Economic Freedom and Entrepreneurship: Dynamic Modeling

Fouzia Awan
Western Washington University

Received: 06/29/2025
Accepted: 08/13/2025

Abstract

This study investigates the dynamic relationship between economic freedom and entrepreneurial activity across U.S. states. A fixed-effects panel regression model with forward lags of the dependent variable is employed to analyze both the contemporaneous and lagged effects of economic freedom components—government spending, taxation, and labor market regulation—on entrepreneurship. In addition, a Bayesian Panel Vector Autoregression (VAR) model is estimated to capture the joint dynamics of the system and to trace the temporal responses of entrepreneurial activity to economic freedom shocks through impulse response functions (IRF). The results indicate that a smaller government and more flexible labor market regulations have immediate and sustained positive effects on entrepreneurship, while the impact of tax policy emerges more gradually. The analysis also examines average marginal effects, accounting for state-level differences in income and educational attainment, to assess the extent to which these socioeconomic factors moderate the relationship between economic freedom and entrepreneurial outcomes.

1 Introduction

Understanding the conditions that foster entrepreneurship is central to promoting economic growth, innovation, and resilience across U.S. states. Among the many factors that influence new business creation, the role of public policy—and more specifically, economic freedom—has attracted growing attention. As reflected in the institutional and regulatory environment shaped by state governments, financial freedom can either support or stifle entrepreneurial efforts. However, the precise mechanisms and timing through which economic freedom affects entrepreneurship remain unclear, particularly when disentangling the effects of government spending, taxation, and labor market flexibility.

This study takes on that challenge by exploring both the immediate and long-term effects of state-level economic freedom policies on entrepreneurial activity across all 50 U.S. states. Using the Kauffman Early-Stage Entrepreneurship (KESE) Series (Fairlie and Desai, 2022) to measure new business formation, and the Economic Freedom of North America (EFNA) index (Stansel et al., 2023) to capture the policy landscape, this research investigates how the key components of economic freedom—government spending, taxation, and labor market regulation—shape entrepreneurial outcomes over time.

This study employs a dual-method dynamic approach to address limitations in the existing literature, which tends to rely on static or contemporaneous analyses. First, fixed-effects panel regressions with forward lags of the dependent variable allow for the estimation of lagged policy effects, offering a clearer view of how entrepreneurs respond to changing conditions over multiple years. Second, a Bayesian Panel VAR framework is used to identify impulse response functions and model the endogenous, time-evolving relationship between policy variables and entrepreneurship. This combination of techniques enables a more accurate depiction of how different economic freedom components interact with entrepreneurial activity in the short run and over extended periods.

The empirical findings provide robust evidence that economic freedom supports entrepreneurship, but in differentiated ways. Smaller government shows a strong and immediate positive effect, while labor market flexibility contributes to sustained entrepreneurial growth. In contrast, favorable tax policies exert a delayed

yet ultimately positive impact, beginning around the fourth year after implementation. Moreover, the effectiveness of these policies is modestly moderated by state-level income and educational attainment, indicating that demographic and economic context play a role in how policies translate into entrepreneurial action.

This paper contributes to the literature by offering a dynamic, component-specific, and context-aware analysis of the relationship between economic freedom and entrepreneurship. It helps reconcile prior conflicting findings—such as the debate between Campbell and Rogers (2007) and Shakya and Plemmons (2021)—by showing that both the timing and structure of policy effects matter. By explicitly modeling contemporaneous and lagged impacts and incorporating demographic heterogeneity, this research provides a richer understanding of how institutional environments shape entrepreneurial ecosystems over time.

The remainder of the paper is structured as follows: Section 2 reviews the relevant literature; Section 3 outlines the data and methodology; Section 4 presents the empirical results; and Section 5 offers conclusions and policy implications.

2 Literature Review

A growing body of research explores the relationship between institutional quality—often measured through economic freedom—and entrepreneurial activity. Grounded in Baumol (1996)'s theoretical distinction between productive and unproductive entrepreneurship, scholars have emphasized the importance of the institutional environment in directing entrepreneurial efforts toward socially beneficial outcomes. Sobel (2008), using cross-sectional data from U.S. states, provides empirical support for Baumol's theory, showing that stronger economic, political, and legal institutions promote productive entrepreneurship and, consequently, economic growth.

Among institutional dimensions, economic freedom has emerged as a critical factor influencing entrepreneurial dynamics. Economic freedom encompasses policy elements such as limited government spending, lower taxation, and minimal regulatory interference—conditions that, in theory, reduce entry barriers and incentivize entrepreneurial risk-taking. Kreft and Sobel (2005) find that economic freedom enhances entrepreneurial activity through its protection of property rights and reduction of tax and regulatory burdens. Likewise, Awan (2023) argues that strengthening legal systems and property rights institutions boosts both investment and entrepreneurial activity. In the same vein, Powell and Weber (2013), using panel data from USA states, demonstrate that improvements in economic freedom are positively associated with business formation and patenting activity.

However, empirical findings have not been entirely consistent, particularly when disaggregating components of economic freedom. For example, Campbell and Rogers (2007) report that smaller government and fewer regulations promote net business formation. In contrast, Shakya and Plemmons (2021), analyzing data from 2005–2015, find that while regulatory freedom is positively associated with entrepreneurship, reduced government spending correlates with lower startup density. These contradictory findings suggest a more nuanced or dynamic relationship between specific components of economic freedom and entrepreneurial activity.

Several studies have attempted to unpack this complexity. Campbell et al. (2013) examine multiple measures of entrepreneurship across 50 states and conclude that economic freedom is not a consistently significant predictor across all metrics. Similarly, F. Gohmann et al. (2013) demonstrate that the impact of economic freedom varies by industry, positively affecting services like finance and professional services but not others, such as healthcare or food services. These studies suggest that the relationship between economic freedom and entrepreneurship is both context-specific and potentially time-dependent.

Temporal considerations are often neglected in the literature. Most empirical studies emphasize contemporaneous effects, despite the plausible expectation that the impact of policy changes on entrepreneurship may materialize only over time. For instance, while Powell and Weber (2013) and Hall and Sobel (2008) identify immediate correlations, they do not fully explore whether effects persist or intensify in subsequent periods. The need for dynamic analysis becomes even more pressing when addressing policy areas—such as taxation—where implementation and adaptation delays are expected.

Furthermore, regional heterogeneity remains underexplored. Several studies (e.g., Mulholland and Hernández-Julián (2013); Shumway et al. (2018); Arif et al. (2020); Plemmons and Ghosh (2022)) have demonstrated that economic freedom affects migration and income trends across states and metropolitan areas. These findings imply that the effectiveness of economic freedom policies may be conditioned by state-specific characteristics such as income levels and educational attainment. Stansel and Tuszynski (2017) call for more granular studies considering these regional variations in institutional effectiveness.

Lastly, the effectiveness of public policy itself has come under scrutiny. Cumming and Li (2013) noted that investor protections and innovation-friendly policies help venture capital and startups, but overly burdensome regulations suppress them. Meanwhile, Tuszynski and Stansel (2018) challenge their effectiveness in promoting entrepreneurship. Their study reveals that such incentives, often designed to attract specific businesses, do not significantly boost overall entrepreneurial activity and may even hinder it by favoring established firms over new entrants. This finding suggests that broad-based policies promoting economic freedom may be more effective in supporting entrepreneurial growth.

In sum, while the literature provides substantial evidence that economic freedom positively correlates with entrepreneurship, it is marked by conflicting results, particularly around specific policy components and the timing of effects. The lack of dynamic models that examine how and when these policies influence entrepreneurship presents a vital gap for further research.

This study contributes to the literature by addressing one of its most pressing gaps: the absence of a dynamic, component-level understanding of how economic freedom shapes entrepreneurship over time. By employing both fixed-effects panel regressions with forward lags of the dependent variable and Bayesian Panel VAR, this paper distinguishes immediate effects from those that unfold gradually. In doing so, it resolves a central contradiction in prior research—particularly the conflicting findings of Shakya and Plemmons (2021) and Campbell and Rogers (2007)—by showing that specific policies, like reduced government spending, have strong contemporaneous effects, while others, such as favorable taxation, exhibit delayed but significant influence. While this paper uses disaggregated elements of the economic freedom and accounts for moderating factors like income and education, offering a richer, context-sensitive analysis. This approach not only improves our understanding of how, when, and where economic freedom policies foster entrepreneurship but also provides state-level policymakers with clearer, evidence-based guidance for fostering long-term entrepreneurial growth.

3 Data and Methodology

This study investigates the dynamic relationship between economic freedom and entrepreneurial activity across all 50 USA states from 1996 to 2021 using a comprehensive panel data framework. The dependent variable is the KESE Index, a composite measure that captures multiple dimensions of entrepreneurial activity. Specifically, it aggregates four key indicators: Rate of New Entrepreneurs – the proportion of the population that starts a new business. Opportunity Share of New Entrepreneurs – the percentage of entrepreneurs motivated by opportunity rather than necessity. Startup Early Job Creation – the average number of first-year jobs startups create, normalized by population. Startup Early Survival Rate – the percentage of startups still operating after one year.

The primary independent variable is economic freedom, measured using the EFNA [1] index developed by the Fraser Institute. The EFNA index reflects the institutional and regulatory environment within each state, incorporating policies that shape incentives for entrepreneurship. It ranges from 0 to 10, with higher values indicating greater economic freedom. In addition to the overall index, three key components are analyzed to isolate specific policy effects:

- Government Spending component of the EFNA variable is measured across the areas: general government consumption expenditures as a percentage of income, transfers & subsidies as a percentage of income, and insurance & retirement payments as a percentage of income. From a policy perspective,

[1]The EFNA index separates 'government spending' and 'taxation' into two of its three core areas, potentially overweighting the role of government. Its regulation component focuses narrowly on labor market regulation, excluding broader domains such as financial, environmental, and licensing regulations. These represent some limitations worth noting.

limiting the role of state government is often viewed as a favorable approach, leading to improved economic outcomes.

