for its long-lasting ability to create

jobs within the community, primarily in young, high-growth firms (Block et al., 2018). Some studies have found that these startups' new jobs are often lower wages, but these jobs attract employees that prioritize innovation and challenge. Over 60 percent of new jobs created bring people directly out of unemployment (Malchow-Moller et al., 2011; Block et al., 2018; Astebro and Tag, 2017). Since many new startups are capital constrained in their first few years and the initial jobs created are low-wage but high-innovation, these firms are especially sensitive to changes in their legal, socioeconomic, and financial environment (Decker et al., 2014; Ghosh, 2017).

The institutional quality of the legal and social environment a firm exists within can have long-lasting impacts on entrepreneurs' success, and not all regulatory environments are as productive in promoting entrepreneurial growth (Parker, 2009; Acs et al., 2017; Gohmann et al., 2016). A common and robust measure in the literature for the institutional environment are the components of economic freedom, which include government spending, taxes, and labor market freedoms (Nikolaev et al., 2018). The dataset most commonly associated with Economic Freedom is the Economic Freedom of North America (EFNA), which is employed over 235 studies (155 of which it was used as an empirical measure), Stansel and Tuszynski (2017) find that economic freedom is commonly associated with economic growth. It is appropriate to use for understanding subnational governments. There is a dynamic and pervasive underlying relationship between economic freedom and economic growth (Ali and Crain, 2002; Cole, 2003; de Haan and Sturm, 2000; Gohmann et al., 2008; Hall et al., 2018; Heckelman, 2000; Powell, 2003), migration (Ashby, 2007; Hall and Lawson, 2014; Mulholland and Hernández-Julian, 2013; Shumway, 2018), inequality (Apergis et al., 2014; Ashby and Sobel, 2008; Bennett and Nikolaev, 2017; Bennett and Vedder, 2013; Bjørnskov, 2017; Pérez-Moreno and Angulo-Guerrero, 2016; Webster, 2013), cultural diversity (Sobel et al., 2010), political economy (Hall et al., 2015), and demographic features (Deskins and Ross, 2016; Hall et al., 2018; Hoover et al., 2018), demographic features like race (Deskins and Ross, 2016; Hall et al., 2018; Hoover et al., 2018). This broader literature motivates controlling for a relevant socio-economic-demography profile of US states to tease the effect of economic freedom on entrepreneurial activities. The literature review provides an idea of the potential list of observable confounders that we utilize when creating our datasets.

High rates of entrepreneurial activity have been found in states or countries with higher rates of economic freedom, even after accounting for potential spatial autocorrelation (Kuckertz et al., 2015; Campbell et al., 2013; Hall et al., 2016). Decreases in local economic freedom, as shown through increases in property tax differences, minimum wage, insurance, and social security payments, cause lower startup entry and higher exit rates of entrepreneurs from the market (Bennett, 2020). As discussed above, many of the jobs created by these entrepreneurial startups are initially low-paying. That means these firms are especially sensitive to the institutional quality and regulatory environment in which they exist.

These relationships can be elicited through understanding many of the subcomponents of freedom. For example, higher government employment as a percentage of total state employment restricts individuals and organizations to contract the labor services freely(Stansel et al., 2017). In particular, minimum wage legislation limits the ability of low-skilled workers and new entrants to the workforce to negotiate for employment they might otherwise accept and, thus, restricts the economic freedom of these workers and the employers who might have hired them (Stansel et al., 2017). Within this study, we attempt to fill an important gap in the literature, and analyze how institutional quality, as measured by these subcomponents of economic freedom, affect job creation within early startup firms.

3 Data

3.1 Startup Early Job Creation

The Kauffman Indicators of Entrepreneurship¹ provides various indicators of entrepreneurial activities within the United States. One index among them is the startup early job creation index, an average number of jobs created by startups in their first year and is measured as the total employment generated by new employer firms in their first year and divide it by the total population. This measure of job creation is normalized by dividing by the total population to make it a per capita metric. Figure 1 depicts the early startup job creation index across all US states in 2019. This data was only released recently, and 2019 is the only year currently in publication.

