Passive Policies for Entrepreneurs

Thomas A. Garrett
Howard J. Wall
Federal Reserve Bank of St. Louis
October 2005

Passive Policies for Entrepreneurs

Thomas A. Garrett
Research Officer and Economist
Federal Reserve Bank of St. Louis

Howard J. Wall
Assistant Vice President and Economist
Federal Reserve Bank of St. Louis

Thomas A. Garrett, a research officer in the Research Division of the Bank, received his doctoral and master's degrees in economics from West Virginia University in Morgantown, W.Va., in 1998 and 1997, respectively. He received his bachelor's degree in business administration from Shippensburg University of Pennsylvania in 1993. Before coming to the St. Louis Fed, he was an assistant professor in the Department of Agricultural Economics at Kansas State University. His research interests include state and local public finance and public choice, state lotteries and casino gambling, and spatial econometrics.

Howard J. Wall is an assistant vice president and the director of the Center for Regional Economics—8th District (CRE8). He received his doctoral degree from the State University of New York at Buffalo in 1989 and his bachelor's degree from the State University of New York at Binghamton in 1984. He joined the St. Louis Fed in 1998, having previously worked in the economics departments at West Virginia University and Birkbeck College, University of London. Wall was a Fulbright scholar in Uruguay and a visiting scholar at the Bank of Japan. He has taught courses for the Bank of England, HM Treasury and the Royal College of Defence Studies.

Table of Contents

Abstract

Entrepreneurial activity is vital for economic growth. Policy-makers and community development leaders recognize this fact and often pursue various active policies to encourage entrepreneurship and small business. These active government policies often involve tax breaks, subsidies or other incentives to entice particular businesses to locate in a certain area. We argue in this report, however, that passive policies can achieve much greater gains in entrepreneurship. Passive policies require little or no direct government intervention into the entrepreneurial process and instead promote an entrepreneur-friendly policy environment. Such policies include general reductions in regulation and taxes rather than targeted regulations or tax breaks. We show that these passive policies have an economically and statistically significant effect on rates of entrepreneurship across U.S. states.

The report is organized into several sections. The first section stresses the importance of entrepreneurship for economic growth and argues that, because entrepreneurial success is derived from individuals' entrepreneurial spirit, government policy should be minimally intrusive into the decisions of entrepreneurs. Section 2 of the report discusses in detail the roles of several passive policies in encouraging entrepreneurship. The third section consists of an empirical analysis that provides evidence on the importance of passive government policies on rates of entrepreneurship across U.S. states. In section 4 of the report, we use estimates from our empirical model to provide a comparison of the effects of passive policies on entrepreneurship in states of the Eighth Federal Reserve District. We show that small differences in passive policies across these states result in significant differences in entrepreneurship. The states are Missouri, Illinois, Indiana, Kentucky, Mississippi, Tennessee and Arkansas.

I. Introduction

Entrepreneurship is a catalyst for economic growth. Through innovation, hard work and a willingness to accept financial risk, the entrepreneur takes advantage of previously undiscovered opportunities for arbitrage and profit.[1] This quest for profit and the possibility of personal and financial failure ensure that an economy's resources are used efficiently. Successful entrepreneurs provide employment opportunities to others, generate innovation and spur economic growth. Given these benefits generated by entrepreneurship, this report explores the factors that influence entrepreneurship and the conditions under which it prospers. As will be seen, a general policy environment that is entrepreneur-friendly can contribute greatly to entrepreneurship. Differences in the rate of entrepreneurship across the United States can be explained, in part, by the presence of entrepreneur-friendly policies.[2]

Entrepreneurial Spirit in the United States

There is little doubt that the favorable view of entrepreneurship in the United States relative to other countries has contributed to this country's remarkable growth over its relatively short history. Several studies have found that while economic and institutional factors are important in explaining some of the difference in rates of entrepreneurship across countries, a large component of cross-country differences cannot be explained by these factors. This unexplained difference in entrepreneurship, commonly referred to as "entrepreneurial spirit," is attributed to a set of attitudes and beliefs that are independent of economics or institutions.[3]

The results of several studies confirm the relatively high degree of entrepreneurial spirit in the United States. For example, one recent study reveals that while more than 70 percent of Americans would prefer being an entrepreneur rather than working for someone else, only 46 percent of adults in Western Europe and 58 percent of adults in Canada felt the same way.[4] Not only do Americans favor entrepreneurship, but they are also more likely to pursue entrepreneurial activities. One study provides cross-country evidence on entrepreneurial activity for 2002, finding that entrepreneurial activity in the United States is in the top third of the 36 countries studied and that the United States is the entrepreneurial leader when compared to Western Europe, Japan and Canada.[5]

Active vs. Passive Policies to Foster Entrepreneurship

Given the importance of entrepreneurship toward fostering economic growth and the high degree of entrepreneurial spirit in the United States, appropriate government policies must be in place to allow entrepreneurship to thrive. Any discussion of the role of government in the entrepreneurial process must recognize the relative abundance of entrepreneurial spirit in the United States.