- Taxes variable is measured across several components: Income and Payroll Tax Revenue as a Percentage of Income, the Top Marginal Income Tax Rate and its applicable income threshold, Property Tax and Other Taxes as a Percentage of Income, and Sales Tax as a Percentage of Income. These components are assessed across different regions to capture variations in taxation policies.
- Labor Market Regulation component of the EFNA encompasses the key areas of full-time minimum wage income as a percentage of per capita income, government employment as a percentage of total state employment, and union density.

To control for broader economic and demographic conditions, the models include several covariates: state unemployment rate, GDP per capita, population density, and educational attainment (measured as the percentage of the population with at least a bachelor's degree).

The literature employs a range of econometric models to study the relationship between public policy and entrepreneurship, including dynamic panel models (e.g., GMM), instrumental variable (IV) approaches, logit/probit models, and spatial econometrics. While each method offers unique strengths, it also has limitations, such as reliance on strong instruments, restrictive assumptions, or oversimplified outcome measures.

To robustly estimate the dynamic effects of economic freedom on entrepreneurship, this study employs two complementary methodologies:

1. Fixed-effects panel regression with forward lags of the dependent variable: This approach accounts for unobserved state-specific characteristics and allows for identification of lagged effects—i.e., how past economic freedom influences future entrepreneurial activity.
2. Bayesian Panel VAR: This method models the joint dynamics between economic freedom and entrepreneurship over time, mitigating small-sample biases and enhancing inference precision. Impulse response functions derived from the Bayesian VAR trace the magnitude and duration of entrepreneurship's response to policy shocks in the EFNA index and its subcomponents.

By incorporating forward-looking dynamics and policy shocks, this study moves beyond static correlations to reveal how economic freedom policy reforms shape entrepreneurial ecosystems over time. Entrepreneurial activity five years from now is likely to reflect today's policy environment, as changes in taxation, government spending, and labor markets influence long-term business planning, expectations, and institutional conditions. Entrepreneurs often respond not just to immediate incentives but to sustained improvements in the broader business climate, whose effects unfold gradually. Additionally, by incorporating state-level income and educational attainment in separate regressions, this analysis examines how these contextual factors moderate the impact of economic freedom, providing a more nuanced understanding of when and where policy is most effective.

The following sections present the empirical results and their interpretation.

4 Empirical Results

Theoretically, the EFNA index and its three core dimensions—Government Spending, Taxation, and Labor Market Regulation—are expected to promote entrepreneurial activity by fostering a supportive institutional framework, mitigating risk, and enhancing the efficiency of resource allocation (Stansel et al., 2023; (Kreft and Sobel, 2005)). State-level policies that reduce government intervention, lower tax burdens, and minimize excessive regulation contribute to a more stable and predictable business environment (Stansel and Tuszynski, 2017). Such stability lowers entry barriers, simplifies regulatory compliance, and improves the expected returns for new ventures. Additionally, tax fairness and labor market flexibility can increase after-tax earnings and reduce employment risks, making entrepreneurship a more attractive and feasible pursuit. By limiting the economic footprint of government, the Economic Freedom framework also enhances allocative efficiency, allowing labor, capital, and innovation to be more effectively channeled toward productive

private-sector activities Campbell and Rogers (2007). Taken together, these features—reduced uncertainty, increased returns, and improved efficiency—underscore the vital role of economic freedom in fostering vibrant entrepreneurial ecosystems.

To empirically test these theoretical relationships, this study employs two complementary econometric approaches: a Fixed-Effects Panel Regression Model with forward lags of the dependent variable and a Bayesian Panel VAR Model. These methodologies are chosen to evaluate both the immediate and dynamic, time-evolving effects of state-level economic freedom on entrepreneurship.

The fixed-effects panel regression, which includes forward lags of the dependent variable, reveals that the effects of economic freedom on entrepreneurship are not limited to the immediate term but unfold over several years. This dynamic relationship reflects the delayed transmission of policy changes, as entrepreneurs often plan over multi-year horizons. Improvements in institutional quality—such as reduced regulation or smaller government—lower entry barriers, and increased investor confidence, gradually. Additionally, shifts in labor markets, skill development, and capital allocation take time to materialize. Importantly, credible and sustained policy reforms also shape expectations, encouraging entrepreneurial activity even before their full effects are realized.

To complement this approach, the Bayesian Panel VAR model is used to capture the joint dynamics between economic freedom and entrepreneurship. This method provides a flexible framework for estimating impulse response functions, which trace the magnitude and duration of entrepreneurship's response to shocks in the EFNA index and its individual components. It also addresses small sample biases and allows for better inference under uncertainty.

Furthermore, the study explores how the impact of economic freedom varies across states with differing income levels and educational attainment. By incorporating these contextual moderators into separate regression models, the analysis identifies whether and how the effects of economic freedom are conditioned by local socioeconomic characteristics.

In short, the policies enacted today shape not only the current business climate but also the entrepreneurial conditions of the future. This temporal dimension necessitates dynamic modeling approaches that account for lagged and evolving effects, offering a more accurate and policy-relevant understanding of how economic freedom fosters entrepreneurship over time.

The following subsections present the empirical results derived from both the panel regression and Bayesian VAR models, followed by a discussion of their implications.

4.1 Entrepreneurship and economic freedom: Panel Regression Model

4.1.1 Overall Score of Economic Freedom

A series of fixed-effects panel regressions is estimated to examine the relationship between entrepreneurship and state-level economic freedom. The baseline specification, represented by Equation (1), models entrepreneurial activity as the dependent variable, with the overall EFNA index serving as the primary explanatory variable.

While the covariates on the right-hand side of Equation (1) remain unchanged, the dependent variable is modified by incorporating forward-lagged values of entrepreneurial activity from time t to t+5. This structure allows for evaluating of both immediate and delayed effects of economic freedom on entrepreneurship across six consecutive future periods.

The analysis utilizes annual data from 1996 to 2021, comprising a panel of all 50 USA states. This approach captures dynamic economic freedom effects on entrepreneurship while accounting for unobserved, time-invariant heterogeneity across states.

$$ENT_{i,t+h} = \beta_{0,h} + \beta_h EFNA_{i,t} + \gamma_h ENT_{i,t-1} + \delta_h EFNA_{i,t-1} + \theta_h X_{i,t-1} + \alpha_i + \epsilon_{i,t+h} \quad (1)$$

In Equations (1), h ranges from 0 to 5, $ENT_{i,t+h}$ represents the entrepreneurial activity measured by KESE index, $EFNA_{i,t}$ represents economic freedom overall score, $X_{i,t-1}$ represents the control variables,

and $\epsilon_{i,t+h}$ account for the error term.

The parameter β_h estimates the effect of the overall economic freedom score on entrepreneurship over successive years. As the economic freedom in the current period may have lasting/delayed impact on entrepreneurship, because it takes time for entrepreneurs to adapt to the improved conditions of economic freedom. The coefficients of β_h from all six regressions are displayed graphically in Figure 1.

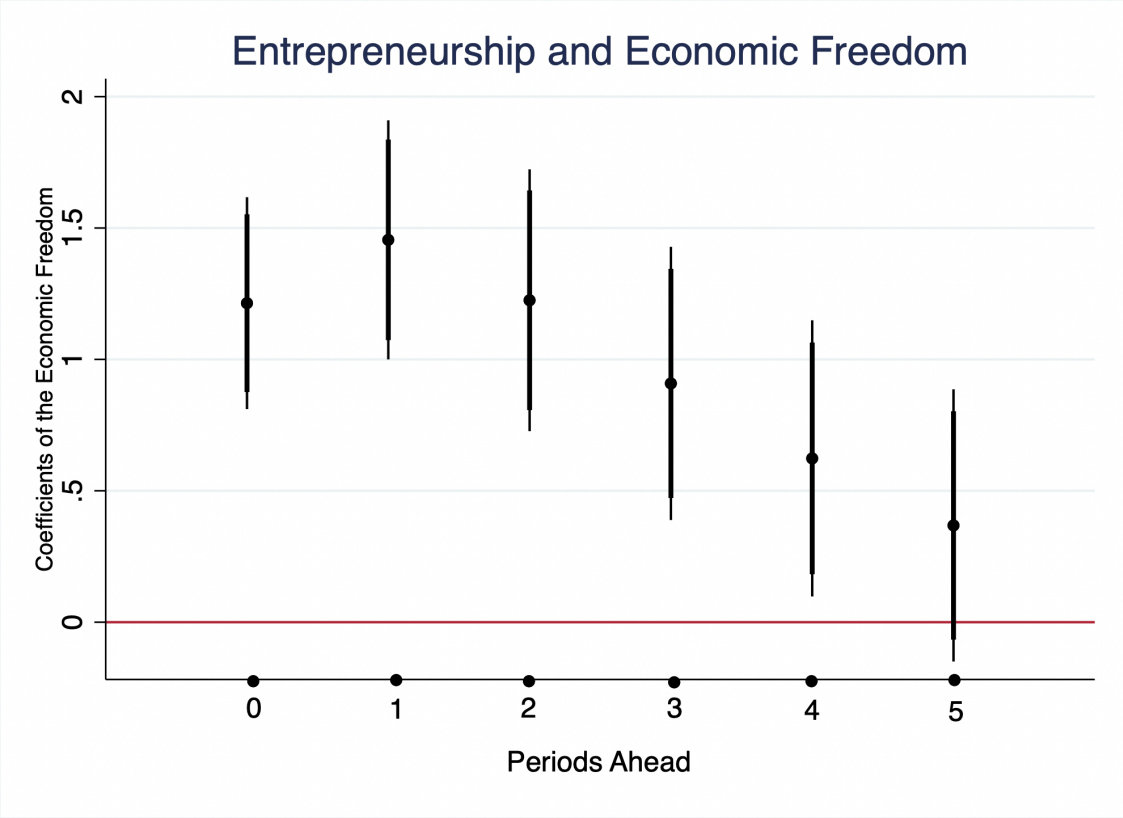


Figure 1: Predicted Entrepreneurial Activity based on economic freedom in the successive periods

Figure 1 displays the dynamic relationship between economic freedom and entrepreneurial activity, estimated through a series of fixed-effects panel regressions using forward-lagged dependent variables. Each plotted point represents the estimated coefficient (β_h) of the EFNA composite score on entrepreneurship from year t to t+5, with 90% and 95% confidence intervals reflecting statistical significance. Control variables—including state unemployment rate, GDP per capita, education, and population density—are included but not shown in the figure, which is designed to emphasize the time profile of the relationship between economic freedom and entrepreneurship.