3.2 Regional Institutional Quality

Economic Freedom of North America (EFNA) proxies state-level institutional quality and is published annually by the Fraser Institute (Stansel et al., 2017). We limit our study to the 10-year window between 2005 and 2015 due to data limitations. This data contains components from subnational incidies within three categories: government spending, taxation, and labor market freedom. Each state within the sample comprises a relative ranking from 0 to 10, with 10 representing the highest degree of economic freedom. We utilize the composite measures for overall economic freedom within our empirical estimation and refer to our subcategory variables as government freedom, tax freedom, and labor market freedom. Table (1) outlines the variables included in the composite measures of economic freedom. Figure 1 further

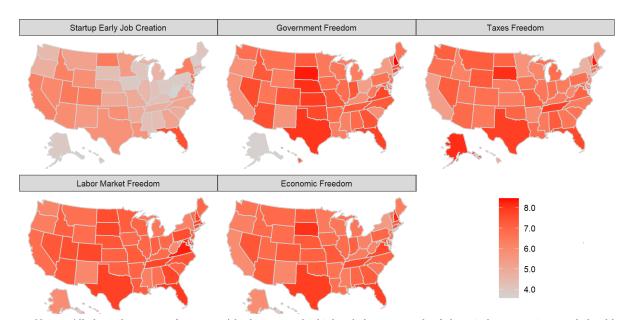
¹The Kauffman Index of Entrepreneurship measures US entrepreneurship across the national, state, and metro levels based on three in-depth studies known as the Kauffman Index of Startup Activity, the Kauffman Index of Main Street Entrepreneurship, and the Kauffman Index of Growth Entrepreneurship (Tareque et al., 2017). This index has been referenced in "multiple testimonies to the US Senate and House of Representative, by US Embassies and Consulates across various countries—including nations like Spain, Ukraine, and United Kingdom—by multiple federal agencies, by state governments and governors from fifteen states— from Arizona to New York—and by the White House's Office of the President of the United States" (Morelix et al., 2015).

presents a pictorial representation of differences in these economic freedom component measures across states.

Table 1: Components of Economic Freedom Measures

Composite Measure	Indices within Composite				
Government Freedom	General Consumption Expenditures by Government as a Percentage of Income				
	Transfers and Subsidies as a Percentage of Income				
	Insurance and Retirement Payments as a Percentage of Income				
Taxes Freedom	Income and Payroll Tax Revenues as a Percentage of Income				
	Top Marginal Income Tax Rate				
	Property Tax and Other Taxes as a Percentage of Income				
	Sales Tax Revenue as a Percentage of Income				
Labor Market Freedom	Index of Minimum Wage Legislation (hiring regulations, minimum wage, firing				
	regulations, centralized collective bargaining, etc.)				
	Government Employment as a Percentage of Total State Employment				
	Union Density				
Economic Freedom	Government Freedom				
	Taxes Freedom				
	Labor Market Freedom				

Figure 1: Startup Early Job Creation and Institutional Quality Index, Averaged (2005-2015)



Notes: All the index ranges from 0-10 (the lowest to the highest), however each of these index are unique and should not be compared with each other.

3.3 Control Variables

Several control measures are commonly used to determine the relationship between economic freedom and entrepreneurial performance, but the bundle of variables that are considered to be the best predictors are often debated within the literature, and no general consensus yet exists. We define 36 different socioeconomic, demographic, and housing-related covariates that have been related to job creation within

entrepreneurial ventures in previous studies and utilize the double-selection post-LASSO procedure outlined below to determine the relevant control variable set for each type of estimation strategy. The 36 variables are outlined in the Appendix within Table A1.