When devising policies, governments can implement policies that are either passive or active toward entrepreneurship. Passive policies reduce the transactions costs of running a business, regardless of whether this business can be classified as entrepreneurial or not. These are practical policies because it is impossible for any government or development leaders to know which businesses are or are not entrepreneurial.

Active policies, on the other hand, consist of targeted tax breaks, subsidies and so forth that move resources into particular business activities. These policies require direct intervention by state and local governments into the entrepreneurial process. Given the entrepreneurial energy in the United States, we argue that active policies do relatively

little to foster entrepreneurship. The focus of government and economic development officials should be to ensure that the proper passive policies exist to allow the entrepreneurial spirit to thrive. Entrepreneurship cannot be planned or managed centrally, as is the presumption with the enactment of active policies. Rather, basic institutions should be in place to facilitate business transactions, along with minimal interference in the actual operation of businesses. Unnecessary costs, be they regulatory or financial, can hinder the entrepreneurial spirit in the United States.

II. Passive Policies to Encourage Entrepreneurship

A particular advantage of passive policies is that entrepreneurs themselves pick the most promising areas of innovation to pursue. In contrast, active policies involve the efforts of government officials to select specific businesses or individuals eligible for tax breaks or other financial incentives. Special interests, of course, try to influence government decisions either by seeking subsidies and tax breaks or by trying to place competitors at a disadvantage.

Experience indicates that governments have a poor track record in identifying promising new technologies. Consequently, subsidies often prove wasteful, as they direct resources toward ultimately unproductive ventures. At the same time, taxes imposed to support the subsidies create disincentives to entrepreneurs in general. In addition, active policies do not necessarily result in net economic growth. Targeted tax breaks or subsidies result in a transfer of income from one group (taxpayers) to the business. Incentives given by local government officials to have a particular business relocate to their area may not result in net economic growth because the business and its resulting jobs are simply transferred from one location to another. Passive policies, on the other hand, promote new markets, innovation and risk-taking—elements that are all vital to economic growth and progress.

Passive Tax Policy

Some minimal level of taxation is required to have a functioning government. While few people would disagree with this statement, disagreement does arise over what constitutes minimal. Regardless, one economic fact is clear—a tax on any activity increases the cost of the activity, thereby discouraging the activity.

Entrepreneurship is an activity that requires investment, consumption and income generation to be successful. A sales tax reduces personal consumption, personal income taxes reduce the incentive to work, corporate income taxes reduce the incentive to start or expand a business, and capital gains taxes reduce the incentive to invest. A recent study has provided estimates on the effect of taxes on economic growth in the United States.[6] Using data for U.S. states covering the period 1977 to 1992, the authors of the study found a negative and statistically significant relationship between state per capita personal income growth and tax collections (and the size of government relative to personal income).

Various tax policies, both active and passive, are in place across U.S. states to foster entrepreneurship.[7] In response to a recent survey from the Kauffman Center for Entrepreneurial Leadership, many states say they focus on lowering the overall tax burden by reducing tax rates or expanding exemptions in order to promote entrepreneurship. About 10 states have more active tax policies, such as capital requirements and targeted tax credits for business location and research and development. Several states also have

reduced or eliminated their capital gains taxes and inheritance taxes.

Policy-makers concerned with entrepreneurship should understand that a trade-off exists between entrepreneurial growth and taxes. The benefits of additional government programs funded through taxation must be weighed with the costs of reduced economic growth and entrepreneurial activities. Also, because targeted tax breaks foster only certain types of businesses or businesses in certain locations, a more passive tax reduction policy will be less restrictive in terms of the type of entrepreneurial activities that may occur and where these activities occur.

Regulation

Labor market and business regulations can be costly for entrepreneurs. However, when compared to European countries, regulations in the United States are much less restrictive.[8] For example, many European countries place restrictions on the number of hours a business may be open or how late into the evening the business may be open. French laws, for another example, restrict the maximum length of the work week to 35 hours. There are also more restrictions on the ability of businesses to hire and fire workers in Europe than in the United States.

