Taxing the Dream: Demographic Disparities in Entrepreneurial Responses to State Tax Structures

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Taxing the Dream: Demographic Disparities in Entrepreneurial Responses to State Tax Changes

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Business, Economics, and Society

Abstract:

State tax structures are critical for states to support spending in schools, roads, and programs that support those in need. The way a state prevents budget deficits and grows its rainy day funds through fiscal policies impacts citizens in a myriad of ways. This research focuses on how state tax structures increase or decrease the likelihood of an individual being a new business owner in that tax environment. This topic is increasingly important as entrepreneurial activity is seen as a critical element in boosting economic growth. This study explores the relationship between the top marginal corporate and income state tax rates and entrepreneurial activity utilizing panel data from 50 states from 1996 to 2023. The study employs a limited probability model controlling for fixed effects at the year, state, and survey participant level while clustering for standard errors at the state and survey participant level. The study identified high statistical significance but a very small effect between tax structures with higher personal income tax rates and the probability of an individual being an entrepreneur. There was no statistically significant relationship between higher corporate income tax rates and the probability of an individual being a new business owner.

KEYWORDS: (Entrepreneurship, State Tax Rates)

ON MY HONOR, I HAVE NEITHER GIVEN NOR RECEIVED UNAUTHORIZED AID ON THIS THESIS

Benjamin Murphy

Signature

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Table of Contents

Contents

Introduction

During the first three years of the Biden administration, 16 million Americans filed new business applications (Buttle, 2024). This surge in entrepreneurship represents an 85% increase in the number of monthly applications to start a business relative to monthly applications between 2004 and January 2021 (Buttle, 2024). The nearly 1 in 5 adults who are in the process of forming a business or formed one in the past 3 ½ years fueled this boost in entrepreneurship (Bhattarai, 2023). Entrepreneurship is incredibly important to the Economy for a myriad of reasons. President Biden stated "Every time someone starts a new small business, it's an act of hope and confidence in our economy" (Buttle, 2024). Biden isn't alone in his characterization of entrepreneurship as a sign of a strong U.S economy. Entrepreneurship has been shown to be one the key pillars of economic growth in the United States, where young firms have led to more net job creation than incumbent firms (Haltiwanger, Jarmin, & Miranda, 2010). According to the U.S. Bureau of Labor Statistics, firms with less than 249 employees employed 46% of the workforce and accounted for 55% of total net job creation in the past ten years (U.S. Bureau of Labor Statistics, 2024). Furthermore, new firms have been shown to play a large role in influencing business cycles, creating innovation and aggregate productivity growth that raises living standards (Curtis & Decker, 2018).

To harness the benefits of entrepreneurship, governments can adopt policies to embrace elements of entrepreneurship such as competition and innovation, which have been shown to promote economic growth (Colino, Benito-Osorio, & Armengot, 2014). There are many actions a government can take to influence entrepreneurship; however, tax policy is one of the more important and highly debated topics (Curtis & Decker,

2018). Taxes are viewed as the primary tool elected officials have to promote innovation and growth (Curtis & Decker, 2018). Many states have adopted competitive tax structures to attract some of the 4.7 million American businesses that are started on average each year (Walczak, Yushkov, & Loughead, 2023). For example, Minnesota levies the highest state corporate income tax rate - a tax levied by the government on business profits – of 9.8% while South Dakota and Wyoming have no corporate income or gross receipts tax rate (Loughead, 2024a). The continued debate and wide-ranging views regarding state tax rates are reflected in the range of rates across the United States.

This research aims to expand on a limited amount of existing literature exploring the causal relationship between specific state tax rates and entrepreneurial activity. Previous studies have conflicting results regarding the substantive and statistical significance of the causal relationship between corporate income tax rats and personal income tax rates (Bruce & Deskins, 2012; Curtis & Decker, 2018). This research investigates this relationship utilizing more recent data while adding a layer of analysis leveraging demographic data and, more specifically, explores how state corporate income tax rates and personal income tax rates impact the likelihood of being an entrepreneur among specific demographic groups. Following a similar method as (Bruce & Deskins, 2012), this research uses a limited probability model with multi-way fixed effects at fixed to explore the new entrepreneurship rate. The question that this paper aims to answer is the following: How do state tax rates influence the rate of new entrepreneurship among different demographic groups in a state? By analyzing panel data on entrepreneurial activity across 50 states from 1996 to 2023 with variables such as the new entrepreneurship rate, education level, race, socioeconomic status, State unemployment

rate, median state income, state poverty rate, state population density, rate of job growth, and the share of a states adult population with a bachelors degree or higher, the question can be answered in a myriad of ways. First, we aim to understand the statistical and economic significance of corporate and income tax rates on entrepreneurship. Second, we aim to understand how these tax structures impact specific genders, races, and socioeconomic groups.

The main data set is produced from entrepreneurship data collected by UCLA Professor Robert Fairlie, compiled with microdata produced by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics (Fairlie, 2024a). The data set has a timeline from 1996 to 2023, with over 500,000 observations in each year of data. This dataset provides the opportunity to investigate the new entrepreneurship rate (the share of new entrepreneurs in a given month out of the population) among specific demographic groups separated by race, gender, family income, age, and education level (Fairlie, 2024).

The other data sets include state tax rates from the tax foundation by state ranging from to 1996-2023. The specific tax rates include corporate tax rates, income tax rates, capital gains tax rates.

The remainder of the paper is organized as follows. The “Literature Review” section explores the role this literature has in building off of previous understandings of the causal relationship between fiscal policy and entrepreneurship rates. The “Theory” section introduces the empirical model. The “Data and Methodology” section describes the data used in this literature, its limitations, and the techniques used to analyze it. The “Analysis and Results” section discusses the findings, limitations to the analysis, and

what the findings mean. The “Conclusion” section completes the literature by providing final takeaways and rendering a summary of the literature.

Historical Background

History of State Fiscal Policy

Today in America, roughly half of Americans live in states that report “short-term budget gaps, potential long-term deficits, or both” (Goodman, 2024) States maintain rainy day funds as a tool to eliminate these budget gaps and address economic downturns or emergencies without affecting their residents (*Fiscal 50: Reserves & balances.*2024). States can operate on their rainy day funds for a median of 48.1 days in 2024, an increase from 2023 (*Fiscal 50: Reserves & balances.*2024). However, the pace of growth in states' rainy day funds is slowing from 15.8% in the previous year to 5.7% in the fiscal year of 2024 (*Fiscal 50: Reserves & balances.*2024). Having a healthy rainy day fund can prevent a state's need for spending cuts or tax increases in the event of economic disasters or downturns (*Fiscal 50: Reserves & balances.*2024).

The way a State minimizes budget deficits and maintains its rainy day funds through fiscal policy impacts the lives of a state's citizens in many ways. Around 1/3 of the average U.S household taxes go to state and local governments (*State and local taxes and spending.*). State tax revenue is used to keep communities running, from repairing public schools, paying teachers, running police departments, providing low-income housing subsidies, helping seniors pay utility bills, funding healthcare, and so much more (*State and local taxes and spending.*). The way a state raises revenue to fund all of these responsibilities is a highly debated topic.

As a point of reference, the tax revenue of the state and local governments in 2018 was made up of the following categories: 34.9% from property taxes, 31.5% from sales and gross receipts taxes, 23.5% from individual income tax rates, 3.4% from corporate income tax rates, 1.9% from motor vehicle license taxes, and 4.8% from other taxes (*State and local taxes and spending.*). According to data from The Pew Charitable Trusts which compared quarterly state receipts of tax revenue to "15-year linear trend of tax collections leading up to each quarter, after adjusting for inflation and seasonality," State personal income tax revenue in quarter 3 of 2023 was 12.4% ($18 billion) lower than the 15 year trend. As of quarter 4, 2023 State corporate income tax revenue was 19% ($5.08 billion) higher than the 15 year trend (Fall & Theal, 2024).