4 Estimation Strategy

Our initial analysis of the effect of economic freedom on job creation begins with a cluster-robust regression model with state and year fixed effect.

$$Y_{it} = \alpha D_{it} + \delta_i + \gamma_t + \epsilon_{it} \tag{1}$$

in which, Y_{it} is the startup early job creation index in each state and each time. i represents an index of states, t indexes times, δ_i are controls for any time-invariant state-specific unobservable characteristics, γ_t are time-specific effects that control flexibly for any aggregated trends, and D_{it} is a measure of regional institutional quality indices. The estimates of α represents the impact of institutional quality on the startup early job creation. The estimate of α can be identified as causal if, and only if, institutional quality is as good as randomly assigned, which is a strong assumption and therefore we do not consider our results necessarily causal in nature.

One way to provide additional evidence of causality is to control relevant confounders and covariates properly. Controlling proper confounders and covariates allows for blocking of the possible spurious relationship. A general form regression is expressed as

$$Y_{it} = \alpha D_{it} + x'_{it}\beta + \delta_i + \gamma_t + \epsilon_{it}$$
 (2)

Here, rather than ad-hoc controlling different sets of covariates to show how startup early job creation responds to various institutional variables, which is likely to subjected to potential p-hacking, cherry-picking, and stargazing the results, we first conducted a literature review and gather 36 different socio, economic, demographic, and housing related variables from various sources that have been used in the previous entrepreneurship and economic freedom literature. We define this set of variables as Θ_{it} . Then we implement the Belloni et al. (2014) approach, the double-LASSO variable selection method, under the assumption of unconfoundedness in which the institutional quality is as good as randomly assigned (exogeneous) only after adequately controlling observable features of a state that affects either or institutional quality and startup early job creation, which is $Y_{it} \perp D_{it}|x_{it}$, where x_{it} is the matrix of adequate vectors of confouders and covariates and $x_{it} \subset \Theta_{it}$. Belloni et al. (2014) explains the double-selection post-LASSO procedure allows to find adequate controls x_{it} from a large list of potential

variables Θ_{it} as following two LASSO² steps:

- In the first step, a set of control variables that are useful for predicting the institutional quality index, D, are selected using the LASSO procedure. This step helps to find control variables strongly related to the treatment (institutional quality index). If the treatment is genuinely exogenous, then this procedure should select no variables.
- In the second step, variables that predict startup early job creation, Y, are selected from the control variables using the LASSO procedure. This procedure ensures that essential variables remain in the equation of interest, ideally helping to keep the residual variance small and intuitively providing an additional chance to find essential confounders.
- Finally, we conduct an ordinary least square regression on the outcome variable and variables of interest using the union of the regressor sets from the two LASSO models. We then correct the inference with heteroskedastic robust OLS standard errors to yield a causal interpretation between institutional quality measures and startup early job creation.

The selected variables, included within the estimation, differ depending on their nature to explain either or both the independent or dependent variables. When investigating the role of government freedom or overall economic freedom on job creation, the models determine that the unemployment rate, per capita household income, and the percentage share of construction industries within a state are relevant controls. For the estimation of tax freedom and labor market freedom, the double-selection post-LASSO only indicated that per capita income and construction industries' shares adequately block the potential confounding effects. Furthermore, it is crucial to recognize the caveats of the models presented in the result section. The estimates can only be interpreted as causal if, and only if, there are no unobservable confounders, no reverse causality from startup job creation to other institutional quality variables, and any potential confounding effects are adequately blocked by properly selecting for the confounders. However, the validity of such an assumption is a wide-open subject of debate. It's plausible that startup early job creation may not directly change the institutional quality, so there may be no reverse causality. Furthermore, we try to control for potential observable confounders using

²The Least Absolute Shrinkage and Selection Operator (LASSO) is an appealing method to estimate the sparse parameter from a high-dimensional linear model is introduced by Frank and Friedman (1993) and Tibshirani (1996). LASSO simultaneously performs model selection and coefficient estimation by minimizing the sum of squared residuals plus a penalty term. The penalty term penalizes the size of the model through the sum of absolute values of coefficients. Consider a following linear model $\tilde{y}_i = \Theta_i \beta_1 + \varepsilon_i$, where Θ is high-dimensional covariates, the LASSO estimator is defined as the solution to $\min_{\beta_1 \in \mathbb{R}^p} E_n \left[(\tilde{y}_i - \Theta_i \beta_1)^2 \right] + \frac{\lambda}{n} \|\beta_1\|_1$, the penalty level λ is a tuning parameter to regularize/controls the degree of penalization and to guard against overfitting. The cross-validation technique chooses the best λ in prediction models and $\|\beta\|_1 = \sum_{j=1}^p |\beta_j|$. The kinked nature of penalty function induces $\hat{\beta}$ to have many zeros; thus LASSO solution feasible for model selection.