A less-regulated labor market serves the American entrepreneur well. There are several areas in which states have reduced the costs of regulation on U.S. entrepreneurs, as reported by the Kauffman Center survey. First, nearly all of the states responding to the survey said that reducing the compliance costs of regulation is a goal to help entrepreneurs. This is done through paperwork reduction, service centers, electronic filing and storage, and uniform reporting across states. Many states recognize that while these improvements may not be large cost-reducers, they have an effect on where a new entrepreneur will locate a business.

Reducing regulation outright is another means of fostering entrepreneurship. The Kauffman Center survey reports that five states have reduced their regulatory burden in hopes of fostering entrepreneurship. States also have reduced the cost of doing business through regulatory reform, such as utility deregulation, tort reform and worker compensation adjustments. While some regulation is probably necessary to protect workers and businesses, states should evaluate their regulations to ensure their relevancy—many regulations are created in a political environment, and thus may be the result of special-interest lobbying rather than a general desire to help the public or businesses.

Startup Costs and Capital Access

The cost of starting a business is certainly a factor one considers before embarking on any entrepreneurial activity. Startup costs include the number of procedures and days it takes to form a business entity, the fees required to establish a business and a minimum level of required capital. According to the World Bank and reported in a recent study, startup costs in the United States and European countries are quite different.[9] For example, whereas there are no startup fees in Denmark, startup fees are $210 in the United States, $4,565 in Italy and $8,115 in Greece. Capital requirements as a percent of per capita income vary from zero percent in the United States and United Kingdom to 145.3 percent in Greece. The average length of time to form a business entity ranges from four days in Denmark and the United States to 115 days in Spain. Given the large startup costs in some countries, one should not be surprised at the level of entrepreneurship in the United States.

Entrepreneurs cannot operate or

expand their ventures without access to capital markets. Unfettered access to adequate capital markets will provide the greatest opportunities for entrepreneurial operation and expansion. Many states have implemented policies to ensure access to capital. The Kauffman Center survey reports that most states implement active policies to provide entrepreneurs with adequate capital through loans. These loans usually have modest interest rates and reasonable repayment periods. However, although adequate capital resources appear to be available to entrepreneurs through state governments, little is done in the way of planning and management of this capital. So, once entrepreneurs acquire their needed capital, they may not have the experience or education necessary to properly manage it.

Legal Protection, Property Rights and Economic Freedom

No entrepreneur can succeed in a society lacking respect for individual property rights and a legal system that protects these property rights. Property rights are defined as the right to control, use and obtain the benefits from a good or service. While this sounds reasonable, think of how little entrepreneurship would occur if individuals did not have the right to their property and the profits that they acquire from using this property in the most valued way. Without property rights, there would be little incentive to invest, expand or create because any gains from such endeavors would be transferred to the state. And granting individual property rights without enforcing them through a well-established legal system would be pointless. One of the most significant and fundamental reasons centralized economies are much poorer than the United States is their lack of individual property rights and a legal system that advocates for these rights.

Property rights and legal protection of these rights are part of a passive policy environment that promotes entrepreneurship. Other policies, such as moderate taxation and regulation, also contribute to the entrepreneurial environment. Economists at the Fraser Institute have quantified a country's active and passive policies through a measure called the Economic Freedom of the World (EFW) Index. This index, ranging between 0 and 10, evaluates countries based on five general criteria: size and scope of government; legal structure and property rights; access to sound money; freedom to exchange goods and services; and the regulation of credit, labor and businesses.[10] Not surprisingly, recent research has found that countries with a higher EFW index, such as the United States (8.2), Canada (7.9) and the United Kingdom (8.2), have higher rates of entrepreneurship and growth than countries with more centralized economies, such as Russia (5.0), Ukraine (5.3) and Indonesia (5.8).[11]

While the EFW Index only allows cross-country comparisons, it does provide lessons for state and local governments here in the United States. Specifically, the relationship between a country's growth and EFW Index suggests that states with greater economic freedom will have higher rates of growth.

Passive Policy Summary

Government can conduct both active and passive policies to encourage entrepreneurship. Although active policies, such as targeted tax breaks and subsidies, are the most commonly discussed, it is passive policy that is important for generating an entrepreneurial friendly environment. One point should be clear—institutions matter. Institutions that lower the cost of doing business—either through tax policy, startup costs or regulation—will

encourage entrepreneurship. More broadly, a complete respect for private property rights and a well-functioning legal system that recognizes and protects these rights is vital. States and countries that respect and enforce these institutions will encourage entrepreneurship and be rewarded with greater economic growth.