There is a wide range of tax rates across the 44 states that levy a state corporate income tax rate in 2024. The top corporate income tax rate ranges from a 3.5% flat rate in North Carolina to a 9.8% top marginal rate in Minnesota. 12 states have a top corporate income tax rate below 5 percent: Arizona, Arkansas, Colorado, Indiana, Kentucky, Mississippi, Missouri, North Carolina, North Dakota, Oklahoma, South Carolina, and Utah. Washington, Texas, Nevada, and Ohio levy a gross receipts tax instead of a corporate income tax rate, while Oregon, Delaware, and Tennessee levy the gross receipts tax rate in addition to their corporate income tax rate. South Dakota and Wyoming are the only states that do not levy a corporate income or gross receipts tax (Loughead, 2024b).

Similar to the state-level tax structure of corporate income tax rates, state personal income tax rates range drastically across the 43 states that levy a personal income tax rate. 12 states have a single tax rate structure, while 29 states and the District of

Columbia levy a graduated-rate income tax. The top rate ranges from 2.5% in Arizona and North Dakota to 13.3% in California. It is critical to note that most US businesses do not pay federal or state corporate income tax rates because their businesses are organized as pass-through entities (Walczak, Yushkov, & Loughead, 2023). Over 95% of businesses were organized as pass-through entities in 2019, where their share of profits from their business were taxed as income under the individual income tax (*How do state and local corporate income taxes work? | Tax Policy Center.* 2024).

States have changed their tax structures to foster entrepreneurship for decades (Thomas, 2005). A survey by the Kauffman Center for Entrepreneurial Leadership in 1999 found that many states focused on lowering their tax burden by reducing rates to promote entrepreneurship (Kayne, 1999). An example of this was in 2012 and 2013 when Kansas governor Sam Brownback urged lawmakers to cut the state's top marginal income tax rate in the state by almost 30%, which Brownback predicted would be “a shot of adrenaline into the heart of the Kansas Economy.” (Mazerov, 2018)

As states face budgetary constraints and slow growth of their rainy day fund, the avenues they turn to in their tax structure to increase revenue may disproportionately impact certain groups of the population, such as entrepreneurs. This research aims to help policymakers understand how their state’s tax structure impacts the environment for entrepreneurship (Yushkov, 2024).

Literature Review

There is a growing wealth of existing literature recognizing the importance of entrepreneurship in society. Young firms have played a larger role in net job creation than incumbent firms (Decker, Haltiwanger, Jarmin, & Miranda, 2014). Acs and Szerb found that entrepreneurship is an "essential factor in the process of accelerating and sustaining economic growth" (Acs & Szerb, 2007). Furthermore, scholars have found that economies with reduced entrepreneurial activity are likely to have reduced economic growth (Carree & Thurik, 2003).

Fiscal policy related to government spending, revenue collection, budget deficits, and public debt has been found to significantly affect economic growth, macroeconomic stability, inflation, and a country's business cycles (Tanchev & Mose, 2023). Previous literature has found significant relationships between state fiscal policy in the United States and enhancing the rewards of entrepreneurship (Bruce & Deskins, 2012; Curtis & Decker, 2018). State tax structures have been altered to improve the business-friendly environment in states across the U.S., which has included cutting the capital gains tax rate, reducing the personal income tax rate, as well as the corporate income tax rate (Acs & Szerb, 2007).

There is a broad range of existing literature exploring the impact of fiscal policy on entrepreneurship. Numerous time series studies that had a focus on federal tax policies concluded that higher federal payroll and income tax rates cause higher rates of entrepreneurship (Blau, 1987; Cowling & Mitchell, 1997; Long, 1982; Parker, 1996; Robson, 1998). The theory behind these findings is that higher taxes drive workers out of paid employment into entrepreneurial ventures where they can avoid and evade taxes

(Bruce & Deskins, 2012). However, there are several other studies that have produced conflicting results (Bruce, 2000, 2002; Bruce & Mohsin, 2006a; Carroll, Holtz-Eakin, & Rosen, 2001; Gentry & Hubbard, 2000; Moore, 2004; Schuetze, 2000). Some of these studies indicated that as taxes increase, there is an ambiguous effect on entrepreneurship, while others add to a growing consensus that as tax rates increase, entrepreneurial activity decreases in terms of survival, growth, entry, investment, and hiring. Despite the findings in these studies, only a few examined state tax rates.

Several studies have explored the causal relationship between entrepreneurial activity and state tax rates. In 1979, Carlton found no strong evidence that local taxes influenced the rate of new entrepreneurs (Carlton, 1979). Bartik, in 1989, expanded this study by examining more detailed tax structures and found that personal income taxes had no statistically significant relationship with entrepreneurship (Bartik, Timothy J., 1989).

However, the lack of a causal relationship was contested by Bartik in 1991, who found that business activity was reduced in a region when state and local taxes increased (Bartik, Timothy, 1991). More than a decade later Bruce and Mohsin examined more taxes such as corporate income tax, capital gains, and estate taxes finding a statistically significant, but very small effect on entrepreneurship rates (Bruce & Mohsin, 2006b).

Georgellis and Wall, in 2000, used panel regressions to examine how changes in the maximum marginal tax rate impact state-level entrepreneurship (Georgellis & Wall, 2000). Garrett and Wall expanded on the work of Georgellis and Wall by including more specific state tax rates in their analysis, such as corporate income tax rates, finding that

higher corporate income tax rates reduce a state's rate of entrepreneurship (Garrett & Wall, 2006).

The key takeaways from these previous studies is that the statistical significance and effect of state tax rates on entrepreneurship are still inconclusive. This is what led Bruce and Deskins in 2012 to expand on this previous literature by examining a broader set of tax policies as well as utilizing numerous ways to measure entrepreneurship (Bruce & Deskins, 2012). My research is modeled off Bruce and Deskins (2012), who explore how the top marginal state corporate income tax rate, top marginal state personal income tax rate, and state sales tax rates impact a state's entrepreneurial activity measured through the percentage of "federal income tax returns filed from each state that report income from a small business or profession" and the percentage of all non-farm workers in each state that are sole proprietors (Bruce & Deskins, 2012). The time period of this study was from 1989 to 2002. Employing a 50-state panel of tax data from 1989 to 2002, they found that state tax policies generally did not have a quantitatively important effect on entrepreneurial activity (Bruce & Deskins, 2012). However, they did find that higher top marginal income tax rates tend to reduce a state's entrepreneurial activity, while corporate income and sales tax rates had no statistical significance (Bruce & Deskins, 2012). They concluded that their findings suggest that the "disincentive effects of higher tax rates (due to lower returns from entrepreneurial activity) are offset by incentive effects due to greater rewards from tax avoidance or evasion, or that both effects are individually small or insignificant" (Bruce & Deskins, 2012).

Bruce and Deskins highlight a key difficulty of many studies in this field: how to measure entrepreneurship. Studies preceding Bruce and Deskins typically utilized a self-

employment rate or firm birth rate to measure entrepreneurship (Bruce & Deskins, 2012). Bruce and Deskins measured entrepreneurship differently, focusing instead on the "percentage of federal individual income tax returns filed from each state that report income from a small business or profession" and "the percentage of all non-farm workers in each state who are sole proprietors" (Bruce & Deskins, 2012). Besides their independent variables of interest, which include corporate income tax rates, personal income tax rates, and sales tax rates, they also include other variables related to state tax policy, such as a measure for the number of tax and non-tax incentive programs offered by the state to encourage economic development. Bruce and Deskins include a dummy variable for the presence of inheritance, estate, or gift tax above the federal tax due to the theory that its presence may reduce entrepreneurial activity by reducing the size of entrepreneurial enterprises upon passage to an heir. Furthermore, they include two variables to capture homestead exceptions for bankruptcy proceedings, which may influence entrepreneurship by reducing the riskiness of entrepreneurial ventures. To measure the progressivity of a state's tax code, they include a variable that measures the change in the average personal income tax rate given a change in the median income for a family of four.