The results demonstrate a clear and consistent pattern: economic freedom exerts a positive and statistically significant influence on entrepreneurial activity from the current year ($h = 0$) through the fourth forward period ($h = 4$). The relationship is strongest in the early years, peaking around period 1, and then gradually tapering off. By period 5, the effect becomes statistically insignificant, suggesting that the influence of today's policy environment tends to dissipate after approximately four years.

This hump-shaped trajectory suggests that policy reforms—particularly those that enhance economic freedom—have immediate and short-term momentum effects, but their marginal impact diminishes over time. This could reflect a saturation effect, where the initial improvement in entrepreneurial conditions (e.g., reduced regulation or smaller government spending) provides a boost to startup activity. Still subsequent marginal improvements yield smaller gains as the business environment stabilizes.

The corresponding regression coefficients from Table 4 (see Appendix) further support this interpretation.

The $EFNA$ variable shows strong, positive, and statistically significant effects on entrepreneurship (ENT) in Models 1 through 5, corresponding to forward periods $h = 0$ to $h = 4$. Although the coefficient remains positive in the final model ($h = 5$), it becomes statistically insignificant, indicating a diminishing effect over time. Notably, a one-unit increase in economic freedom ($EFNA$) is associated with a maximum expected increase of 1.455 units in new firm creation (ENT), observed in Model 2 ($h = 1$).

In contrast, lagged $EFNA$ scores are consistently negative and significant in the earlier models, suggesting that recent improved economic freedom conditions exert a more substantial influence on entrepreneurial activity than older economic freedom environments. This pattern highlights the relevance of current institutional settings in driving new business formation and reinforces the importance of timely and sustained policy reforms to support entrepreneurship.

Together, these findings confirm that economic freedom fosters entrepreneurship and highlight the importance of timely policy improvements. The results also reinforce the value of using a dynamic framework to evaluate the impact of economic freedom, as static or contemporaneous models would miss the longer-term effects and the temporal evolution of the policy-entrepreneurship link.

4.1.2 Individual Components of Economic Freedom

While numerous studies highlight a positive relationship between entrepreneurship and overall economic freedom, the effects of individual policy components can vary considerably. For example, Campbell and Rogers (2007) analyze data from 1990 to 2001 across USA states and find that a supportive economic freedom environment—marked by reduced regulation and a smaller government—encourages entrepreneurial activity. Similarly, Shakya and Plemmons (2021) provide partial support for this view in their analysis of 2005–2015 data, showing that greater regulatory freedom significantly promotes entrepreneurship. However, in contrast to Campbell's findings, they report that lower government spending is associated with declining startup density. These contrasting results underscore the importance of examining the disaggregated components of economic freedom, rather than relying solely on composite indices.

Dis-aggregating institutional indices, however, presents methodological challenges. Institutional components often operate in complementary and interdependent ways—tax policy and regulation, for instance, may reinforce one another. Examining these elements in isolation risks obscuring their joint effects. This paper addresses that concern by dis-aggregating the EFNA index in a theoretically grounded and empirically structured manner, rather than simply including individual components in regressions. By incorporating temporal dynamics and comparative modeling, the analysis maintains the broader institutional context and avoids the common pitfall of treating interconnected institutions as independent. Comparing aggregate and disaggregated effects over time allows for a more nuanced understanding of how specific dimensions of economic freedom influence entrepreneurship.

As shown in Table 1, among the three components of economic freedom, labor market policies have the lowest average score across states, at 5.77. The Government spending component exhibits the highest standard deviation, at 1.67, indicating the most significant variation among states, followed by Labor Market policies, which have a standard deviation of 1.06.

Table 1: Summary Statistics of the Economic Freedom overall Score and its Components

Variable Name	**Observations**	**Mean**	**Std. Dev.**	**Minimum**	**Maximum**
EFNA Score	1,300	6.03	0.95	3.47	8.05
Government Spending	1,300	6.50	1.67	0	9.7
Taxation	1,300	5.81	0.96	2.88	8.42
Labor Market Regulation	1,300	5.77	1.06	2.86	8.68

Each component of the EFNA index represents a distinct aspect of economic freedom that can influence entrepreneurial activity theoretically. Government Spending: A smaller government, characterized by lower

spending and fewer subsidies, reduces the crowding out of private sector initiatives, thereby creating more space for new businesses to enter the market and thrive. Taxation: Lower income and property taxes, coupled with fair tax policies, increase disposable income and incentivize investment, allowing entrepreneurs to retain a larger share of profits to reinvest in their businesses. Labor Market Regulation: Flexible labor regulations—such as minimal wage controls and less restrictive hiring and firing practices—enable entrepreneurs to swiftly adapt to market conditions, reducing labor costs and facilitating business scalability.

Collectively, these components of the EFNA index contribute to lower regulatory and financial burdens, establishing a foundation for increased entrepreneurial ventures and dynamic business ecosystems. This study empirically tests this model by regressing entrepreneurial activity against each of EFNA's individual components while controlling for other economic and demographic factors.

The regression specification for each individual *component* of the EFNA index is given by the following panel regression model:

$$ENT_{i,t+h} = \beta_{0,h} + \beta_h component_{i,t} + \gamma_h ENT_{i,t-1} + \delta_h component_{i,t-1} + \theta_h X_{i,t-1} + \alpha_i + \epsilon_{i,t+h} \quad (2)$$

where $h = 0, 1, \ldots, 5$ denotes the forecast horizon, $ENT_{i,t+h}$ is the entrepreneurship in state i at time $t+h$, and componenti,t represents one of the three disaggregated elements of the EFNA index evaluated contemporaneously. While the term component$i,t-1$ includes the lagged value of the component of the EFNA index. $X_{i,t-1}$ is a vector of control variables. State fixed effects α_i control for time-invariant unobserved heterogeneity, and $\epsilon_{i,t+h}$ denotes the error term.

Government Spending: This section investigates the role of Government Spending as a core dimension of economic freedom in shaping entrepreneurial activity over time. In Equation (2), the variable componenti,t is specified as the government spending, while all other control variables remain consistent with the baseline specification. The dependent variable, entrepreneurial activity, is forward-lagged from period t to t+5, allowing for a dynamic analysis of the temporal effects of government spending on entrepreneurship.

The Government spending index reflects the extent of public sector involvement in the economy, including General Government Consumption Expenditures, Transfers and Subsidies, and Insurance and Retirement Payments as a share of income. A smaller government footprint, as represented by lower values in these areas, is often associated with more favorable conditions for private enterprise, as it reduces the likelihood of resource misallocation and minimizes distortive interventions in the market.

Figure 2 visualizes the estimated coefficients β_h from six separate forward-lag regressions, highlighting the predicted impact of government spending on entrepreneurship over successive time horizons. The results indicate a strong and immediate positive effect of a smaller government on entrepreneurial activity, particularly in the current year ($h = 0$) and the following two years ($h = 1$ and $h = 2$). The magnitude of the effect peaks in the first forward period and then gradually declines. From periods $h = 3$ to $h = 5$, the coefficients remain positive. Still, they are no longer statistically significant, suggesting that the influence of reduced government spending is front-loaded and most impactful within the short term.

The regression results in Table 5 (see Appendix) illustrate the dynamic impact of government spending on entrepreneurship. The (smaller) Government Spending variable is positively and significantly associated with new firm creation in Models 1 through 3 ($h = 0$ to $h = 2$), with coefficients ranging from 0.577 to 0.281—all statistically significant at conventional levels. Specifically, a 1-unit decrease in the $EFNA$ government spending score corresponds to a 0.577-unit increase in new firm creation in the same year. This suggests a reduced government footprint is associated with higher entrepreneurial activity in the short run. However, the lagged Government Spending variable (sog_lag1) shows a negative and statistically significant association in Models 1 through 4 ($h = 0$ to $h = 3$), indicating that greater economic freedom in the previous year (i.e., smaller government) is linked to lower entrepreneurial activity in the current period. This temporal divergence highlights the complex and potentially non-linear relationship between government size and entrepreneurship.

This somewhat counterintuitive finding may suggest the presence of diminishing marginal returns to policy reforms or adjustment costs that initially delay entrepreneurial responses to pro-market policies. It is also possible that policy-induced uncertainty or short-term displacement effects—such as reduced public sec-

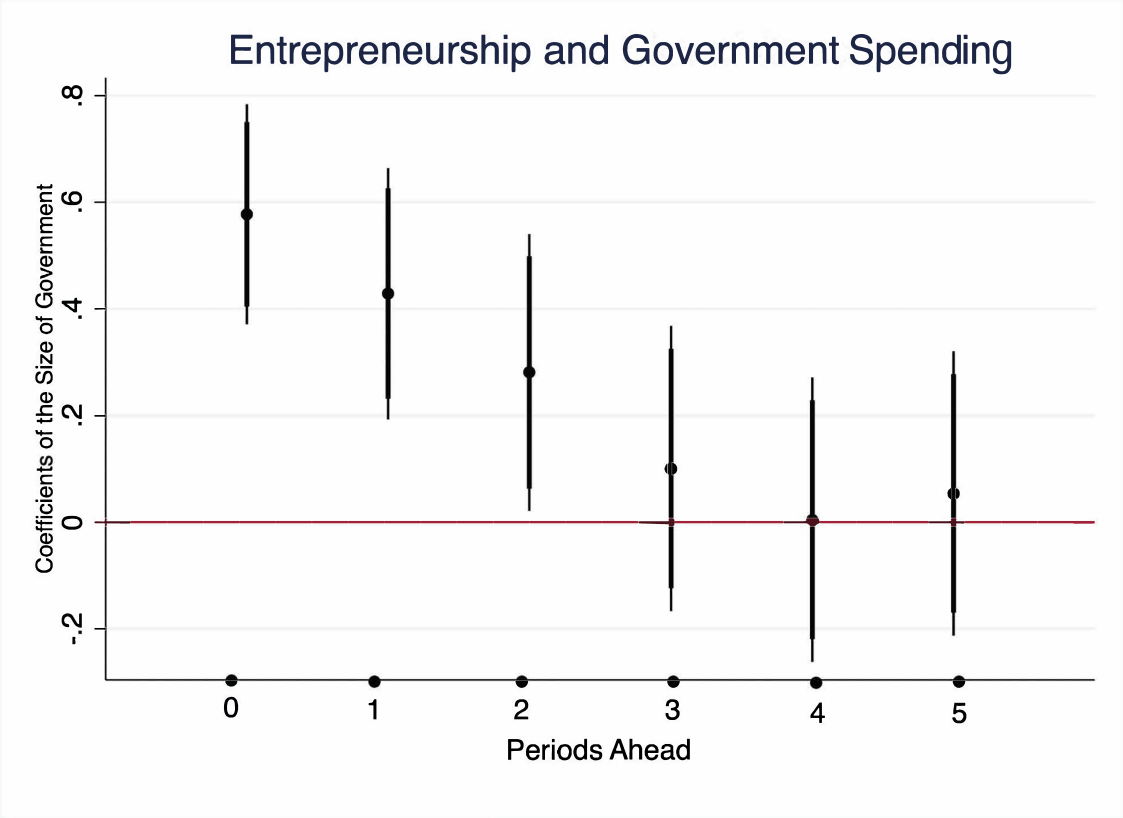


Figure 2: Predicted Entrepreneurial Activity based on the Government Spending in successive periods