The next section of the report provides an empirical analysis of the effect of passive policies on rates of entrepreneurship across U.S. states. Specific policies that were studied include income tax rates, minimum wage legislation and bankruptcy laws. As will be seen, many of these policies have significant effects on the rates of entrepreneurship across states.

III. Passive Policies and Entrepreneurship across the States—Empirical Analysis

Previous research on entrepreneurship has examined the roles of various demographic, human capital and financial considerations in the decision to become an entrepreneur. Several authors have stressed the importance of the earnings differential between entrepreneurship and paid employment, while others have focused on the relationship between liquidity constraints and entrepreneurship.[12] Personal and job satisfaction differentials between entrepreneurship and paid employment have also been addressed.[13] In addition, other authors have examined the importance of social factors, or latent entrepreneurship, in explaining differences in entrepreneurship across countries and regions, respectively.[14]

This section of the report examines the influence of government policy on rates of entrepreneurship across U.S. states, a topic that has received significant attention only recently. Past research has explored the influence of several state-level policies on entrepreneurship, such as personal income tax rates, bank deregulation and bankruptcy laws. Other policies also are considered here, such as corporate income tax rates and state minimum wages. We obtained estimates of the effects of government policies on entrepreneurship by exploiting the differences in entrepreneurship and policies across the 50 states during the period 1992 to 1998. Throughout the report, entrepreneurship is defined as the share of the working age population (ages 16 to 64) who are proprietors. There were substantial differences in state rates of entrepreneurship at the beginning and the end of the period (Table 1, see Page 12). For example, in 1990, there were two states, Mississippi and South Carolina, whose rates of entrepreneurship were less than half that of Alaska and Wyoming, the two most entrepreneurial states. The decade saw significant upward movement in entrepreneurship: The average of state rates of entrepreneurship went from 13.5 percent in 1990 to 15.8 percent in 2000 and all but two states saw higher rates of entrepreneurship in 2000 than in 1990.

Figures 1 and 2 (see Page 13) illustrate the regional pattern of entrepreneurship. In both years, New England and the West were the most entrepreneurial regions, with the South and Great Lakes regions lagging. The geographic pattern of changes in entrepreneurship is less clear than the difference in the levels of entrepreneurship (Figure 3). Although some of the already entrepreneurial states in New England and the West saw the largest increases in entrepreneurship, some of the lagging states, particularly in the South, also saw large increases.

The four policy variables considered in the following analysis are bankruptcy laws, personal income tax rates, corporate income tax rates and the minimum wage. A descrip-

Continued on Page 14

Table 1. State Rates of Entrepreneurship, 1990 and 2000

State	1990	2000	Change	State	1990	2000	Change
Alabama	10.0	12.6	2.6	New Hampshire	15.9	18.7	2.7
Alaska	19.4	18.8	-0.5	New Jersey	11.8	13.0	1.2
Arizona	13.4	17.6	4.1	New Mexico	13.0	15.6	2.6
Arkansas	12.1	15.1	3.0	New York	10.5	13.1	2.6
California	14.7	17.5	2.9	North Carolina	11.7	14.7	3.0
Colorado	17.8	21.7	3.9	North Dakota	14.4	17.9	3.5
Connecticut	14.0	16.8	2.8	Ohio	10.7	13.1	2.3
Delaware	11.1	13.7	2.6	Oklahoma	15.8	17.1	1.2
Florida	12.6	15.2	2.7	Oregon	15.9	17.6	1.7
Georgia	10.5	13.9	3.4	Pennsylvania	12.0	13.1	1.1
Hawaii	14.2	15.5	1.2	Rhode Island	11.2	13.1	1.9
Idaho	17.6	19.7	2.2	South Carolina	9.7	11.9	2.3
Illinois	11.6	13.8	2.2	South Dakota	16.5	19.6	3.1
Indiana	11.3	13.1	1.8	Tennessee	12.5	16.0	3.5
Iowa	14.3	16.6	2.3	Texas	15.1	16.7	1.7
Kansas	15.4	16.6	1.2	Utah	16.0	19.2	3.1
Kentucky	10.5	12.4	1.9	Vermont	18.3	21.4	3.1
Louisiana	10.3	12.6	2.2	Virginia	11.2	12.7	1.4
Maine	16.2	20.1	3.8	Washington	15.1	15.1	0.0
Maryland	12.4	14.2	1.8	West Virginia	10.2	11.4	1.2
Massachusetts	12.4	16.3	3.9	Wisconsin	11.6	13.2	1.6
Michigan	10.8	12.7	1.9	Wyoming	18.8	19.9	1.1
Minnesota	14.1	16.1	2.1				
Mississippi	9.7	12.4	2.7				
Missouri	12.9	15.3	2.4				
Montana	18.3	21.4	3.2	**Mean**	**13.5**	**15.8**	**2.3**
Nebraska	15.3	17.0	1.8	**Standard deviation**	**2.7**	**2.8**	**1.0**
Nevada	12.8	17.7	4.9				