Their findings are conflicting with a more recent study conducted by Curtis and Decker in 2018, which expanded this investigation by looking at "how entrepreneurial activity responded in counties that experienced a change in their state corporate, personal, or sales tax rates relative to bordering counties whose state did not change rates" (Curtis & Decker, 2018). In contrast to Bruce and Deskins, Curtis and Decker found that entrepreneurial activity was negatively and disproportionately impacted by corporate tax

rates while not finding evidence of an effect of personal and sales tax rates (Curtis & Decker, 2018). Curtis and Decker employed a straightforward panel regression model at the county level. Tax rate variables, outcome variables such as job creation, job destruction, and employment growth, as well as log population, are measured at the county-quarter level (Curtis & Decker, 2018). Their focus on county-level data comparing counties that experienced policy changes to bordering counties did not depart from the focus of this paper's research. This research aims to understand how high tax rates impact the likelihood of being an entrepreneur rather than how a policy change impacted entrepreneurship levels across counties.

These two most recent studies, which produced conflicting results, warrant continued exploration of the causal relationship of state fiscal policy on entrepreneurial activity. With more recent data, my research will seek to answer the contested question of the statistical significance and strength of the effect of top corporate and personal income state tax rates on the likelihood of an individual starting a business. This study is modeled on the methodology and data used by Bruce and Deskins.

No study has explored the demographic disparities of entrepreneurial activity in response to state tax structures. While Bruce and Deskins, as well as Curtis and Decker, examine the relationship between state tax changes and entrepreneurial activity, they do not investigate this relationship on a more granular level through its impact on different demographic groups. The data set used in this study allows for a deep investigation into how state tax structures impact the likelihood of being a new entrepreneur depending on an individual's race, gender, socioeconomic status, and education level. This expansion of

the scope of the question explored by previous research can help guide policymakers in their understanding of how their tax structure impacts more vulnerable communities.

Theory

There is a wide range of theories regarding responses to changes in state tax structure. The overarching theory utilized by Bruce and Deskins is the push and pull of two responses to a shift in tax policy. First, raising a tax rate may reduce entrepreneurial activity by reducing its potential returns (Bruce & Deskins, 2012). However, higher tax rates may also increase the rewards for tax evasion, which could boost entrepreneurial activity. Building off the model created by Bruce and Deskins, my research further explores which of these reactions to tax changes is stronger or if these two outcomes offset each other.

My research seeks to answer the question: How do state corporate and personal income tax rates impact the likelihood of an individual becoming a new business owner? This question aims to identify two relationships: How does state fiscal policy impact entrepreneurial activity? Does state fiscal policy disproportionately impact certain groups' entrepreneurial activity?

This literature is built on three pieces of data. First, the data is utilized from a study conducted by Professor Robert Fairlie at UCLA containing entrepreneurship microdata from 1996 to 2023. Entrepreneurship is measured through the new entrepreneurship rate, which is the percentage of new entrepreneurs who created businesses (Fairlie, 2024). It is important to note that new bsuiness owners are “defined here as those individuals who worked an average of 15 or more hours per week in their businesses in the preceding month” (Fairlie, 2024). While Fairlie explores the new

entrepreneurship rate across different demographics, he does not analyze a causal relationship with any other variables. Bruce and Deskins utilize panel data from 50 states and run a multivariate regression controlling for fixed effects at the state and the year level (Bruce & Deskins, 2012).

The model used in this research paper multi-way fixed effect limited probability model controlling for fixed effects at the state year and individual participant level. The main dependent variable of interest is the binary dependent variable of being a new business owner. The main independent variables of interest include the top marginal corporate income tax rate and the top marginal personal income tax rate. The model has numerous controls to isolate the fixed effects of state fiscal policy on entrepreneurship. This model is based on the model utilized by Bruce and Deskins in their 2012 study exploring the effect of state fiscal policy on entrepreneurial activity.

We employ state expenditures per capita to "control for state and time differences in the size and scope of government services" (Bruce & Deskins, 2012). Bruce and Deskins also employ non-tax explanatory variables such as the state unemployment rate, state median income, state poverty rate, state population density, state rate of job growth, and share of the adult population with a bachelor's degree or higher (Bruce & Deskins, 2012). My research model utilizes these controls and adds additional controls, such as race, gender, education level, and family income.

However, the model in this research differs from Bruce and Deskins's in several ways. First, my time frame is from 1996 to 2023, while Bruce and Deskins investigate data from 1989 to 2002. Next, while we both utilize panel data regressions with fixed effects at the state and year level, we do not use the same variables in the model. The

main independent variables in my model include the top statutory corporate income tax rate and the top statutory personal income tax rate. The key difference with Bruce and Deskins' model is their inclusion of sales tax rates as a variable. The model in this study does not include sales tax rates as a variable because both Bruce and Deskins and Curtis and Decker have results finding no significance in state sales tax effect on entrepreneurial activity.

There are a few variables that the model in this research does not include that are present in Bruce and Deskins model. These missing variables include a measure of the number of tax and non-tax incentive programs the state offers to encourage economic development. Bruce and Deskins include a dummy variable for the presence of inheritance, estate, or gift tax above the federal tax, and they include two variables to capture homestead exceptions for bankruptcy proceedings. Lastly, they include a variable that measures the change in the average personal income tax rate given a change in the median income for a family of four.

An assumption in this research is that because each state experiences the same federal tax rates, it does not need to be included in the model. It does not provide information about the relationship between the independent and dependent variable since it does not vary in the data set among observations in a given year.

There are limitations to the empirical approach of my research that should be noted. A study by Curtis and Decker in 2018 reveals issues of endogeneity in the examination of the causal relationship of state fiscal policy on entrepreneurship (Curtis & Decker, 2018). An assumption must be made that tax rates are changed to influence the rate of business, rather than in reaction to it. However, states may change the tax rate to

benefit from a large shift in entrepreneurship within their state or they may change their tax structure to create a positive working environment for businesses. This presents an issue in our ability to believe that the coefficient estimate of how much a 1% shift in a tax rate impacts the likelihood of being an entrepreneur due to the endogeneity present in our model (Curtis & Decker, 2018).

Model: Limited Probability model with multi-way fixed effects controlling for fixed effects at state, year, and individual levels.

$$\Pr(Y = 1 | X_1 X_2) = Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \alpha_i + \varepsilon_{it \text{ or } } v_{it}$$

Table 1: Variables in Regression

Variable Code name	Meaning	Type	Role in Regression
ent015u	business owner in second survey month with 15+ hrs	Binary (dummy)	Dependent
Corp_Inc_Percent	State Corporate Income Tax Rate	Continuous	Independent Variable of Interest
State	State	Categorical	Control
Inc_Tax	State Personal Income Tax Rate	Continuous	Independent Variable of Interest
LongTermGains	Top Marginal State Capital Gains tax Rate	Continuous	Independent Variable of Interest
female	Gender	Dummy	Control
Race_Including_Hisp	Race	Categorical	Control
College_Degree	Educational attainment of a college degree or higher	Categorical	Control
Above_Pov_Line	Family Income	Categorical	Control
Age	Age	Categorical	Control
Married	Married	Dummy	Control
Born_Abroad	Born in the United States or Abroad	Dummy	Control
vet	Veteran	Dummy	Control