tor employment or benefits—create transitional frictions that temporarily suppress entrepreneurial activity before longer-term benefits emerge. These results underscore the complex, time-dependent nature of policy impacts and highlight the importance of using dynamic models to capture immediate and delayed effects.

The evidence aligns with the view that limiting government involvement in economic activity reduces entry barriers, enhances private sector resource allocation, and encourages entrepreneurial risk-taking. Prior studies offer mixed findings on this relationship. Campbell and Rogers (2007) argue that smaller government fosters entrepreneurship by promoting economic flexibility, while Shakya and Plemmons (2021) suggest that reduced public spending may weaken startup activity, particularly when government support plays a stabilizing role. Powell and Weber (2013), however, find that smaller government spending is a key driver of business formation and innovation. Similarly, Hall and Sobel (2008) and Stansel and Tuszynski (2017) emphasize the broader positive association between economic freedom and entrepreneurial outcomes.

While much of the previous literature focuses on contemporaneous effects, this analysis provides a dynamic perspective. It reveals that the benefits of reduced government spending are immediate and short-lived, typically materializing within two to three years. These insights highlight the importance of timeliness in policy reforms, as delayed impacts may diminish or become statistically insignificant over longer horizons.

Taxation Policies: The next stage of the analysis evaluates the role of taxation policies as a core component of economic freedom. In Equation (2), componenti, t is defined as the Taxation variable, which captures the extent to which state governments impose tax-related constraints on income and business incentives. This component includes income tax, sales tax, property tax, and other levies as a percentage of income, thereby reflecting the fiscal burden placed on individuals and potential entrepreneurs.

As illustrated in Figure 3, the relationship between tax freedom and entrepreneurship does not appear significant in the short run. No statistically significant association is observed in the contemporaneous model (h = 0) or the first two forward periods ($h = 1, h = 2$). However, beginning in the third period

($h = 3$), a statistically significant and positive relationship emerges, reaching 90% confidence at first and then strengthening to 95% confidence in periods four and five ($h = 4, h = 5$). These results indicate a delayed but substantial effect of improved tax policy—characterized by reduced fiscal interference—on entrepreneurial activity.

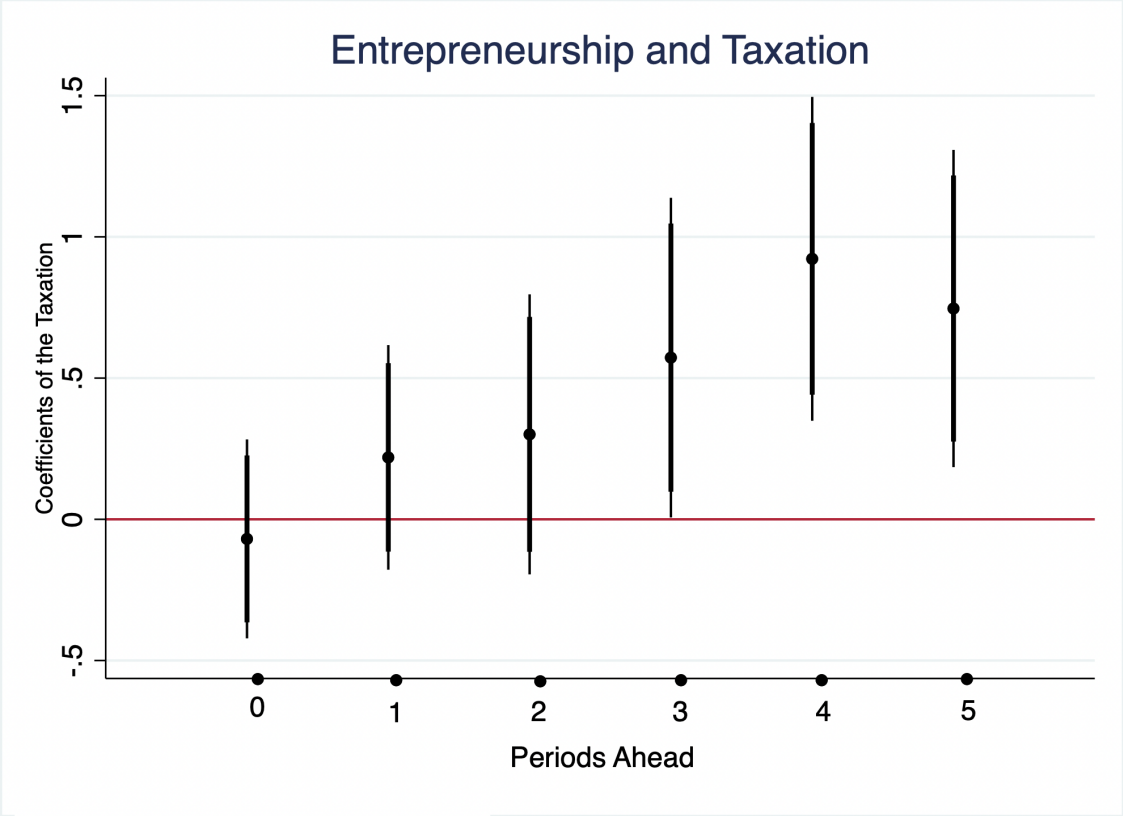


Figure 3: Predicted Entrepreneurial Activity based on Taxation policies in the successive periods

Table 6 (see Appendix) presents the results for the Tax variable. In Models 4 through 6 ($h = 3$ to $h = 5$), the coefficient becomes positive and statistically significant, rising from 0.572 to a peak of 0.922, then slightly declining to 0.746. Specifically, a 1-unit increase in the EFNA tax freedom score is associated with a 0.922-unit increase in new firm creation four periods ahead ($h = 4$). The delayed emergence of significance suggests that the effect of tax freedom on entrepreneurship unfolds gradually—likely reflecting the time needed for individuals and firms to adjust financial behavior, planning horizons, and investment decisions in response to tax policy changes. Moreover, the lagged Tax variable (tax_lag1) is positive and significant in the earlier models (Models 1–4), indicating that prior tax conditions also influence current entrepreneurial activity. These findings highlight a temporal dimension to the tax–entrepreneurship relationship, emphasizing both immediate and delayed effects.

These findings contrast with those of Shakya and Plemmons (2021), who report a negative contemporaneous correlation between tax freedom and startup density. In contrast, the present analysis finds an insignificant contemporaneous effect but a positive and statistically significant long-run association. This discrepancy underscores the importance of adopting a dynamic framework to evaluate policy effects, as immediate correlations may obscure the actual long-term impact of fiscal policy on entrepreneurial behavior.

In summary, the evidence suggests that favorable tax environments promote entrepreneurship, but their effects unfold over an extended period. These results emphasize the need for policymakers to exercise patience when implementing tax reforms and to recognize that the full benefits for entrepreneurial growth may take several years to materialize.

Labor Market Regulations: The final component of the analysis focuses on Labor Market Regulations, defined in Equation (2) as componenti, t. This variable captures state-level labor market flexibility, incorporating metrics such as minimum wage levels, the share of government employment, and union density. Higher values in this index indicate a more flexible and less interventionist labor environment, theoretically conducive to entrepreneurial activity by lowering hiring constraints and reducing regulatory compliance burdens.

As shown in Figure 4, the relationship between labor market regulations and entrepreneurship closely mirrors the overall pattern observed for the EFNA composite index. A consistently positive and statistically significant effect is observed from the contemporaneous period ($h = 0$) through the fourth forward period ($h = 4$), with only the fifth period ($h = 5$) showing an insignificant impact. The coefficient path forms a hump-shaped trajectory, rising sharply from period 0 to period 1, peaking in the short term, and gradually declining thereafter. This pattern may reflect an initial surge in entrepreneurial activity in response to more flexible labor policies, followed by a natural leveling-off as marginal benefits diminish—a dynamic consistent with the concept of diminishing marginal returns to policy reforms.