Figure 1. Rates of Entrepreneurship, 1990

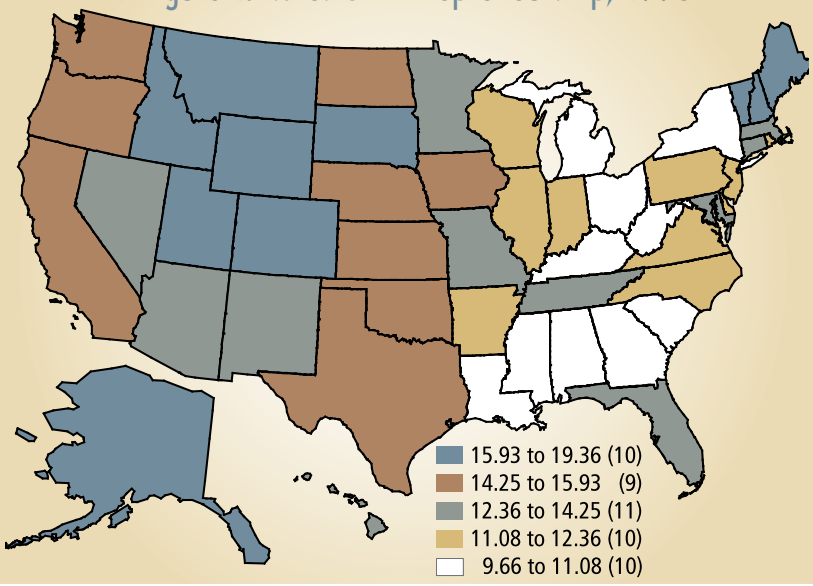


Figure 2. Rates of Entrepreneurship, 2000

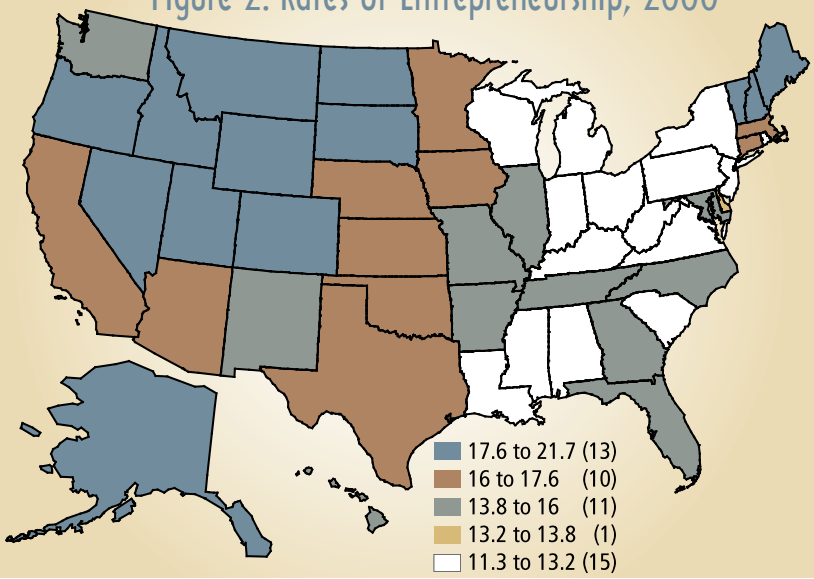
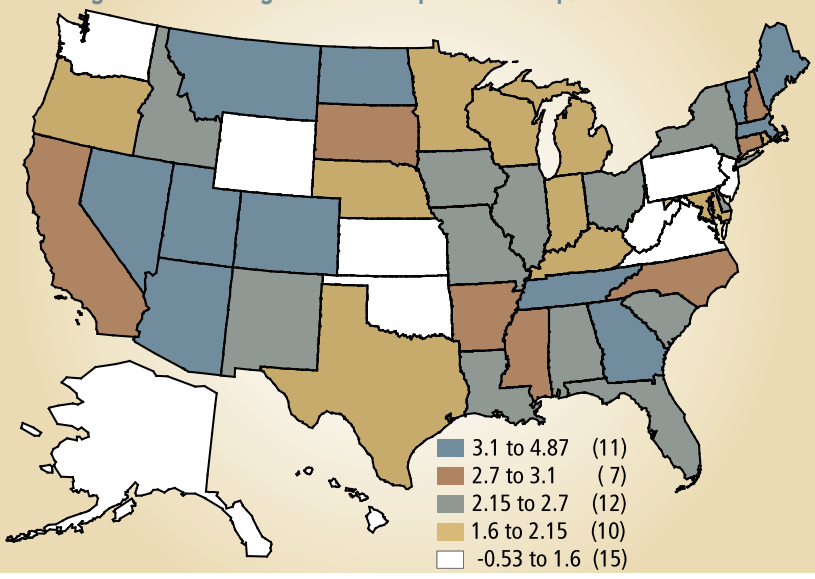