Unemp_Rate	State Unemployment Rate	Continuous	Control
Med_Inc	State Median Income	Continuous	Control
Pov_Rate	State Poverty Rate	Continuous	Control
Pop_State	State Population Density	Continuous	Control
Job_Growth	State Rate of Job Growth	Continuous	Control
Bach_Ed	Share of state adult population with a bachelor's degree or higher (2006-2023)	Continuous	Control
Cap_Expend	State and Local Direct General Expenditures, Per Capita	Continuous	Control

Data & Methodology

Data:

The data in my research is compiled from numerous sources. Robert Fairlie, a professor at UCLA, compiled the data containing information about individual American entrepreneurial activity across 50 states (Fairlie, 2024a). Dr. Fairlie compiled microdata produced by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics (Fairlie, 2024a). The data set has a timeline from 1996 to 2023, with over 500,000 observations in each year of data. This dataset provides the opportunity to investigate the new entrepreneurship rate (The share of new entrepreneurs in a given month out of the population) among specific demographic groups separated by race, gender, family income, age, and education level. Individuals in the data were interviewed three times in each year (Fairlie, 2024a). This research is particularly interested in the variable ent015u, which indicates that the individual surveyed is a new business owner. This entrepreneurship micro data set measures new business owners as "those individuals who

worked an average of 15 or more hours per week in their businesses in the preceding month" (Fairlie, 2024a)**.**

State fiscal policy data is compiled from the National Bureau of Economic Research and the Tax Foundation from 1997 to 2023. However, the state tax rate data set is limited by availability. This research has data on the top marginal income tax rate across 50 states from 1996 to 2023, but it only has state corporate income tax rate data from 2015 to 2023. Other tax rates, such as the top marginal personal income tax rate in each state, are present from 1996 to 2023. This research utilizes these types of state tax rates due to the continued debate on the significance and effect of state corporate and personal income tax rates in influencing entrepreneurial activity. The top statutory tax rate for each of the respective types of taxes in each state was utilized because it was the data that was readily available and most easily integrated with the micro-entrepreneurship data.

Control variables are compiled from various sources. The State unemployment rate data was taken from Iowa State University, which compiled data from the U.S. Bureau of Labor Statistics. Median household income, poverty rates, educational attainment, and state population density are compiled from the U.S. Census Bureau. State expenditures per capita were compiled from the Tax Policy Center. The Seidman Research Institute compiled the rate of job growth. These control variables are all modeled after the control variables used by Bruce and Deskins.

This data was used in an empirical study in Stata utilizing a limited probability model with multi-way fixed effects at the state, year, and individual participant level. The model also clusters standard errors for the invidious participant in the study as well as the

state level. Fixed effects are used at the state and year levels to control for differences between states that may impact the business environment for entrepreneurial activity such as political factors and regulatory environments (Bruce and Deskin, 2012). The dependent variable is whether someone is a new business owner, and the independent variables of interest include personal income tax rates and corporate income tax rates at the state level.

An important limitation to highlight is the lack of a complete data set for certain control variables used in my model. A regression utilizing all the controls in the model can only utilize 3,928,075 observations from 2015 to 2023. The data sets utilized in this study are limited by availability. Every data set was utilized due to the lack of micro data on entrepreneurship. This study faced an obstacle in terms of independent variables: a lack of state tax data readily available before 2014. This limits the accuracy of the regression and increases the variance of the regression. In total, this research utilized over 17 million observations between the time period of 1996 and 2023.

Methodology:

The model in this regression is a limited probability model with multi-way fixed effects at the state, year, and survey participants' level with clustering for the state and survey participants. A limited probability was utilized instead of a Probit or Logit model due to the need to implement multi-way fixed effects beyond a two-way fixed effect model. A limited probability model allowed for the model to have fixed effects at the year, state, and individual survey participant level.

Three versions of this regression are run. The first regression utilizes all the independent and control variables in this study. The second regression replaces the

categorical variables of age and race with dummy variables for a survey participant being White and another dummy variable for being less than 30 years old. Due to the way the initial model was coded, the coefficients of these two categories were embedded in the constant coefficient of the regression result. Creating a dummy variable for these two categories and running a separate regression allows for the specific causal effect to be observed between these categories and the likelihood of being a new business owner. Lastly, interaction variables between specific races and the different tax variables allow for the measurement of how to observe the impact of raising tax rates on specific demographic groups. The question this answers is whether different demographic groups are affected differently by tax structures.

To limit econometric issues within the model, each variable was investigated to ensure it was normally distributed and that there were no extreme outliers. All other continuous variables other than the tax variables and categorical/dummy variables had normal distributions. However, non-normal data will not affect the accuracy or bias of my coefficient estimates. For this reason, the tax variables were not manipulated to address their lack of a normal distribution.

Foundation of Model: Limited Probability model with Multi-Way Fixed Effects

$$\Pr(Y = 1| X_1 X_2)=Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \alpha_i + \varepsilon_{it} + \gamma t$$

Model 1:

The likelihood an individual is a new business owner in year t = $\beta_0 + \beta_1$*Inc_Tax $+ \beta_2$*Corp_Inc_Percent$+ \beta_3$*Female $+ \beta_4$*Race_Including_Hisp $+ \beta_5$*College_Degree $+ \beta_6$*Age $+ \beta_7$*Married $+ \beta_8$*Above_Pov_Line $+ \beta_9$*Vet $+ \beta_{10}$*Born_Abroad $+ \beta_{11}$*Unemp_Rate $+ \beta_{12}$*Med_Inc $+ \beta_{13}$*State_Pop $+ \beta_{14}$*Job_Growth $+ \beta_{15}$*Pov_Rate $+ \beta_{16}$*Bach_Ed $+ \beta_{17}$*Cap_Expend $+ \alpha_i + \varepsilon_{it} + \gamma t$

Model 2:

The likelihood an individual is a new business owner in year t = $\beta_0 + \beta_1$*Inc_Tax $+ \beta_2$*Corp_Inc_Percent+ β_3*Female $+ \beta_4$*White $+ \beta_5$*College_Degree $+ \beta_6$*Less_Than_30_Years_old $+ \beta_7$*Married $+ \beta_8$*Above_Pov_Line $+ \beta_9$*Vet $+ \beta_{10}$*Born_Abroad $+ \beta_{11}$*Unemp_Rate $+ \beta_{12}$*Med_Inc $+ \beta_{13}$*State_Pop $+ \beta_{14}$*Job_Growth $+ \beta_{15}$*Pov_Rate $+ \beta_{16}$*Bach_Ed $+ \beta_{17}$*Cap_Expend $+ \alpha_i + \varepsilon_{it} + \gamma t$

Model 3:

An individual starts a business in year t = $\beta_0 + \beta_1$*Inc_tax $+ \beta_2$*Income Tax if Black $+ \beta_3$*Income Tax if White $+ \beta_4$*Income Tax if American Indian $+ \beta_5$*Income Tax if Asian $+ \beta_6$*Income Tax if Hispanic $+ \beta_7$*Income Tax if Other Race $+ \beta_8$*Income Tax if Female $+ \beta_9$*Income Tax if Educated β_3*Female $+ \beta_4$*Race_Including_Hisp $+ \beta_5$*College_Degree $+ \beta_6$*Age $+ \beta_7$*Married $+ \beta_8$*Above_Pov_Line $+ \beta_9$*Vet $+ \beta_{10}$*Born_Abroad $+ \beta_{11}$*Unemp_Rate $+ \beta_{12}$*Med_Inc $+ \beta_{13}$*State_Pop $+ \beta_{14}$*Job_Growth $+ \beta_{15}$*Pov_Rate $+ \beta_{16}$*Bach_Ed $+ \beta_{17}$*Cap_Expend $+ \alpha_i + \varepsilon_{it} + \gamma t$

The next few paragraphs provide more details about each variable and explain why they were included in the model.