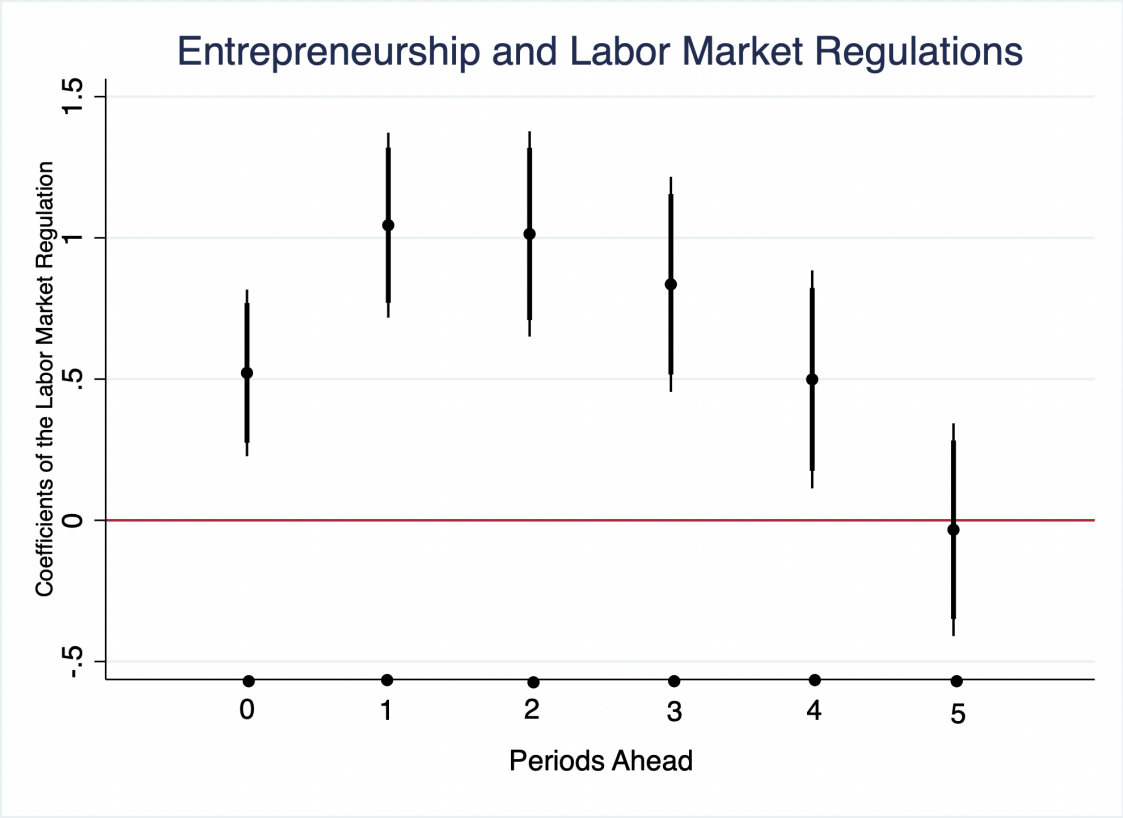


Figure 4: Predicted Entrepreneurial Activity based on Labor Market Regulations in the Successive Periods

Table 7 (see Appendix) reports the results for labor market regulation. The variable ($regu$) is positive and highly significant in Models 1 through 5 ($h = 0$ to $h = 4$), with coefficients ranging from 0.499 to 1.045. A 1-unit increase in the EFNA labor market regulation score corresponds to a maximum expected increase of 1.045 in new firm creation at $h = 1$. However, the effect weakens in Model 6 ($h = 5$) and becomes statistically insignificant, consistent with the pattern observed in the figure. The lagged labor market regulation variable ($regu_lag1$) remains positive and significant across all models, indicating that earlier labor market conditions continue to influence current entrepreneurial activity. This persistence suggests that flexible labor environments not only spur immediate startup formation but also exert a sustained impact over time.

These findings reinforce the critical role of labor market policies in shaping entrepreneurial ecosystems.

States with more flexible labor markets—characterized by fewer wage controls, lower public-sector employment shares, and reduced unionization—appear better positioned to support entrepreneurship. This is consistent with previous empirical research, including Shakya and Plemmons (2021), Campbell and Rogers (2007), and Kreft and Sobel (2005), who find that reduced labor regulation correlates with higher levels of business formation and entrepreneurial dynamism.

Furthermore, summary statistics in Table 1 reveal that labor market regulation has the lowest average score among the three EFNA components across the 50 U.S. states. This suggests that even incremental improvements in labor market flexibility may offer substantial gains for entrepreneurship. Given its consistently strong and sustained influence over time, labor market policy emerges as a particularly effective lever for fostering entrepreneurial growth.

4.2 Entrepreneurship and Economic Freedom: Panel VAR

To further analyze the dynamic interplay between economic freedom and entrepreneurial activity, a Bayesian Panel VAR model is employed. This framework treats all variables as endogenous, enabling the examination of mutual influences over time while accounting for state-level fixed effects. The dataset spans 26 years (1996–2021) across 50 U.S. states, resulting in a relatively short time dimension. To address the limitations of short panel data, the estimation follows a pooled Bayesian approach with fixed effects, as recommended by Ferroni and Canova (2021) for applications of this nature.

The Bayesian framework is particularly advantageous in settings with limited sample sizes or when prior knowledge—both statistical and economic—can enhance inference. It mitigates overfitting risks and improves predictive accuracy by integrating parameter uncertainty into the estimation process. Initially developed for macroeconomic forecasting, Bayesian VAR models have demonstrated robust applicability across diverse empirical domains (Canova, 2007). Their capacity to accommodate uncertainty and model complexity makes them well-suited to assess how policy environments influence entrepreneurship over time.

In the empirical setup, the Panel VAR model is specified as:

$$AY_{i,t} = B_0 + B_1 Y_{i,t-1} + f_i + e_{i,t} \tag{3}$$

where $Y_{i,t}$ is a vector of endogenous variables—comprising entrepreneurship and one dimension of economic freedom (overall score, government spending, taxation, or labor market regulation). The term f_i captures unobserved state-specific effects, the matrices A, B_0, and B_1 contain the respective coefficients, while $e_{i,t}$ represents structural shocks. The model recognizes that direct estimation of the structural form is infeasible due to endogeneity between $Y_{i,t}$ and $e_{i,t}$. Therefore, a reduced-form version is estimated first, and the structural shocks are subsequently recovered using identification restrictions.

The reduced-form representation is expressed as:

$$Y_{i,t} = A^{-1}B_0 + A^{-1}B_1 Y_{i,t-1} + A^{-1}f_i + A^{-1}e_{i,t} \tag{4}$$

This equation can be further expressed as:

$$Y_{i,t} = C_0 + C_1 Y_{i,t-1} + a_i + u_{i,t} \tag{5}$$

where,

$$\begin{aligned} C_0 &= A^{-1}B_0, \\ C_1 &= A^{-1}B_1, \\ a_i &= A^{-1}f_i, \\ u_{i,t} &= A^{-1}e_{i,t} \end{aligned}$$

To identify the structural shocks, a Cholesky decomposition is applied. This identification strategy assumes a recursive structure: variables ordered earlier in the system contemporaneously affect those ordered later but not vice versa. In this context, entrepreneurship is placed below economic freedom in the ordering,

implying that economic freedom can contemporaneously influence entrepreneurship, while entrepreneurship is assumed not to have an immediate effect on economic freedom. This ordering reflects the theoretical assumption that institutional changes—such as tax reform or labor deregulation—can have contemporaneous effects on entrepreneurial incentives, whereas entrepreneurial responses do not instantaneously influence broader policy environments.

The IRFs derived from the estimated model trace the dynamic evolution of entrepreneurial activity in response to unanticipated shocks in economic freedom variables. These IRFs offer a detailed view of the magnitude and duration of policy effects over time, allowing for a richer understanding of how different dimensions of economic freedom shape entrepreneurial ecosystems across states.

4.2.1 Overall Score of Economic Freedom

Figure 5 (first row, left) displays the estimated dynamic response of entrepreneurship to a shock in the Overall Economic Freedom Score, represented by an IRF. The gray bands indicate the 68% high probability density (HPD) set, which, in Bayesian statistics, defines a credible interval. This interval represents the range within which an unobserved parameter is likely to fall, based on a specified probability, derived from either a posterior or predictive distribution. The horizontal axis shows the number of years after the shock, while the vertical axis illustrates the magnitude of the response in entrepreneurial activity.

The findings indicate that, on average, a one-standard-deviation shock in the economic freedom score leads to an immediate peak increase of approximately 0.19 units in entrepreneurial activity.

As shown in Figure 5 (first row, left), a change in Economic Freedom results in a positive and statistically significant increase in entrepreneurship across all sixteen periods following the shock. Entrepreneurship exhibits an L-shaped response to changes in economic freedom. Qualitatively, this pattern somewhat aligns with the results presented in Figure 1, suggesting that the initial impact of improved economic freedom is strongest, but gradually declines over time.

4.2.2 Individual Components of Economic Freedom

While the overall Economic Freedom score positively impacts entrepreneurship, the individual components of EFNA may not exhibit the same pattern. Therefore, it is crucial to analyze each component separately, particularly when developing and implementing targeted policies.

Government Spending: A shock in Economic Freedom refers to an unexpected change, such as a reduction in Government Spending, represented by decreases in general government consumption expenditures, transfers & subsidies, and insurance & retirement payments. The results in Figure 5 (first row, right) suggest that improvements in economic freedom—specifically through a smaller Government spending—produce an immediate, positive, and significant impact on entrepreneurship. On average, a one-standard-deviation reduction in government spending leads to an immediate peak increase of approximately 0.34 units in entrepreneurial activity. This effect aligns with the regression results, as shown in Figure 2.

Taxation Policies: In Figure 5 (second row, left), the dynamic response to a shock in Taxation policies initially shows a negative impact on entrepreneurship. However, around the second to third period, the response turns positive, peaking at approximately 0.07 before gradually declining. This pattern suggests that while immediate supportive taxation policies hinder entrepreneurial activity, their long-term effects might encourage adaptation or reflect delayed benefits of the policy changes.

The initial negative impact of a supportive taxation policy on entrepreneurial activity, followed by a delayed positive effect, can be interpreted through the following economic dynamics. The initial drop in entrepreneurial activity following the implementation of a more favorable tax policy (i.e., lower discriminatory taxes) may seem counterintuitive but could be explained by adjustment costs or expectation effects. When tax policy changes, potential entrepreneurs and existing businesses may initially pause or slow their activities to assess how these new policies affect the market environment. Entrepreneurs might be cautious, waiting to see if the policy shift will be sustained or if there will be further changes. This "wait-and-see" approach can result in a short-term decrease in activity as entrepreneurs delay investment or expansion.