double-selection post-LASSO. Hence, we claim that our models are more likely to support the causality but are not genuinely causal since we cannot factor out the possibility of unobservable confounders.

5 Results

Table (2) exhibits the estimates of the effects of various indices of institutional quality on job creation by startups. Estimates in this table are presented under two different sets of two equations presented in the empirical strategy equation (1) and (2) in panel A and B, respectively. All the estimates incorporate state and year fixed effect to absorb state and year specific unobserved heterogeneities and report very conservative standard errors. The standard errors are robust to heteroskedasticity and are clustered at the state level. Comparing several indices of freedom, we find that increases in labor market freedom cause large and significant increases in startup early job creation. However, a one-unit increase in government and tax freedom harms startup early job creation when we account for environmental factors such as the unemployment rate, per capita income, and the state's industry makeup. These positive and negative relationships do not hold for the overall economic freedom index, which does not depict a significant relationship with startup early job creation due to the counter coefficient estimates for the individual components.

Table 2: Impacts of Various Economic Freedom Indices on the Startup Early Job Creation

Variables	A: Startup early job creation				B: S	B: Startup early job creation			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Government freedom	0.402**				-0.221**				
	(0.189)				(0.106)				
Taxes freedom		-0.383				-0.537**			
		(0.235)				(0.214)			
Labor market freedom			1.887***				1.099***		
			(0.439)				(0.265)		
Economic freedom				1.048**				-0.171	
				(0.399)				(0.23)	
Unemployment rate (%)					0.03			0.044	
					(0.062)			(0.062)	
Per capita personal income (log)					10.863***	10.307***	7.163***	10.72**	
					(2.192)	(1.705)	(1.977)	(2.335)	
Share of Construction industry (%)					0.244***	0.201**	0.240***	0.235**	
					(0.081)	(0.084)	(0.074)	(0.082)	
State fixed effect	√	√	✓	✓	✓	✓	√	√	
Year fixed effect	\checkmark	\checkmark	\checkmark	✓	✓	✓	✓	\checkmark	
SE clustering at state	\checkmark	\checkmark	\checkmark	✓	✓	✓	✓	✓	
Heteroscedasticity robust SE	\checkmark	\checkmark	\checkmark	\checkmark	✓	✓	\checkmark	✓	
Feature selection with DSPL					✓	✓	✓	✓	
Observations	550	550	550	550	550	550	550	550	

Notes: The 1%, 5% and 10% level of significance are given as ***, ***, and * respectively. Enclosed in the parenthesis are robust to heteroskedasticity standard errors that are clustered at the state level. Regression in column (1), (2), (3), and (4) regress startup early job creation on the index of institutional quality and includes state and year fixed effects. Regression in column (5), (6), (7), and (8) regress startup early job creation on the index of institutional quality and includes state and year fixed effects. At the same time, the controls are selected using double-selection post-LASSO.

Discussing each of our freedom indices in turn, the government freedom index³ is a composite measure

³The rise of general consumption expenditure serves two broad government functions: protection of individuals against

of general consumption expenditures, insurance, retirement payments, and transfers and subsidies, which are all depicted as a percentage of income. Initially, in column (1), we observe a positive relationship between government freedom and job creation, but this is potentially falsely related to unaccounted control variables. Using the double-selection post-LASSO method to develop a set of suitable covariates, shown in column (5), we find that a one-unit increase in government freedom, which is represented by decreases in the provision of public goods, among other measures, is likely to decline average job creation for startups by 0.2 units. This indicates that policymakers need to consider the entrepreneurial environment before using government spending as a policy tool because it may disincentives some startups from increasing hiring.