a) Main Independent Variables of Interest: The following variables allow for the measurement of how different tax rates impact the likelihood of being an entrepreneur

    a. Top Marginal Personal Income Tax Rate: This variable represents each state's top marginal personal income tax rate in a given year. This is one of the main independent variables of interest. It is continuous with a minimum and maximum of 0% and 14.1%. The average income tax rate is 5.398%, and the median is 5.82.% The standard deviation is 3.527. The

income tax rate is expressed as a percent. This variable is important because its significance and effect on entrepreneurial activity are still contested in recent studies. Utilizing this variable in the regression allows the model to see how a 1% increase in the top marginal personal income tax rate affects the likelihood of being a new business owner.

b. Top Marginal Corporate Income Tax: This variable represents each state's top marginal corporate income tax rate in a given year. This is one of the main independent variables of interest because Curtis and Decker's results regarding the strength of its effect and significance on entrepreneurial activity are contested by Bruce and Deskins's study. It is continuous with a minimum and maximum of 0% and 12%. The average income tax rate is 6.10%, and the median is 6.5%. The standard deviation is 2.955. The corporate income tax rate is expressed as a percent. Utilizing this variable in the regression allows the model to see how a 1% increase in the top marginal corporate income tax rate affects the likelihood of being a new business owner. The variable was manipulated to match the units of the other tax variables, expressing percentages as a whole number. Each observation was multiplied by 100 to express the percentage as a whole number rather than a decimal.

b) Top Marginal Capital Gains Tax: This variable represents each state's top marginal long term capital gains tax rate in a given year. This was intitially one of the main independent variables of interest. This variable was not utilized in the model this research uses by Bruce and Deskins. This variable

was readily available in the data set utilized in this study. It is continuous with a minimum and maximum of 0% and 14.1%. The average capital gains tax rate is 5.23%, and the median is 5.25%. The standard deviation is 3.47%. The summary statistics of this variable are very similar to the personal income tax rate average and median. This is because many states tax capital gains at the same rate as personal income. This becomes a problem because it highly correlates with the personal income tax rate. Due to the high correlation between these two variables, long term capital gains was removed from the model. The capital gains income tax rate is expressed as a percent.

c) Demographic Variables: These variables below allow for the measurement of how changes in tax structure impact specific demographic groups. These variables also allow for the exploration of which groups are more likely to be entrepreneurs.

    a. Race/Identifies as White: This is a categorical variable used to control for racial differences in the impact of a state's tax structure on the likelihood of being an entrepreneur. This variable was aggregated heavily to allow for meaningful categories to be created. There were 26 categories of race in the data set. To simplify this, the data was coded to create a new race variable with six core categories: White, Black, Asian and Pacific Islander, American Indian, Hispanic, and “other races”. This choice was justified as only 273,278 observations out of 17,364,642 were identified as other races. An individual is put in this category if they select more than once racial background. Furthermore, based on the way the Census

collects demographic data, Hispanic was a separate dummy variable in the data set that was recoded into the categorical variable of Race. These variables also play an important role in understanding how an individual's race impacts their likelihood of being a new business owner. Furthermore, interaction variables between race and the different tax rates allow for measuring how a 1% increase in a tax rate influences increases or decreases the likelihood of being a new business owner if you are part of a specific racial group.

b. Female: This dummy variable is recorded in each observation as 1 if the survey participants identified as a woman. This variable helps measure if women are more or less likely generally to be new business owners. However, it also serves the purpose of understanding how changes in tax structures specifically impact women's likelihood of being new business owners. Considering this a dummy variable, the minimum, and maximum are zero and one. The median is 1, and the mean is 0.518, meaning that the majority of survey participants are women.

c. College Graduate: The data set contained detailed information about each survey participants educational attainment. The 17 categories ranged from having a less than first-grade education to a doctorate degree. To create a more meaningful understanding of how tax structures impact the population, these categories were aggregated into a dummy variable where 1 means the survey participant graduated from college. The creation of this dummy variable helps measure how education generally impacts an

individual's likelihood of being an entrepreneur. The median and mean are 0 and 0.40, respectively, meaning that the majority of those surveyed do not have a college degree. A college degree is defined as an associated degree and above. The standard deviation is 0.491.

d. Age: Age in this model is not a continuous variable. Instead, age is divided into numerous categories of participants in their 20s, 30s, 40s, 50s, and 60s. This reflects the range of ages from 20 to 64 years old. Each category is a range of 10 years. The median is 3, which is the category for survey participants in their 40s. The mean is 2.78, and the standard deviation is 1.26. Age as a categorical variable helps measure how different age groups differ in their likelihood of being entrepreneurs.

e. Married: This dummy variable is measured as a 1 if a participant is married. The median is 1, and the mean is 0.59 meaning the majority of survey participants are married. The standard deviation is 0.49. This is an example of a variable that was readily available in the data set utilized in this research. It can provide more information about how different demographics are impacted by tax rate changes, as well as how being married influences the likelihood of being an entrepreneur.

f. Income Above Poverty Line: Income above the poverty line is a dummy variable created to understand how poverty impacts the likelihood of being an entrepreneur. Initially, the data set had the income level of individuals organized as a categorical variable. However, the granular level of each category was not useful in understanding how high and low

socioeconomic status impacts the likelihood of being an entrepreneur. The categories were aggregated to provide a more meaningful measurement of how poverty impacts entrepreneurship. The mean and median are 0.69 and 1 respectively. This indicates that the majority of individuals in this study are above the poverty line. The standard deviation is 0.458. The poverty line used to separate those who are above and those that are below is $30,000 which is the 2023 poverty line for a family of 4.

g. Veteran: This is a dummy variable where a measured 1 indicates an individual is a veteran. Most individuals surveyed were not veterans, which can be seen in a mean and median of 0.075 and 0, respectively. The standard deviation of this variable is 0.264. This variable adds to the wealth of demographic data that helps understand which demographic groups are more likely to be entrepreneurs and who is impacted by changes in the tax structure.

h. Born Abroad: This dummy variable measures those who were born outside the United States. The mean and median are 0.148 and 0, respectively, meaning the majority of individuals are born in the United States. The standard deviation This variable can help us understand how different cultural backgrounds may influence entrepreneurial activity.

d) Control Variables: These control variables are all used in a previous model by Bruce and Deskins to isolate the causal effect of state tax structures on the likelihood of becoming a new business owner. (Bruce & Deskins, 2012)

e) State Unemployment Rate: State unemployment rate measured as a percent was included in the model to control for the way unemployment may affect entrepreneurial activity in a given year. The variable is continuous. The median and mean unemployment rate is 5.1% and 5.517% respectively. The minimum unemployment rate was 1.9% and the maximum was 13.7%. The high unemployment rates can be credited to economic crises such as the great recession and the pandemic. Lastly the standard deviation is 1.98654.

f) Median State Income: Median state income is a continuous variable measured in US dollars. The median U.S income is $50,015 and the mean is $53,411. The minimum income is 25,086 and the maximum income is 113,000. The standard deviation is 15,175. Median state income is important because it contributes to higher-income populations, which may have more resources and subsequently, a higher likelihood of starting a business.

g) State Population: This is a continuous variable measured in thousands. The range is from 479,602 to 39,503,200. The median state population is 6,075,411 and the mean is 10,093,170. The standard deviation is 10,406,450. States with more people may have more entrepreneurs and this helps further isolate the effect of state tax rates.

h) State Job Growth: This continuous variable is measured as a percent. States with higher job growth may have more or less entrepreneurs than those with less job growth. This variable is included in the model to control for state-level economic growth. The minimum and maximum are -22.72% and 16.96%. This wide range of growth and decline is defined by the Great

Recession as well as the pandemic. The mean and median job growth rates are 0.976% and 1.28%, respectively. The standard deviation is 2.42.