Figure 3. Changes in Entrepreneurship, 1990-2000



tion of the empirical model is provided in the Appendix, and data sources and descriptive statistics for each policy variable are listed in Appendix Table 1A and Appendix Table 2A. (See Pages 27 and 28.) An overview of each policy variable and the hypothesized relationship between each policy and the rate of entrepreneurship across states is discussed below.

Bankruptcy Law—The Homestead Exemption

State bankruptcy laws allow those filing for personal bankruptcy to exempt some of their assets and income from creditors. The exemptions can include some or all of the value of the person's home, pension and a host of other assets. An entrepreneur's home is likely to be his or her most valuable asset. As a result, recent studies have examined the possibility of a link between the homestead exemption and levels of entrepreneurship.[15] These studies have posited two opposing effects on rates of entrepreneurship. The first effect arises because a potential entrepreneur views the level of the homestead exemption as insurance against the failure of an entrepreneurial venture. If one's home is not subject to distribution to creditors, a potential entrepreneur is more likely to take on the increased risk of being an entrepreneur instead of being a wage-and-salary employee. However, in addition to this wealth-insurance effect that suggests a positive relationship between the homestead exemption and entrepreneurship, the homestead exemption may also create a credit-access effect. Banks and other creditors are aware of bankruptcy exemptions and adjust the availability of credit accordingly. Thus, by making credit more difficult to come by, the homestead exemption might reduce the number of entrepreneurs.

The homestead exemption is quite different across the states. Cross-state differences in the homestead exemption are summarized in the first data column of Table 2. These differences are significant: In 1997, six states did not allow for any amount of the value of a person's home to be exempt from distribution to creditors, but eight other states placed no limit on the amount that could be exempted. Note also that many states allow those filing for bankruptcy to choose the federal exemption rather than the state exemption.[16]

We construct a homestead exemption rate and use this variable in the empirical model. The homestead exemption rate is constructed to allow for the fact that some states permit filers to use the federal exemption level and that some states allow married filers to double the exemption level.[17]

Personal Income Tax Rate

Of the policy variables that we consider, the personal income tax is the one that has received the most attention in the literature. For the most part, the effect of personal income tax rates on entrepreneurship has been expected to be negative because of a labor-supply effect. The idea is that an increase in income tax rates increases the price of working (or reduces the price of leisure); so, individuals will be less likely to enter the labor market or work as many hours. However, most studies have found a positive relationship between personal income tax rates and entrepreneurship.[18] The usual explanation for this unexpected result is a tax-avoidance effect arising from the observation that being an entrepreneur affords greater opportunity for tax avoidance than does wage-and-salary employment. Authors have allowed for a nonlinear relationship between personal income tax rates and entre-