An increase in tax freedom implies that there are subsequent reductions in transfers, subsidies, or tax burdens on individuals. Unlike government freedom, our tax freedom effect is consistent in the direction across all versions of the model. We observe that increases in tax freedom can have adverse effects on startup job creation. In the double-selection post-LASSO results featured in (6), we observe that a one-point increase in tax freedom is associated with a 0.5 point decline in job creation. This negative relationship is not significant in the simple OLS regression. Policymakers who are concerned about job creation may believe that adjustments in taxes will not affect startups from the initial results, but after controlling for economic factors such as income and industry shares, we observe that this is not the case. Though this result may initially seem counter-intuitive, it is important to note that some transfers and subsidies are geared towards business development, such as grants for service-disabled veteran-owned small businesses, USDA rural business development, or business recovery programs in the event of natural disasters- to highlight a few. Before cuts are made within this category to spur job creation, the funds should be carefully tracked to ensure that cuts will not result in affecting programs that small businesses depend on.

Government and tax freedom are synonymous terms in the discussion of job creation within the political sphere. Yet, our estimates and results suggest that for startups, these relationships may have the opposite effects, since spending and tax-transfer programs may go to funding small business incentive and hiring programs. This is inherently different from labor market freedoms, in which these policy changes are geared towards increasing or reducing restrictions on hiring practices and working environments. Unlike the previous two specifications, changes in labor market freedoms directly affect working conditions within the startup and the cost of employing and maintaining a workforce. This index measure incorporates the percentage of government employment, union density, minimum wage legislation,

invasions by domestic and foreign intruders (productive function) and the provision of the public goods (productive function) (Gwartney et al., 1996). Beyond these two functions, the government's provision of private goods can restrict consumer choices and suppress economic freedom. Government spending, independent of taxation, once exceeds the necessary minimum level of protective and productive function, can reduce economic freedom. An increase in government consumption lowers the score of government spending index.

hiring and firing regulations, and collecting bargaining information.

The ability to freely negotiate contracts for labor services without intermediaries is an essential component of economic freedom. These labor market freedoms are associated with a large and significant increase in job creation for early-stage startups. In our initial model, depicted in column (3), a one-point increase in labor market freedoms is correlated with a significant increase of 1.9 points in average startup job creation. Even after accounting for the potential confounding variables using double-selection post-LASSO estimation, we still observe that a one-point increase in labor market freedoms causes a 1.1 point increase in job creation. This result is crucial because it identifies a set of policies that are observed to increase job creation in new startups. Policymakers attempting to encourage hiring increases and startup employment should begin their policy review process with an investigation into barriers within the entrepreneurial working environment. Allowing firms and workers to contract services and negotiate salaries freely creates jobs and is not the direct result of government revenue or spending adjustments.

In our last model estimation, we observe no significant effects on economic freedom after accounting for potential confounding variables. This makes intuitive sense because the overall measure of economic freedom is an amalgamation of our other three distinct categories. Within our previous estimations, we observe that two of the three categories harm startup early job creation (government and tax freedom). In contrast, the third (labor market freedom) maintains a positive relationship. Together in a singular index, we cannot make conclusive recommendations on the overarching effect of economic freedom and instead purport that policymakers need to analyze the individual types of proposals separately to gauge potential effectiveness.

6 Conclusion

Startup firms are an essential source of job creation, especially for low-wage jobs that pull innovative risk-takes from unemployment. Since these institutions are new and do not have the resources of years of customer history and savings, they often can be heavily influenced by the institutional quality of the regulatory environment in which they exist. In this study, we observe the relationship between institutional quality, as proxied by economic freedom, to determine the optimal policy strategies for policymakers who want to facilitate entrepreneurial hiring, employment, and activity within their communities.