i) State Poverty Rate: The state poverty rate is a continuous control variable measured as a percent. The variable ranges from 3.7% to 25.5%. The median and mean are 12.3% and 12.5% respectively. The standard deviation is 3.150677.

j) Percent of state population with a bachelor's degree: This continuous variable measures the percentage of a state population with a bachelors degree or higher. The range is from 16.5% to 65.9%, with a median and mean of 30 and 30.6, respectively.

k) State capital expenditure per capita: This continuous variable measures the dollar amount of state expenditures per capita to control for states that may have more resources than others. The range is from $4614 to $26,644. The mean and median are $8,594 and $8,139 respectively. The standard deviation is $2,229

l) Fixed Effects: This model utilizes fixed effects due to the panel data that is utilized containing data from 50 different states from 1996 to 2023. Utilizing fixed effects helps capture unobserved time-invariant factors that distinguish Nevada from Washington and one individual from another. This model utilizes multi-way fixed effects, which are only possible with the limited probability model.

    a. Year: Fixed effects at the year level are necessary because the model potentially pools the data and treats each observation as an individual

observation. The year ranges from 1996 to 2023. Fixed effects at the year level help capture the economic recessions, changes in federal policies and regulations, natural disasters, and technological advancements in a year. The fixed effects ensure that these national-level dynamics don't bias the results.

b. State: There are 50 states and Washington DC included in the data. Fixed effects at the state level account for unobserved time-invariant factors that distinguish

different states form each other. An example is the presence of Silicon Valley in California that other states do not have. Other variables include political atmosphere, cultural attitudes, or having more business-friendly policies.

c. Survey Participant: Fixed effects for the survey participant are present in this model because, in one year, a survey participant is interviewed three times. The model needs to account for the unobserved differences between individuals.

m) Clustering: This model clusters standard errors to account for potential correlation in error terms within clusters.

a. Survey Participant: Each participant is interviewed 3 times in a year. To ensure the model accounts for the structure of the data, we cluster the standard errors of the survey participant to prevent the standard errors from being calculated as though those three observations per participant were three independent observations.

b. State: Clustering at the state level captures the potential that all individuals in a state may respond similarly to state tax policies, macroeconomic conditions, or regulatory environments. Observations within a state may not be independent due to shared economic conditions, demographics, and cultural factors.

All of these variables play a role in isolating the causal relationship between tax rates and the likelihood of starting a business. However, Curtis and Decker outline severe limitations to this model's structure. First, entrepreneurs consider many factors when starting a business. It is difficult to control the many things they consider before creating a business. Furthermore, state may alter tax rates in their state to benefit from already high entrepreneurship. This means that it could be that high entrepreneurship may lead to higher tax rates. This presents a high likelihood of endogeneity that this model cannot account for. When interpreting the coefficients, it is important to understand the potential endogeneity present.

Analysis and Results

From the variables discussed in the methodology and theory section, numerous regressions can be run through the Stata platform. These results provide a new understanding of how tax rates influence the likelihood of starting a business and the likelihood of different demographic groups in being new business owners. The regression results can be found in the appendix. The following paragraphs will focus on answering the question posed by this research through the regression results. These results assume heteroskedasticity and control for this with robust standard errors.

Personal Income Tax Rates:

One of the main questions this research aims to answer is understanding the significance and effect of personal income tax rates on entrepreneurial activity. As discussed in the literature review and theory section of this paper, this relationship is contested in previous studies (Bruce & Deskins, 2012; Curtis & Decker, 2018). The results of this model find that there is high statistical significance in the variable of the top marginal personal income tax rates. The regression was run with robust standard errors to control for heteroskedasticity. When interpreting the coefficient, for every percent an individual's income is taxed through the top marginal tax rate, it leads to an expected increase in the likelihood of an individual being a new entrepreneur by 0.000422 percentage points. Even with the inflated standard errors due to the use of this technique, personal income tax rates have high levels of significance. This finding is surprising as it contests both of the preceding studies conducted that this research was modeled after (Bruce & Deskins, 2012; Curtis & Decker, 2018). Bruce and Deskins found a statistically significant effect that higher personal income tax rates decrease the likelihood of being an entrepreneur in a quantitatively unimportant way (Bruce & Deskins, 2012). Curtis and Decker found a statistically insignificant relationship between personal income tax rates and entrepreneurial activity (Curtis & Decker, 2018). The finding in this research agrees with the statistical significance that Bruce and Deskins measured but disagrees with the sign of the relationship as they found a negative relationship while this research identified a positive relationship. This finding also contests with Curtis and Decker's results that found no statistical significance in their model.

There is only one model with no statistically significant relationship between personal income tax and entrepreneurial activity. In the third model, interaction terms are used to simulate for how the impact of income tax rates on the likelihood of being an entrepreneur depends on race. Interaction terms were utilized for all 6 race variables, the female dummy variable, the college-educated dummy variable, and the poverty line dummy variable. The regression results show no statistical or substantive significance between any of the interaction terms and the likelihood of being an entrepreneur. Furthermore, personal income tax rates as a variable lose all statistical significance. While there is no statistical significance for any of the interaction terms, it indicates that different races, genders, and socioeconomic statuses are not disproportionally affected in their likelihood of being new business owners by the presence and tax rate of personal income tax rates. Interaction terms were only used for personal income tax rates because it was the only statistically significant independent variable of interest.

The statistical significance of personal income tax rates becomes more logical when more than 95% of U.S. businesses are taxed through the personal income tax rate. However, the positive relationship between personal income tax rates and the likelihood of starting a new business is surprising. First, this may point to how potential entrepreneurs ignore personal income tax rates due to the lack of substantive significance in the .000422 percentage point increase in the likelihood of being a new business owner holding all other variables constant. It is also interesting to measure a result where personal income tax rates are higher, meaning entrepreneurs pay a higher tax rate, the likelihood of someone becoming an entrepreneur increases. This result points to the theory examined by Bruce and Deskins as well as Curtis and Decker that hypothesize a

push and pull between two responses to a personal income tax change. Entrepreneurs may be disincentivized to start a business as higher tax rates lower their returns. However, tax avoidance incentives through entrepreneurship may offset this effect as tax rates increase. Based on the results of this regression, the theory that higher tax rates incentivize entrepreneurship due to their ability to avoid more taxes appears to offset the effect of less entrepreneurship due to lower returns. Furthermore, the tax variables in this study are the top marginal rate, which may not impact the observed population, considering over 30% of participants are below the poverty line.

Overall, a statistically significant but substantively insignificant relationship exists between personal income tax rates and the likelihood of being an entrepreneur.

Corporate Income Tax Rates:

Corporate income tax rates have no statistically or economically significant relationship with the likelihood of being a new business owner. In all three models, there is no statistical significance. The tax structure of the majority of businesses in the United States may add clarity to these results. As mentioned in the paragraph above and the historical background section of this paper, the vast majority of businesses do not pay corporate income taxes. If corporate income tax rates do not impact most businesses, then it is logical that these tax rates would not influence their entrepreneurial ventures. Even if there was statistical significance, for every percent corporate income is taxed, the likelihood of an individual being a new entrepreneur increases by 0.0003 percentage points when holding all other variables constant. This is an incredibly low effect.

The results of this regression contest the results of Curtis and Decker, who found a statistically significant relationship between corporate income tax rates and

entrepreneurial activity. However, the lack of statistical significance in this regression confirms the findings of Bruce and Deskins.

Demographic Disparities in Responses to State Tax Structure:

The second question this research aims to understand is how different demographic groups' entrepreneurial activity is impacted by state tax structures as well as how being part of different demographic groups impacts the likelihood of being an entrepreneur. The interaction variables discussed in the results section for personal income tax rates reveal no statistically significant demographic disparities in entrepreneurial responses to state tax structures. However, statistically significant relationships exist between being part of a specific demographic group and their likelihood of being a new business owner. The following paragraphs outline the relationship between specific demographic groups and their likelihood of being new business owners.