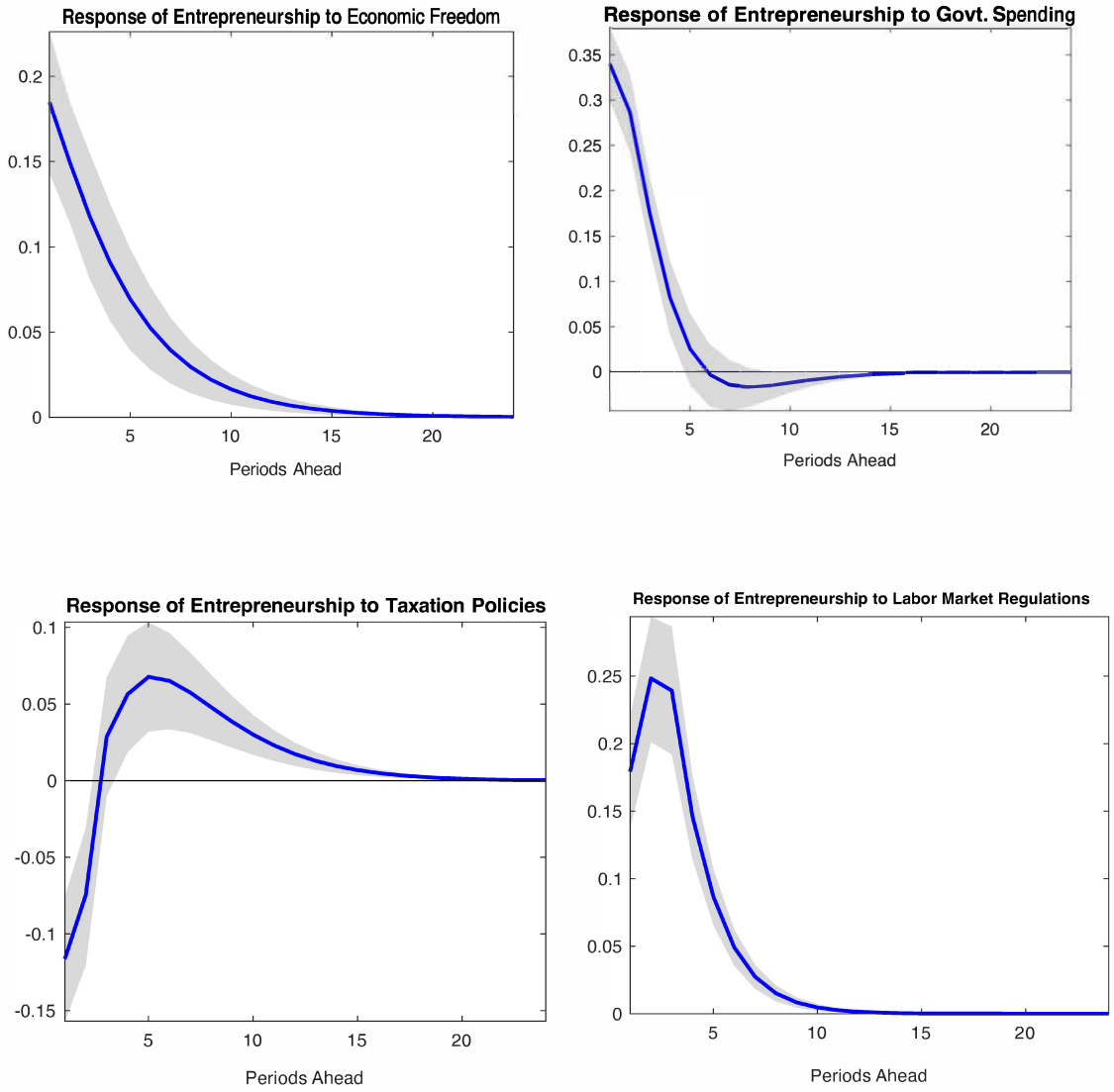


Figure 5: Response of Entrepreneurial Activity to Economic Freedom and its Components

After the initial adjustment period, entrepreneurial activity rises as businesses and new entrants adapt to the new tax conditions. With lower discriminatory taxes, entrepreneurs retain more of their profits, improving their cash flow and ability to reinvest. This delayed positive response reflects the time it takes for these benefits to translate into actual business decisions, such as hiring, expansion, or entry into new markets. Over time, the supportive tax environment lowers barriers to entry and incentivizes risk-taking, attracting more individuals to start businesses. The peak in activity represents the point at which the tax policy's supportive effect is strongest. Entrepreneurs, having adjusted to the favorable tax environment, are fully leveraging the increased after-tax earnings and reinvesting in their businesses. This peak is often a period of heightened business formation and expansion as confidence in the supportive tax environment grows.

Similarly, our fixed-effect panel regression results align with this finding. In the initial period, the coefficient for Taxation policies is negative, but statistically insignificant, as seen in Figure 3. This implies that while the short-term impact of improved taxation policies may not be substantial, the long-run influence could become more pronounced. The eventual positive shift could be due to businesses adjusting to the new tax structure or other long-term factors that mitigate the initial burden on entrepreneurship.

Taken together, these results underscore the importance of considering both immediate and longer-term effects when assessing the relationship between taxation policy and entrepreneurial outcomes. The initial negative (or insignificant) response highlights the short-term challenges imposed by such policies, while the eventual positive trend may indicate the economy's capacity to adapt and sustain entrepreneurial growth in the face of taxation changes. This nuanced dynamic is crucial for policymakers aiming to strike a balance between revenue generation and the promotion of entrepreneurship.

Labor Market Regulations: Figure 5 (second row, right) demonstrates a hump-shaped response of entrepreneurship to changes in labor market regulation, which is measured by factors such as full-time minimum wage income, government employment, and union density. This pattern suggests that reducing regulatory constraints in the labor market—such as lowering minimum wage restrictions, decreasing government employment rates, and reducing union density—stimulates entrepreneurial activity in U.S. states.

The results indicate that, on average, a one-standard-deviation (STD) positive change in labor market regulations leads to a peak increase of approximately 0.25 units in entrepreneurial activity, occurring three years after the policy change. This time lag suggests that the positive effects of labor market deregulation accumulate gradually as businesses adapt to a more flexible labor environment. In the initial years following the regulatory changes, Businesses benefit from increased flexibility in managing labor costs, which facilitates hiring, scaling operations, and innovation. However, over time, the rate of entrepreneurial growth slows as the initial advantages of deregulation are fully absorbed by the market.

This hump-shaped trajectory is also consistent with the fixed-effect panel regression results (Figure 4), where the coefficient plot for labor market regulation shows a similar pattern. The panel VAR and fixed-effect models reinforce the conclusion that favorable labor market regulations initially spark a surge in entrepreneurial activity, but the momentum tapers off in subsequent years.

4.3 Entrepreneurship and Economic Freedom: Average Marginal Effect (AME)

To further investigate the dynamics between economic freedom and entrepreneurial activity, this section examines whether the effects of economic freedom are conditioned by state-level economic and human capital characteristics—specifically, per capita personal income (PCPI) and educational attainment. These structural factors can shape how individuals respond to institutional environments, potentially amplifying or dampening the influence of economic freedom on entrepreneurship.

The analysis estimates AMEs by interacting economic freedom measures with income and education, assessed in separate regressions. This approach allows for an exploration of heterogeneous policy effects, recognizing that the same institutional reforms may produce different entrepreneurial responses depending on the underlying economic and demographic context.

4.3.1 AME of Economic Freedom on Entrepreneurship across different Income levels

To examine how the impact of economic freedom on entrepreneurship varies across income levels, per capita personal income (*pcpi*) is used as a proxy for economic variation among U.S. states. A series of panel regressions is estimated based on Equation (6), which incorporates an interaction term between the $EFNA_{i,t}$ index and $pcpi_{i,t}$. This framework allows for the dynamic assessment of how the marginal effect of economic freedom on entrepreneurship is moderated by income levels, using forward-lagged values of the dependent variable across six periods ($h = 0$ to $h = 5$).

$$\begin{aligned} ENT_{i,t+h} = \beta_{0,h} + \beta_h EFNA_{i,t} + \phi_h pcpi_{i,t} + \lambda_h EFNA_{i,t} * pcpi_{i,t} + \delta_h EFNA_{i,t-1} \\ + \eta_h pcpi_{i,t-1} + \gamma_h ENT_{i,t-1} + \theta_h X_{i,t-1} + \alpha_i + \epsilon_{i,t} \end{aligned} \tag{6}$$

In this specification, the AME of economic freedom on entrepreneurship is calculated as:

$$d(ENT)/d(EFNA) = \beta_h + \lambda_h pcpi_{i,t} \tag{7}$$

To interpret the AMEs across varying income levels, the differenced *pcpi* variable (used to address non-stationarity) is divided into three tertiles. The mean values for each tertile, shown in Table 2, serve as representative income levels for low, medium, and high-income groups across states. In the sample, the differenced *pcpi* ranges from –2,500 to 5,500.

Table 2: Mean values of per capita personal income levels

pcpi	Mean
1st Tertiles	300
2nd Tertiles	1500
3nd Tertiles	2900

The AMEs are then calculated across all six periods using the corresponding mean value of *pcpi* for each tertile, the results are presented in Figure 6. Each subplot illustrates the dynamic AME of economic freedom on entrepreneurship at different income levels.

Figure 6 shows that the AME of economic freedom follows a hump-shaped trajectory across all income levels. The effect is modest in the contemporaneous period ($h = 0$), increases in magnitude through the first few periods, peaks around the third period, and gradually declines thereafter. This pattern mirrors the temporal dynamic observed in the baseline regression (Figure 1), indicating that the influence of economic freedom strengthens over time before tapering off.

Importantly, the AMEs are larger for lower-income states, with the curves shifting slightly upward as income levels decline. This suggests that economic freedom has a more pronounced positive effect on entrepreneurship in states with lower per capita personal income. One possible explanation is that higher income increases the opportunity cost of leaving paid employment, thereby reducing the incentive to engage in entrepreneurial activity. In contrast, in lower-income states, individuals may have fewer formal employment opportunities and a stronger incentive to pursue self-employment or business creation when institutional conditions become more favorable.

Overall, these findings underscore the importance of accounting for economic context when assessing the effects of economic freedom. While economic freedom promotes entrepreneurship across all income levels, the strength and timing of this effect are moderated by underlying income conditions, with greater gains observed in lower-income environments.