We addressed the relationship between economic freedom and entrepreneurship by using a double-selection post-LASSO methodology to control for potential confounding relationships developed from a list of variables commonly used controls within the literature. We find that policymakers prioritizing job creation among early startups should focus on reducing barriers to the labor market, such as strict hiring and firing regulations, minimum wage, and union density. Encouraging labor market freedom has

sizable and persistent effects in promoting early startup job creation, even when accounting for potential spurious correlations. Other composites, such a government and tax freedom, should not be a policy intervention strategy to encourage entrepreneurship without further investigation.

This study is subject to potential limitations that need to be addressed for transparency. First, our results are more likely to be in line with the genuine causal relationship. However, we do not claim a causal relationship since there may still be some unknown spurious correlations or reverse causality. Second, though we have information on the regulatory environment, we do not know which programs and policies government spending and tax transfers are geared to support. For example, taxes could fund small business development or offset tax cuts from larger firms. Until we know exactly how this money is spent within each state, we only have an idea of government and tax freedom without the nuanced differences in spending habits that may exist within states. Future research should consider addressing or revising results to include these possibilities.

References

- Acs, Z. J., Stam, E., Audretsch, D., and O'Connor, A. (2017). The lineages of the entrepreneurial ecosystem approach. *Small Business Economics*, 49(1):1–10.
- Ali, A. M. and Crain, W. M. (2002). Institutional distortions, economic freedom, and growth. *Cato Journal*, 21(3):415–426.
- Apergis, N., Dincer, O., and Payne, J. (2014). Economic Freedom and Income Inequality Revisited: Evidence from a Panel Error Correction Model. *Contemporary Economic Policy*, 32(1):67–75.
- Ashby, N. J. (2007). Economic Freedom and Migration between U.S. States. *Southern Economic Journal*, 73(3):677–697.
- Ashby, N. J. and Sobel, R. S. (2008). Income inequality and economic freedom in the U.S. states. *Public Choice*, 134(3-4):329–346.
- Astebro, T. and Tag, J. (2017). Journal of business venturing insights. *Journal of Business Venturing Insights*, 8:64–70.
- Belloni, A., Chernozhukov, V., and Hansen, C. (2014). High-Dimensional Methods and Inference on Structural and Treatment Effects. *Journal of Economic Perspectives*, 28(2):29–50.
- Bennett, D. and Vedder, R. (2013). A dynamic analysis of economic freedom and income inequality in the 50 u.s. states: Empirical evidence of a parabolic relationship. *Journal of Regional Analysis and Policy*, 43(1):42–55.

- Bennett, D. L. (2020). Local Institutional Heterogeneity Firm Dynamism: Decomposing the Metropolitan Economic Freedom Index. *Small Business Economics*, Forthcoming: Available ahead of print.
- Bennett, D. L. and Nikolaev, B. (2017). Economic freedom & happiness inequality: Friends or foes?

 Contemporary Economic Policy, 35(2):373–391.
- Bjørnskov, C. (2017). Growth, Inequality, and Economic Freedom: Evidence From the U.S. States. Contemporary Economic Policy, 35(3):518–531.
- Block, J., Fisch, C., and van Praag, M. (2018). Quantity and quality of jobs by entrepreneurial firms.

 Oxford Review of Economic Policy, 34(4):565–583.
- Campbell, N., Mitchell, D. T., and Rogers, T. M. (2013). Multiple measures of US entrepreneurial activity and classical liberal institutions. *Journal of Entrepreneurship and Public Policy*.
- Carree, M. A. and Thurik, A. R. (2003). The Impact of Entrepreneurship on Economic Growth. *International Handbook of Entrepreneurship Research*.
- Cole, J. H. (2003). The Contribution of Economic Freedom to World Economic Growth, 1980-99. Cato Journal, 23(2):189-198.
- de Haan, J. and Sturm, J.-E. (2000). On the relationship between economic freedom and economic growth. *European Journal of Political Economy*, 16(2):215–241.
- Decker, R., Jaltiwanger, J., Jarmin, R., and Miranda, J. (2014). The role of entrepreneurship in us job creation and economic dynamism. *Journal of Economic Perspectives*, 28(3):3–24.
- Deskins, J. and Ross, A. (2016). Economic Freedom and Racial Differences in Entrepreneurship. *Public Finance Review*, 46(2):177–204.
- Frank, L. E. and Friedman, J. H. (1993). A Statistical View of Some Chemometrics Regression Tools.