One variable in this research is female. It had high statistical significance in the first and second models, with low levels of statistical significance at the 90% confidence interval in the third model. If an individual identifies as a woman, their likelihood of being a new business owner decreases by 0.00452 percentage points, holding other variables constant. There is low economic significance, as the effect is interestingly very small. What this reveals is that women may experience more barriers to becoming entrepreneurs.

In terms of age groups, the regression results found a statistically significant relationship between 40 to 50 years old and 50 to 60 years old at 95% and 90% confidence intervals, respectively. Being between 40 and 50 years old decreases the

likelihood of being a new business owner by 0.00137 percentage points, holding other variables constant. Being between 50 and 60 years old decreases the likelihood of being an entrepreneur by 0.00142 percentage points. These coefficients do not have economic significance.

Out of all the race categories, only one had statistically significant results. Identifying as Black, White, Hispanic, Native American, and Pacific Islander did not have a statistically significant relationship with an increased or decreased likelihood of being a new business owner. Those who identified as an Other Race had a statistically significant 0.00295 percentage point increase in their likelihood of being a new business owner. The statistical significance of these results is at a 90% confidence interval. These results do not have economic significance due to the size of their effect. Interestingly, a positive relationship exists between identifying as another race and the likelihood of being a new business owner. In the 3rd model, other races was also statistically significant at a 90% confidence interval. Interpreting the coefficient finds that identifying as another race increases the likelihood of being a new business owner by 0.00390 percentage points. This is also not economically significant because the effect of the coefficient is so low.

A category of interest in this research is exploring how socioeconomic status impacts the likelihood of being a business owner. As explained above, the dummy variable for this category splits the observations into below the poverty line for a family of 4 which is $30,000 per year of total family income and above the poverty line. The regression results found a statistically significant result at the 95% confidence level for socioeconomic status. The results find that if an individual has family income above

$30,000, they decrease their likelihood of being an entrepreneur by .000593 percentage points. This coefficient is not economically significant as its effect is low.

Certain control variables have statistical significance in their effect on the likelihood of being an entrepreneur. These include the State unemployment rate, job growth in a state, and state population. In all three models, the state unemployment rate was highly statistically significant at a 99% confidence level, finding that for a 1 percent increase in the unemployment rate in a state, the likelihood of an individual in that state being a new business owner decreases by .000235 percentage points.

State population was not statistically significant in model 1, but was significant in models 2 and 3. It is significant at the 90% confidence level with a coefficient of 1.71e-06, meaning that when the state population increases by 1,000 people, the likelihood that an individual in that state becomes a new business owner increases by 1.71e-06 percentage points. This is not economically significant as the coefficient is minimal.

The job growth variable was statistically significant at the 95% confidence level in all three regression models. An increase of 1% in a state's job growth is expected to decrease the likelihood of being an entrepreneur by -5.53e-05 percentage points. While this may be statistically significant, it lacks economic significance as the effect is small enough that a large shift in the job growth rate in a state would not have a large impact on the likelihood of being an entrepreneur.

The constant had a low level of statistical significance in the first and second models at a 90% confidence interval and a 95% confidence interval in the third model. When all independent variables are equal to zero, the likelihood of being a new business owner decreases by -0.0194 percentage points. In the third model, the likelihood of being

a business owner decreases by -.0210. More specifically, in the 1st and main model of this research, this is the coefficient when corporate and personal income tax is equal to zero, the participant is white, male, 20 to 20 years old, not married, income below the poverty line, not a veteran, no college degree, born in the United States, living in a state with an unemployment rate of 0, median income of 0, state poverty rate of 0, state population of 0, job growth of 0, no people with a bachelors degree in the state, and $0 in state expenditures per capita. The utility of this constant in understanding the relationship between state tax structure and entrepreneurial activity is limited due to the number of variables incorporated in the constant. This is a key reason why numerous regressions were run to pull specific coefficients out of the constant.

Overall, there is a statistically significant relationship between the likelihood of being a new business owner and identifying as female, identifying as an other race category, being 40 to 50 years old, being 50 to 60 years old, as well being above the poverty line impacts the likelihood of being a new business owner.

Conclusion

This study's goal was to measure the relationship between state tax structures and entrepreneurial activity. More specifically, it aimed to understand how top marginal corporate and personal income tax rates impact the likelihood of being a new business owner generally and in specific demographic groups. It successfully identified a statistically significant but weak relationship between personal income tax rates and the likelihood of being a business owner while finding no statistical significance for corporate income tax rates impacting the likelihood of being a business owner. In terms of effects on demographic groups, no statistically significant disparities were identified in

how corporate and personal income tax rates impact the likelihood of being an entrepreneur among different demographic groups. However, a weak negative relationship was found between identifying as a woman and the likelihood of being a new business owner, a weak positive relationship was identified between identifying as "other race" and their likelihood of being a new business owner, and a weak positive relationship was identified between being in two age categories, 40 to 50 and 50 to 60 and their likelihood of being an entrepreneur.

These results have a few key takeaways. First, it is clear that personal income tax rates and corporate income tax rates do not strongly affect the decision to start a business and become an entrepreneur. This also indicates that cutting state tax rates to spark entrepreneurship may not lead to more business formation. Policymakers should consider other methods and policies to incentivize entrepreneurship beyond changing corporate and personal income tax rates.

Next, no demographic disparities were identified by the regression results regarding the effects of corporate and personal income tax rates on the likelihood of being a new entrepreneur. This demonstrates how top marginal corporate and personal income tax rate changes do not disproportionately affect specific demographic groups.

Lastly, the study identified relationships between specific demographic groups and the likelihood of being a "new business owner." While small in their effect, these relationships point to potential barriers women may face in becoming entrepreneurs. Furthermore, the increased likelihood of being an entrepreneur in 40 to 50 year olds, 50-60 year olds and those that identify as other race warrant further investigation.

This study could be improved in multiple ways. First, more control variables could further isolate the effect of state tax structure on entrepreneurial activity. An example would be a variable accounting for the regulatory environment in each state. It could be that higher tax rates are correlated with more regulations. I was unable to create or locate this variable.

The model's endogeneity issue needs to be addressed in future research. An instrumental variable that impacts tax rates but not entrepreneurial activity could help solve this. However, at the moment, policymakers could change state tax rates to benefit from a boom in entrepreneurship rather than to encourage it.

A principal finding of this study is that people ignore state tax structures when considering starting a business. If other independent variables that may influence entrepreneurship, such as the regulatory framework of states, can be identified, it is highly valuable to continue to explore the ways policymakers and state governments can continue to incentivize entrepreneurship.

Another element of the study that could be shifted is the tax variables. This study utilized the top marginal corporate and personal income tax rates as the independent variables of interest. However, it may be that the lowest tax bracket in a state tax structure influences entrepreneurial activity more than the top marginal tax rates.

Although there is a lack of economic signficance to demonstrate differences in how various demographic groups respond to top marginal corproate and personal income tax rates, this study represents a pioneering effort in examining this relationship.

In summary, the study suggests that state lawmakers should consider other approaches to increasing entrepreneurial activity besides altering the top marginal personal and corporate income tax rate. While no statistically significant results identified disparities in demographic group entrepreneurial responses to state tax infrastructure changes, this is the first study of its kind to explore this relationship. The findings suggest that state policymakers seeking to promote entrepreneurial activity should prioritize strategies beyond modifying top marginal personal and corporate income tax rates.