Continued on Page 16

Table 2. State Policy Environments, 1997

State	Homestead exemption (dollars)	Max. marginal personal income tax rate	Maximum corporate income tax rate	Minimum wage relative to productivity
Alabama	5,000	3.12	5	0.23
Alaska	54,000	0	5.2	0.16
Arizona	100,000	4.8	9	0.21
Arkansas	no limit	7	3.75	0.25
California	7,500	9.78	9.3	0.18
Colorado	20,000	5.36	5	0.21
Connecticut	0	4.5	11.25	0.16
Delaware	0	6.9	8.7	0.15
Florida	no limit	0	5.5	0.21
Georgia	5,000	5.83	6	0.20
Hawaii	30,000	9	5.4	0.20
Idaho	30,000	8.2	8	0.25
Illinois	7,500	3	4.8	0.18
Indiana	7,500	3.4	3.4	0.22
Iowa	no limit	6.36	9	0.23
Kansas	no limit	6.45	4	0.24
Kentucky	5,000	6	6.13	0.22
Louisiana	15,000	3.75	6	0.19
Maine	7,500	8.5	6.22	0.25
Maryland	0	6	7	0.19
Massachusetts	100,000	5.95	9.5	0.18
Michigan	3,500	4.4	1.15	0.20
Minnesota	no limit	8.86	9.8	0.21
Mississippi	30,000	4.85	4	0.25
Missouri	8,000	6	6.25	0.22
Montana	40,000	6.83	6.75	0.29
Nebraska	10,000	7	6.7	0.24
Nevada	90,000	0	0	0.19
New Hampshire	5,000	0	7	0.20
New Jersey	0	6.37	9	0.15
New Mexico	20,000	8.4	6.2	0.20
New York	10,000	6.85	9	0.15
North Carolina	7,500	8.08	7.75	0.22
North Dakota	80,000	5.25	6.75	0.28
Ohio	5,000	7.2	7	0.21
Oklahoma	no limit	6.05	6	0.25
Oregon	15,000	9	6.6	0.21
Pennsylvania	0	2.8	10	0.20
Rhode Island	0	9.66	9	0.20
South Carolina	5,000	7.3	5	0.23
South Dakota	no limit	0	0	0.26
Tennessee	5,000	0	6	0.22
Texas	no limit	0	0	0.19
Utah	8,000	5.72	5	0.24
Vermont	30,000	8.85	6.88	0.25
Virginia	5,000	5.75	6	0.20
Washington	30,000	0	0	0.20
West Virginia	7,500	6.5	9	0.23
Wisconsin	40,000	6.93	7.9	0.23
Wyoming	10,000	0	0	0.18

preneurship and find that the labor supply effect dominates at low tax rates while the tax-avoidance effect dominates at higher tax rates.[19]

As the second column of Table 2 illustrates, states differ a great deal in their tendency to use income taxes to generate revenue. Nine states had no income tax in 1997, while eight states had their highest statutory marginal tax rate set at 8 percent or higher. The personal income tax variable used here is the maximum marginal tax rate (state plus federal) as generated by the National Bureau of Economic Research's TAXSIM model. Although few people actually face the maximum marginal tax rate, it should be strongly correlated with the marginal tax rate that the average person faces.

Corporate Income Tax Rate

A corporation is a separate legal entity that is distinct from the entrepreneur. Unlike an unincorporated entrepreneur who is personally liable for the assets and liabilities of running a business, an incorporated entrepreneur's liability is limited to the assets of the corporation. In addition, because potential buyers will also have limited liability for the actions of the seller, incorporation might increase the market value of a business. Incorporation might make it easier for an entrepreneur to raise investment capital, primarily because it allows an entrepreneur to issue shares of stock.

Higher corporate income tax rates mean that some entrepreneurs will choose to not incorporate. For some entrepreneurial ventures, however, incorporation might be the only viable choice, perhaps because they require relatively large amounts of capital or the ventures are relatively risky. These ventures might not be started if corporate income tax rates are too high. Even the number of unincorporated entrepreneurs can be affected by the rate of corporate income tax because future incorporation might be in the plans when an entrepreneurial venture grows. High corporate income tax rates reduce future profitability and might dissuade some potential entrepreneurs from becoming unincorporated entrepreneurs.

In addition to the negative effects outlined above, higher corporate income tax rates may have a positive effect on the number of entrepreneurs. Because the corporate income tax is levied on all corporations, whether they are run by entrepreneurs or not, the suppressing effect of corporate taxes might reduce wage-and-salary employment at corporations. In this way, high corporate income tax rates may have the effect of pushing people out of their wage-and-salary jobs and into entrepreneurial activities. However, one should keep in mind that this effect, while increasing the number of entrepreneurs, reflects the overall deleterious effects of overly high tax rates.

The rates at which states tax the income of corporations are very different (Table 2). Five states, none of which taxed personal income in 1997, had no tax on corporate income. For 11 states, however, the top corporate income tax rate was 9 percent or higher. The corporate income tax variable used in this analysis is the maximum statutory state corporate income tax rate.

Minimum Wage

Businesses run by entrepreneurs are relatively more likely to see their hiring decisions affected by the minimum wage. Large shares of entrepreneurs are in industries that rely on low-wage workers: Four of the top five industry categories in terms of the percentages of workers earning the minimum wage or below account for about one-third of self-employed men and about one-half of self-employed women.[20] For such businesses, an increase in the minimum wage would make it more difficult for some portion of them

to remain profitable. The fact that the federal minimum wage is set at the same level for all states makes it more problematic for entrepreneurs in low-productivity states.[21] Because of this, the minimum wage variable considered here is the statutory minimum wage relative to the average productivity of labor in the state, as measured by per employee Gross State Product (GSP) per hour.