 Technometrics, 35(2):109–135.
- Ghosh, S. (2017). Regulation and entrepreneurial intention: Cross-country evidence. *Journal of Entrepreneurship and Public Policy*, 6(2):193–205.
- Gohmann, S., Hobbs, B., and McCrickard, M. (2016). Productive versus unproductive entrepreneurship: Industry formation and state economic growth. *Journal of Entrepreneurship and Public Policy*, 5(2):145–160.
- Gohmann, S. F., Hobbs, B. K., and McCrickard, M. (2008). Economic Freedom and Service Industry Growth in the United States. *Entrepreneurship theory and practice*, (502):855–875.

- Gwartney, J., Lawson, R., and Block, W. (1996). Economic Freedom of the World, 1975–1995. Technical report, Fraser Institute.
- Hall, J., Harger, K., and Stansel, D. (2015). Economic Freedom and Recidivism: Evidence from US States. International Advances in Economic Research, 21(2):155–165.
- Hall, J., Lacombe, D., and Pokharel, S. (2016). Freedom and entrepreneurship: A spatial econometric approach. *Journal of Entrepreneurship and Public Policy*, 5(3):404–411.
- Hall, J. C., Humphreys, B. R., and Ruseski, J. E. (2018). Economic Freedom, Race, and Health Disparities: Evidence from US States. *Public Finance Review*, 46(2):276–300.
- Hall, J. C. and Lawson, R. A. (2014). Economic freedom of the world: An accounting of the literature.

 Contemporary Economic Policy, 32(1):1–19.
- Heckelman, J. C. (2000). Economic Freedom and Economic Growth: A Short-Run Causal Investigation.

 Journal of Applied Economics, 3(1):71–91.
- Hoover, G. A., Compton, R. A., and Giedeman, D. C. (2018). More on the Impact of Economic Freedom on the Black–White Income Gap. *Public Finance Review*, 46(2):205–223.
- Kibly, P. (1971). Entrepreneurship and Economic Development. Free Press, New York.
- Kirzner, I. M. (1997). Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach. *Journal of Economic Literature*, 35(1):60–85.
- Kuckertz, A., Berger, E. S. C., and Mpeqa, A. (2015). The more the merrier? economic freedom and entrepreneurship. *Journal of Business Research*, 69:1288–1293.
- Malchow-Moller, N., Schjerning, B., and Sorensen, A. (2011). Entrepreneurship, job creation and wage growth. *Small Business Economics*, 36:15–32.
- Morelix, A., Fairlie, R. W., Russell-Fritch, J., and Reedy, E. J. (2015). 2015 The Kauffman Index Startup Activity—state trends. Technical report, Ewing Marion Kauffman Foundation.
- Mulholland, S. E. and Hernández-Julian, R. (2013). Does Economic Freedom Lead to Selective Migration by Education? *Regional Analysis and Policy*, 43(1):65–87.
- Nikolaev, B., Boudreaux, C., and Palich, L. (2018). *Journal of Small Business Management*, 56(S1):243–280.
- North, D. C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge University Press.

- Parker, S. C. (2009). The Economics of Entrepreneurship. Cambridge University Press.
- Pérez-Moreno, S. and Angulo-Guerrero, M. J. (2016). Does economic freedom increase income inequality? Evidence from the EU countries. *Journal of Economic Policy Reform*, 19:327–347.
- Powell, B. (2003). Economic Freedom and Growth: The Case of the Celtic Tiger. *Cato Journal*, 22(3):431–448.
- Romer, P. M. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy*, 94(5):1002–1037.
- Schumpeter, J. (1934). The Theory of Economic Development. Harvard University Press.
- Shumway, J. M. (2018). Economic Freedom, Migration and Income Change among U.S. Metropolitan Areas. *Current Urban Studies*, 06(01):1–20.
- Sobel, R. S., Dutta, N., and Roy, S. (2010). Does cultural diversity increase the rate of entrepreneurship?