4.3.2 AME of Economic Freedom on Entrepreneurship across different Education Levels

To examine how the impact of economic freedom on entrepreneurship varies with education, the percentage of a state's population holding a bachelor's degree or higher is used as a proxy for educational attainment.

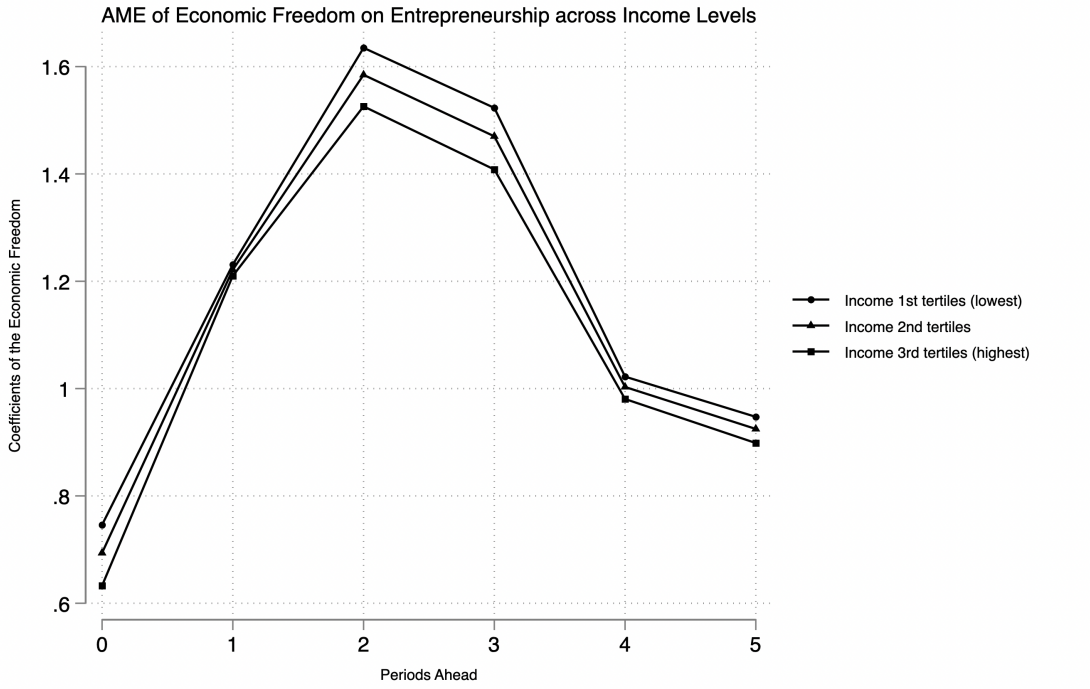


Figure 6: Average Marginal Effect of Economic Freedom on Entrepreneurship across different Income levels

A panel regression framework is employed, incorporating an interaction term between the $EFNA$ index and education (edu). Forward lags of the dependent variable are included to capture dynamic effects across time horizons $h = 0$ to $h = 5$. The model is specified in Equation (8):

$$\begin{aligned} ENT_{i,t+h} = \beta_{0,h} + \beta_h EFNA_{i,t} + \phi_h edu_{i,t} + \lambda_h EFNA_{i,t} * edu_{i,t} + \delta_h EFNA_{i,t-1} \\ + \eta_h edu_{i,t-1} + \gamma_h ENT_{i,t-1} + \theta_h X_{i,t-1} + \alpha_i + \epsilon_{i,t} \end{aligned} \tag{8}$$

In this equation, $edu_{i,t}$ denotes the proportion of the population with a bachelor's degree or higher. The AME of economic freedom on entrepreneurship is calculated by taking the derivative of entrepreneurship ($ENT_{i,t+h}$) with respect to economic freedom ($EFNA_{i,t}$):

$$d(ENT)/d(EFNA) = \beta_h + \lambda_h edu_{i,t} \tag{9}$$

To better understand how the effect of economic freedom varies across different levels of educational attainment, the differenced education variable (used to correct for non-stationarity) is divided into three tertiles. Mean values for each tertile are shown in Table 3, along with the cumulative AME of economic freedom across periods 0 to 5.

Table 3: Mean values of education levels

edu.	Mean	Cumulative effect
1st Tertiles	0.0	5.03
2nd Tertiles	0.4	5.18
3nd Tertiles	1.1	5.43

Using the regression framework defined in Equation (8), AMEs are calculated across each education level by substituting the mean of each tertile into the marginal effect Equation (9). The resulting dynamic AMEs are presented in Figure 7.

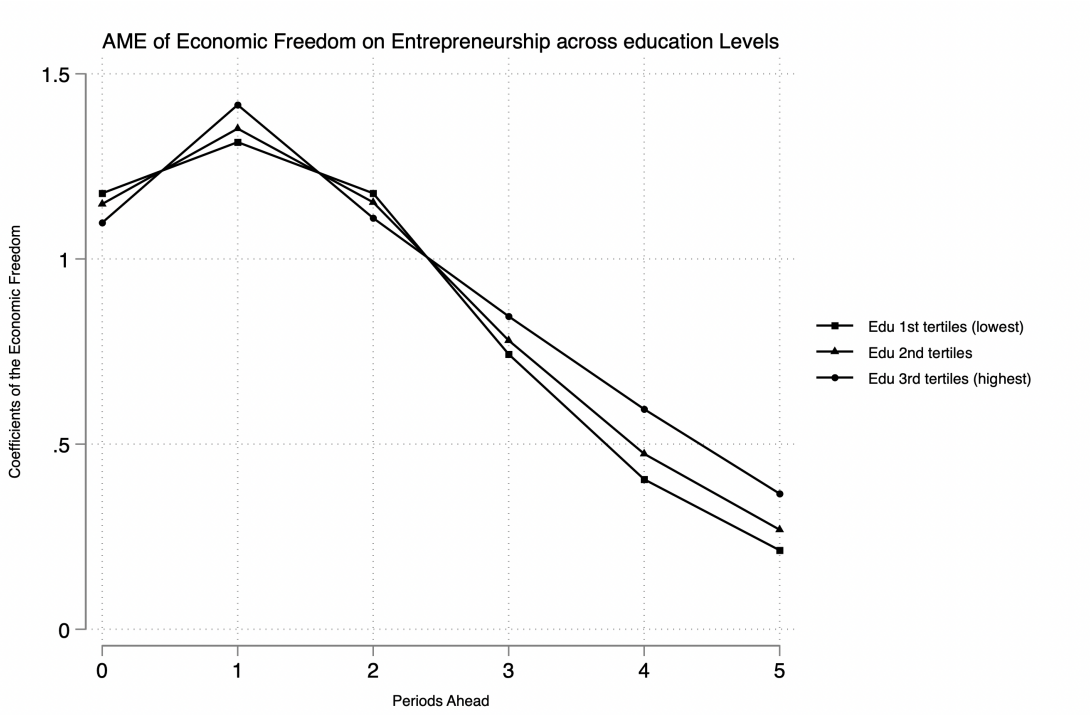


Figure 7: Average Marginal Effect of Economic Freedom on Entrepreneurship across different levels of Education

Figure 7 demonstrates that the magnitude of the AME increases with higher education levels, particularly over longer time horizons. Although the differences across education tertiles are modest in the early periods, the cumulative effect from period 0 to 5 (shown in Table 3) reveals a clear upward trend. This pattern suggests that the positive impact of economic freedom on entrepreneurship is amplified in states with more highly educated populations.

The AME plots also exhibit a hump-shaped pattern across all education levels, consistent with prior findings from the fixed-effects panel regressions (e.g., Figure 1). The marginal effect starts relatively small in the contemporaneous period, increases in periods 1 and 2, and gradually declines in subsequent periods. This trajectory indicates that policy effects often peak after a short delay and diminish over time, likely due to institutional adjustment lags and saturation effects.

These results underscore the role of human capital in mediating the relationship between public policy and entrepreneurial outcomes. In states with higher educational attainment, individuals may possess greater access to knowledge, skills, and networks that allow them to capitalize more effectively on pro-business institutional environments. Conversely, in states with lower levels of educational attainment, the entrepreneurial response to economic freedom appears more constrained.

When viewed alongside the findings from Section A (pcpi-based AMEs), a clearer picture of the interaction between structural conditions and public policy emerges. While higher income levels may raise the opportunity cost of entrepreneurship—potentially dampening startup incentives—higher educational attainment tends to enhance entrepreneurial capacity. This distinction suggests that education plays an enabling role, facilitating opportunity-driven entrepreneurship when favorable policies are in place.

Overall, the interaction between education and economic freedom reveals substantial heterogeneity in policy effectiveness. Economic freedom tends to generate stronger entrepreneurial responses in more educated

states, emphasizing the importance of complementary investments in human capital alongside institutional reforms to maximize policy impact on entrepreneurial growth.

5 Conclusion

This study presents a dynamic investigation into the relationship between Economic Freedom and entrepreneurial activity across all 50 U.S. states, emphasizing how different dimensions of economic freedom influence entrepreneurship over time. The analysis reveals that supportive institutional environments—particularly those characterized by a smaller government footprint and greater labor market flexibility—are consistently associated with increased entrepreneurial activity. Both the Government Spending and Labor Market Regulation components demonstrate immediate and sustained positive effects, underscoring the importance of reducing government intervention and regulatory barriers to foster a conducive environment for business formation.

In contrast, the effects of Taxation policies appear more nuanced. The impact of tax freedom is insignificant or negative in the short term but becomes positive and statistically significant in later periods, suggesting a delayed response as individuals and firms adjust to changes in tax policy over time. This highlights the need for patience and long-term commitment when implementing fiscal reforms to stimulate entrepreneurship.

The study also finds that state-level differences in per capita income and educational attainment modestly moderate the relationship between economic freedom and entrepreneurship. Higher income levels may increase the opportunity cost of leaving wage employment, slightly dampening entrepreneurial responses. In contrast, higher educational attainment tends to enhance the positive impact of economic freedom by equipping individuals with the skills and capacity needed to pursue opportunity-driven entrepreneurship.