Appendices:

Table 2: Summary Statistics

Variable	Median	Mean	Min	Max	Standard Deviation	Observations
Personal Income Tax Rates	5.82	5.399	0	14.1	3.527991	17,364,642
Corporate Income Tax Rates	6.5	6.104	0	12	2.955465	4,904,502
Long Term Capital Gains	5.25	5.234	0	14.1	3.477592	17,364,642
Female	1	0.519	0	1	0.4996564	17,364,642
Race	1	2.643	1	6	1.890188	17,364,642
College Degree	0	0.406	0	1	0.4910585	17,364,642
Age	3	2.784	1	5	1.265354	17,364,642
Married	1	0.594	0	1	0.4911737	17,364,642
Family Income Above Poverty Line for Family of 4	1	0.699	0	1	0.458592	17,364,642
Veteran	0	0.075	0	1	0.2648024	17,284,475
Born Outside the United States	0	0.149	0	1	0.3558636	17,364,642
State Unemployment Rate	5.1	5.517	1.9	13.7	1.986546	17,364,642
State Median Income	50015	53411.520	25086	113000	15175.4	17,364,642
State Poverty Rate	12.3	12.502	3.7	25.5	3.150677	17,364,642
State Population	6075.411	10093.170	479.602	39503.2	10406.45	17,364,642
State annual Job Growth	1.28	0.976	-22.72	16.96	2.424253	17,364,642
Percent of state population with bachelors degree	30	30.603	16.5	65.9	6.109404	10,937,766
State capital expenditure per capita	8139	8594.640	4614	26644	2229.104	11,703,270

Table 3: Regression 1 Results

Variables	Regression Coefficients	Standard Errors
Observations = 3,928,075	--	--
R-squared = 0.37	--	--
N = 3,928,000	--	--
Top Marginal Personal Income Tax Rate	0.000422***	-0.000121
Top Marginal Corporate Income Tax	0.000304	-0.000211
Female Gender Identity	-0.00452***	-9.33E-04
Identifies as Black	0.00295	-0.00198
Identifies as American Indian, Aleut, Eskimo	-0.00477	-0.00381
Identifies as Asian or Pacific Islander	-0.0022	-0.00212
Identifies as Hispanic	0.000488	-0.00128
Identifies as Other Races	0.00295*	-0.00171
Has a College Degree	-0.000412	-0.000353
30 to 40 years old	0.000573	-0.000528
40 to 50 years old	0.00137**	-0.000665
50 to 60 years old	0.00142*	-0.000742
Over 60 years old	0.000684	-0.000785
Married	-9.85E-05	-0.000481
Income Above Poverty Line	-0.000593**	-0.000269
Veteran	0.000932	-0.00174
Born Outside the United States	-0.00078	-0.00163
State Unemployment Rate	-0.000235***	-7.18E-05
State Median Income (US Dollars)	4.37E-09	-1.48E-08
State Poverty Rate	1.07E-05	-5.12E-05
State Population (in thousands)	1.70e-06*	-9.12E-07
Job Growth in State	-5.53e-05**	-2.48E-05
Percent of State with a Bachelor's Degree or Higher	0.000106	-8.75E-05
State Capital Expenditure per Capita	-3.20E-09	-7.01E-08
Constant	-0.0201*	-1.02E-02
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1		

Table 4: Regression 2 Results

Variable	Regression Coefficients	Standard Errors
Observations = 3,928,075	--	--
R-squared = 0.37	--	--
N = 3.93E+06	--	--
Top Marginal Personal Income Tax Rate	0.000421***	-0.000122
Top Marginal Corporate Income Tax	0.000305	-0.000211
Female Gender Identity	-0.00448***	-0.000938
White	0.000521	-0.000978
Has a College Degree	-0.000422	-0.000354
20 to 30 years old	-0.000653	-0.000527
Married	-0.000111	-0.000483
Income Above Poverty Line	-0.000593**	-0.000269
Veteran	0.00103	-0.00174
Born Outside the United States	-0.000881	-0.00164
State Unemployment Rate	-0.000235***	-7.18E-05
State Median Income (US Dollars)	4.36E-09	-1.48E-08
State Poverty Rate	1.08E-05	-5.13E-05
State Population (in thosuands)	1.71e-06*	-9.10E-07
Job Growth in State	-5.50e-05**	-2.49E-05
Percent of State with a Bachelors Degree or Higher	0.000106	-8.69E-05
State Capital Expenditure per Capita	-2.76E-09	-7.02E-08
Constant	-0.0194*	(-0.0105)
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1		

Table 5: Regression 3 Results

VARIABLES	Regression Coefficients	Standard Errors
Observations = 3,928,075	--	--
R-squared = 0.37	--	--
N = 3,928,000	--	--
Inc_Tax	0.000414	-0.00025
Top Marginal Personal Income Tax Rate if Black	5.27E-05	-0.000252
Top Marginal Personal Income Tax Rate if White	0.000182	-0.000186
Top Marginal Personal Income Tax Rate if Native American	0.00024	-0.00136
Top Marginal Personal Income Tax Rate if Asian or Pacific Islander	-8.55E-05	-0.00044
Top Marginal Personal Income Tax Rate if Hispanic	-1.68E-05	-0.000252
Top Marginal Personal Income Tax Rate if Female	-0.000267	-0.000263
Top Marginal Personal Income Tax Rate if College Educated	9.43E-05	-8.02E-05
Top Marginal Corporate Income tax Rate	0.0003	-0.000211
Top Marginal Income Tax Rate if Other Race	-.0003709	.0004669
Top Marginal Income Tax Rate if Above Poverty Line	-.000058	.0000546
Female Gender Identity	-0.00315*	-1.63E-03
Identifies as Black	0.00365	-0.00239
Identifies as American Indian, Aleut, Eskimo	-0.00503	-0.00703
Identifies as Asian or Pacific Islander	-0.000588	-0.00392
Identifies as Hispanic	0.00161	-0.00174
Identifies as Other Races	0.00390*	-0.00209
Has a College Degree	-0.000918*	-0.000526
30 to 40 years old	0.00057	-0.000527
40 to 50 years old	0.00137**	-0.000663
50 to 60 years old	0.00141*	-0.000741
Over 60 years old	0.000679	-0.000785
Married	-9.34E-05	-0.000481
Income Above Poverty Line	-0.000593**	-0.00027
Veteran	0.00095	-0.00174
Born Outside the United States	-0.000811	-0.00164
State Unemployment Rate	-0.000235***	-7.12E-05
State Median Income (US Dollars)	4.34E-09	-1.48E-08
State Poverty Rate	1.16E-05	-5.12E-05
State Population (in thosuands)	1.71e-06*	-9.14E-07
Job Growth in State	-5.51e-05**	-2.45E-05
Percent of State with a Bachelors Degree or Higher	0.000104	-8.74E-05
State Capital Expenditure per Capita	-3.80E-09	-7.01E-08
Constant	-0.0210**	-1.03E-02
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1		

Table 6: Correlation Table of Independent Variables of Interest

Variable	Top Marginal Personal Income Tax Rate	Top Marginal Long-Term Capital Gains Tax Rate	Top Marginal Corporate Income Tax Rate
Top Marginal Personal Income Tax Rate	1		
Top Marginal Long-Term Capital Gains Tax Rate	**0.969**	1	
Top Marginal Corporate Income Tax Rate	0.5912	0.5894	1

Table 7: Correlation Table of Control Variables

Variable	State Unemployment Rate	State Median Income	State Poverty Rate	State Job Growth	State Population	Percent of State Population with Bachelors Degree	State Capital Expenditure per Capita
State Unemployment Rate	1						
State Median Income	-0.3001	1					
State Poverty Rate	0.4498	-0.6281	1				
State Job Growth	-0.4217	0.0438	0.0022	1			
State Population	0.227	0.1028	0.233	0.0805	1		
Percent of State Population with Bachelors Degree	-0.1727	0.774	-0.5664	0.0679	0.1466	1	
State Capital Expenditure per Capita	-0.0246	0.5159	-0.2257	-0.0566	0.1312	0.4437	1

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