 Review of Austrian Economics, 23(3):269–286.
- Stansel, D., Torra, J., and McMahon, F. (2017). Economic Freedom of North America 2017. Technical Report August, Fraser Institute.
- Stansel, D. and Tuszynski, M. P. (2017). Sub-national economic freedom: A review and analysis of the literature. *Journal of Regional Analysis Policy*, 48(1):61–71.
- Tareque, I., Fairlie, R., and Morelix, A. (2017). 2017 The Kauffman Index Startup Activity—State Trends. Technical report, Ewing Marion Kauffman Foundation.
- Tibshirani, R. (1996). Regression Selection and Shrinkage via the Lasso. *Journal of the Royal Statistical Society B*, 58(1):267–288.
- Webster, A. L. (2013). Testing the Relationship Between Economic Freedom and Income Inequality in the USA. *Journal of Applied Economics and Business*, 12(5):17–38.
- Wennekers, S. and Thurik, R. (1999). Linking Entrepreneurship and Economic Growth. *Small Business Economics*, 13:27–56.

A Appendix A

Table A1: List of Potential Control Variables for DSPL Variable Selection

$\mathbf{S}\mathbf{N}$	Variables	Sources	
1	Net migration	IRS	
2	Unemployment rate	UKCPR	
3	Percent Low Income Unisured Children	UKCPR	
4	Poverty Rate	UKCPR	
5	PCPI	UKCPR	
6	Percent BEDROOMS 5ormorebedrooms	ACS	
7	Percent BEDROOMS Nobedroom	ACS	
8	Percent CLASSOFWORKER Private wage and salary workers		
9	Percent CLASSOFWORKER Unpaid family workers	ACS	
10	Percent COMMUTINGTOWORK Public transportatio nexcluding taxicab	ACS	
11	Percent COMMUTINGTOWORK Walked	ACS	
12	Percent EDUCATIONALATTAINMENT 9th to 12th grade nodiploma	ACS	
13	Percent EDUCATIONALATTAINMENT Associates degree	ACS	
14	Percent EDUCATIONALATTAINMENT Bachelors degree	ACS	
15	Percent EDUCATIONALATTAINMENT Graduate or professional degree	ACS	
16	Percent EDUCATIONALATTAINMENT High school graduate include equivalency	ACS	
17	Percent EDUCATIONALATTAINMENT Less than 9th grade	ACS	
18	Percent EDUCATIONALATTAINMENT Some college no degree	ACS	
19	Percent HOUSINGOCCUPANCY Occupied housing units	ACS	
20	Percent HOUSINGTENURE Renter occupied	ACS	
21	Percent INDUSTRY Agriculture forestry fishing and hunting and mining	ACS	
22	Percent INDUSTRY Arts entertainment and recreation and accommodation and foodservices	ACS	
23	Percent INDUSTRY Construction	ACS	
24	Percent INDUSTRY Educational services and healthcare and social assistance	ACS	
25	Percent INDUSTRY Finance and insurance and real estate and rental and leasing	ACS	
26	Percent INDUSTRY Information	ACS	
27	Percent INDUSTRY Manufacturing	ACS	
28	Percent INDUSTRY Other services except public administration	ACS	
29	Percent INDUSTRY Professional scientific and management and administrative and waste management services	ACS	
30	Percent INDUSTRY Public administration	ACS	
31	Percent INDUSTRY Retail trade	ACS	
32	Percent INDUSTRY Transportation and warehousing and utilities	ACS	
33	Percent INDUSTRY Wholesalet rade	ACS	
34	Percent OCCUPANTS PER ROOM 1 or more	ACS	
35	Percent PLACEOFBIRTH Foreignborn	ACS	
36	Percent RESIDENCE 1 YEAR AGO Different house in the US Different county Same state	ACS	

Notes: UnionStats represents datasets from UnionStats.com. UKCPR represents the National Welfare data provided from the University of Kentucky Center for Poverty. ACS represents United States Census Bureau's American Community Survey database.