In sum, the findings highlight the importance of dimension-specific and context-sensitive policy design. Policymakers seeking to foster entrepreneurship should consider not only the immediate effects of regulatory and institutional reforms but also their dynamic trajectories, particularly for taxation. Targeted efforts to maintain a leaner government structure, enhance labor market flexibility, and strengthen human capital will likely yield the most substantial and sustained entrepreneurial outcomes.

References

Arif, I., Hoffer, A., Stansel, D., and Lacombe, D. (2020). Economic freedom and migration: A metro area-level analysis. *Southern Economic Journal*, 87(1):170–190.

Awan, F. (2023). Entrepreneurship, investment, and legal system & property rights in countries with different income-levels. In *Conference paper, SEA 93rd Annual Meeting, Nov 18-20, 2023, New Orleans, LA, USA.*

Baumol, W. J. (1996). Entrepreneurship: Productive, unproductive, and destructive. *Journal of business venturing*, 11(1):3–22.

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*, 2(1):4–20.

Campbell, N. D. and Rogers, T. M. (2007). Economic freedom and net business formation. *Cato J.*, 27:23.

Canova, F. (2007). *Methods for applied macroeconomic research*, volume 13. Princeton university press.

Cumming, D. and Li, D. (2013). Public policy, entrepreneurship, and venture capital in the united states. *Journal of Corporate Finance*, 23:345–367.

F. Gohmann, S., K. Hobbs, B., and J. McCrickard, M. (2013). Economic freedom, entrepreneurial activity, and the service sector. *Journal of Entrepreneurship and Public Policy*, 2(2):144–159.

Fairlie, R. and Desai, S. (2022). National report on early-stage entrepreneurship in the united states: 2021. kauffman indicators of entrepreneurship.

Ferroni, F. and Canova, F. (2021). A hitchhiker's guide to empirical macro models.

Hall, J. C. and Sobel, R. S. (2008). Institutions, entrepreneurship, and regional differences in economic growth. *Southern Journal of Entrepreneurship*, 1(1).

Kreft, S. F. and Sobel, R. S. (2005). Public policy, entrepreneurship, and economic freedom. *Cato J.*, 25:595.

Mulholland, S. E. and Hernández-Julián, R. (2013). Does economic freedom lead to selective migration by education? *Journal of Regional Analysis and Policy*, 43(1):65–87.

Plemmons, A. and Ghosh, S. (2022). Business regulations and between-city migration. *Public Finance Review*, 50(5):579–596.

Powell, B. and Weber, R. (2013). Economic freedom and entrepreneurship: A panel study of the united states. *American Journal of Entrepreneurship*, 6(1).

Shakya, S. and Plemmons, A. (2021). The impact of economic freedom on startups. *Journal of Regional Analysis and Policy*, 51(1):29–42.

Shumway, J. M. et al. (2018). Economic freedom, migration and income change among us metropolitan areas. *Current Urban Studies*, 6(01):1.

Sobel, R. S. (2008). Testing baumol: Institutional quality and the productivity of entrepreneurship. *Journal of Business Venturing*, 23(6):641–655.

Stansel, D., Torra, J., McMahon, F., and Carrión-Tavárez, Á. (2023). Economic freedom of north america 2023. *Vancouver: Faser Institute.[Google Scholar]*.

Stansel, D. and Tuszynski, M. (2017). Sub-national economic freedom: a review and analysis of the literature. *Journal of Regional Analysis and Policy (Forthcoming)*.

Tuszynski, M. P. and Stansel, D. (2018). Targeted state economic development incentives and entrepreneurship. *Journal of Entrepreneurship and Public Policy*, 7(3):235–247.

Appendix

Table 4: Entrepreneurship and Economic Freedom of North America (EFNA) index

VARIABLES	Model1	Model2	Model3	Model4	Model5	Model6
ENT_lag1	0.466***	0.267***	-0.049	-0.100**	-0.168***	-0.216***
	-0.030	-0.035	-0.038	-0.040	-0.041	-0.040
EFNA	1.214***	1.455***	1.225***	0.909***	0.623**	0.368
	-0.205	-0.232	-0.254	-0.265	-0.268	-0.264
EFNA_lag1	-0.618***	-0.967***	-0.848***	-0.634**	-0.306	0.060
	-0.229	-0.265	-0.295	-0.309	-0.316	-0.311
unemp_lag1	-0.012	-0.042	-0.066	-0.013	0.076	0.181***
	-0.035	-0.041	-0.047	-0.050	-0.052	-0.051
edu_lag1	0.175**	0.025	0.227*	0.244*	0.266*	0.095
	-0.083	-0.112	-0.124	-0.132	-0.139	-0.138
GDP_pc_lag1	0.047	0.080**	0.096**	0.048	-0.005	-0.060
	-0.033	-0.039	-0.042	-0.044	-0.044	-0.044
popd_lag1	-0.042	-0.033	0.075	0.005	-0.200	-0.378*
	-0.070	-0.175	-0.192	-0.201	-0.204	-0.200
Constant	-3.764***	-2.918**	-2.305	-1.988	-2.739*	-3.969**
	-1.048	-1.271	-1.433	-1.538	-1.610	-1.593
Observations	1,000	950	900	850	800	750
R-squared	0.299	0.151	0.055	0.032	0.050	0.109
No of states	50	50	50	50	50	50

Table 7: Entrepreneurship and Labor Market Regulations

VARIABLES	Model1	Model2	Model3	Model4	Model5	Model6
ENT_lag1	0.469***	0.269***	-0.046	-0.098**	-0.169***	-0.219***
	-0.030	-0.034	-0.038	-0.040	-0.041	-0.040
regu	0.522***	1.045***	1.014***	0.835***	0.499**	-0.033
	-0.150	-0.167	-0.185	-0.194	-0.197	-0.192
regu_lag1	0.600***	0.618***	0.616***	0.615***	0.515**	0.580***
	-0.157	-0.178	-0.198	-0.205	-0.212	-0.205
unemp_lag1	-0.076**	-0.106***	-0.127***	-0.062	0.028	0.141***
	-0.030	-0.034	-0.038	-0.040	-0.042	-0.041
edu_lag1	0.187**	0.036	0.231*	0.241*	0.256*	0.094
	-0.083	-0.111	-0.122	-0.130	-0.138	-0.137
GDP_pc_lag1	0.028	0.050	0.057	0.000	-0.043	-0.094**
	-0.034	-0.041	-0.045	-0.046	-0.047	-0.046
popd_lag1	-0.048	-0.037	0.062	0.008	-0.188	-0.344*
	-0.070	-0.170	-0.187	-0.196	-0.201	-0.198
Constant	0.159	0.335	0.270	-0.087	-0.573**	-1.182***
	-0.183	-0.214	-0.245	-0.264	-0.279	-0.278
Observations	1,000	950	900	850	800	750
R-squared	0.291	0.168	0.082	0.059	0.062	0.114
No of state	50	50	50	50	50	50

Table 5: Entrepreneurship and Government Spending

VARIABLES	**Model1**	**Model2**	**Model3**	**Model4**	**Model5**	**Model6**
ENT_lag1	0.472***	0.270***	-0.048	-0.099**	-0.166***	-0.211***
	-0.030	-0.035	-0.038	-0.040	-0.041	-0.040
sog	0.577***	0.429***	0.281**	0.101	0.004	0.054
	-0.105	-0.120	-0.132	-0.136	-0.136	-0.136
sog_lag1	-0.536***	-0.491***	-0.376***	-0.252*	-0.118	-0.133
	-0.108	-0.123	-0.133	-0.140	-0.145	-0.148
unemp_lag1	-0.066*	-0.091**	-0.101**	-0.058	0.027	0.111**
	-0.035	-0.040	-0.045	-0.049	-0.053	-0.055
edu_lag1	0.210**	0.044	0.248**	0.260*	0.284**	0.108
	-0.082	-0.113	-0.125	-0.133	-0.140	-0.138
GDP_pc_lag1	0.031	0.094**	0.117***	0.076*	0.024	-0.047
	-0.034	-0.041	-0.044	-0.045	-0.045	-0.045
popd_lag1	-0.032	0.000	0.113	0.022	-0.190	-0.352*
	-0.070	-0.176	-0.194	-0.201	-0.204	-0.200
Constant	-0.088	0.710	0.750	0.873	0.159	-0.487
	-0.633	-0.731	-0.830	-0.906	-0.991	-1.029
Observations	1,000	950	900	850	800	750
R-squared	0.292	0.129	0.037	0.022	0.044	0.104
No of states	50	50	50	50	50	50

Table 6: Entrepreneurship and Taxation

VARIABLES	**Model1**	**Model2**	**Model3**	**Model4**	**Model5**	**Model6**
ENT_lag1	0.472***	0.273***	-0.041	-0.089**	-0.153***	-0.201***
	-0.031	-0.035	-0.038	-0.040	-0.040	-0.040
tax	-0.069	0.219	0.301	0.572**	0.922***	0.746***
	-0.179	-0.203	-0.253	-0.288	-0.292	-0.286
tax_lag1	0.375**	0.388*	0.501*	0.493*	0.187	0.125
	-0.187	-0.214	-0.259	-0.292	-0.294	-0.285
unemp_lag1	-0.038	-0.043	-0.062*	-0.021	0.031	0.106***
	-0.030	-0.034	-0.037	-0.039	-0.040	-0.040
edu_lag1	0.190**	0.035	0.226*	0.197	0.216	0.075
	-0.085	-0.114	-0.125	-0.131	-0.137	-0.136
GDP_pc_lag1	0.088***	0.134***	0.138***	0.082*	0.027	-0.042
	-0.033	-0.039	-0.042	-0.042	-0.042	-0.042
popd_lag1	-0.044	-0.136	-0.055	-0.146	-0.324	-0.462**
	-0.071	-0.176	-0.192	-0.198	-0.200	-0.199
Constant	-1.814**	-3.491***	-4.693***	-6.413***	-6.946***	-5.955***
	-0.840	-0.979	-1.072	-1.117	-1.155	-1.151
Observations	1,000	950	900	850	800	750
R-squared	0.272	0.125	0.050	0.055	0.082	0.128
No of state	50	50	50	50	50	50