Empirical Results—Passive Policies Matter

The empirical results reveal that most of the passive policy variables are important determinants of the level of entrepreneurship across the states. The estimated coefficients on the homestead exemption rate, corporate income tax rate and the relative minimum wage rate are all statistically different from zero (Appendix Table 3A, see Page 29).[22] The estimated effects of the four policy variables on rates of entrepreneurship are illustrated by Figures 4 through 7. As these figures show, in addition to being statistically significant, these policies also tend to be economically significant.

Homestead Exemption Rate

The decision to become an entrepreneur is related to the homestead

Figure 4. Homestead Exemptions

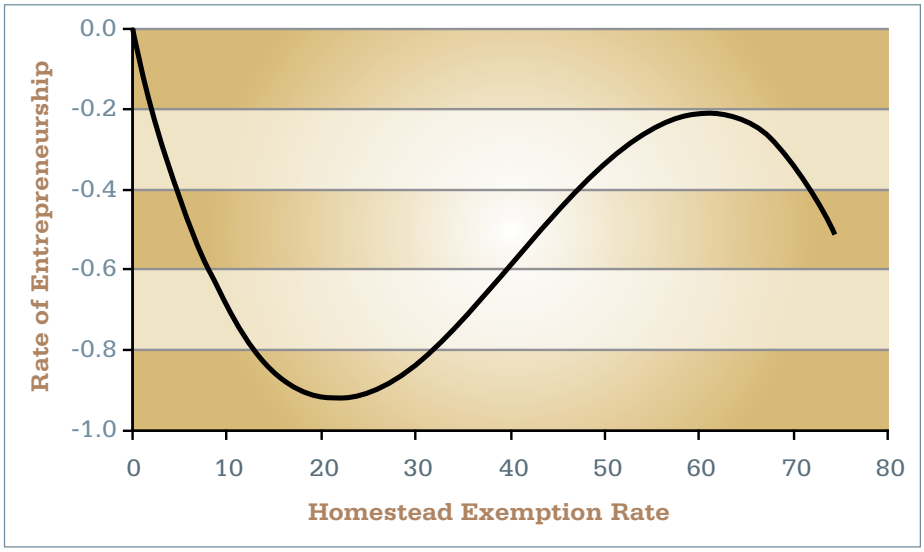


Figure 5. Personal Income Taxes

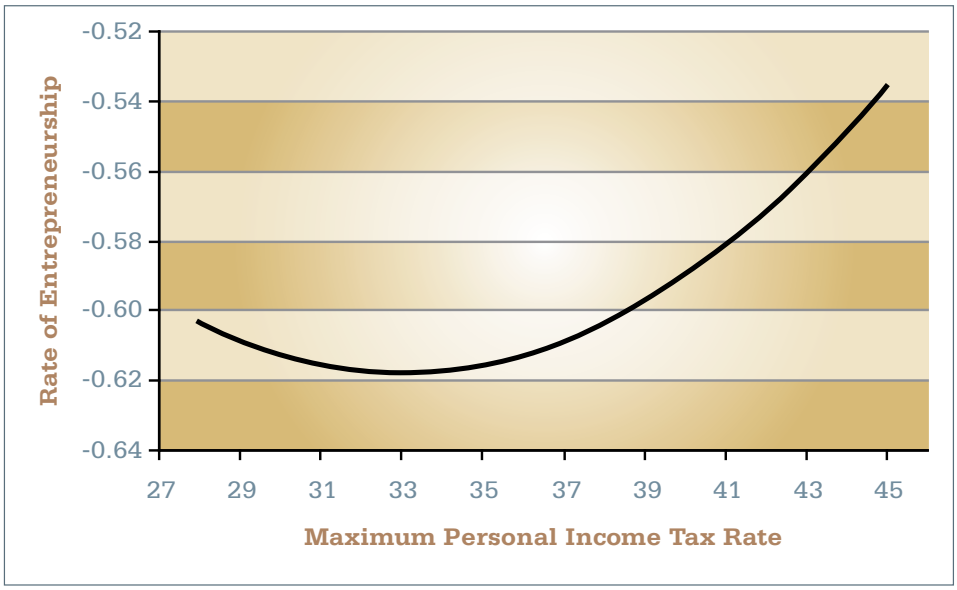


Figure 6. Corporate Income Taxes

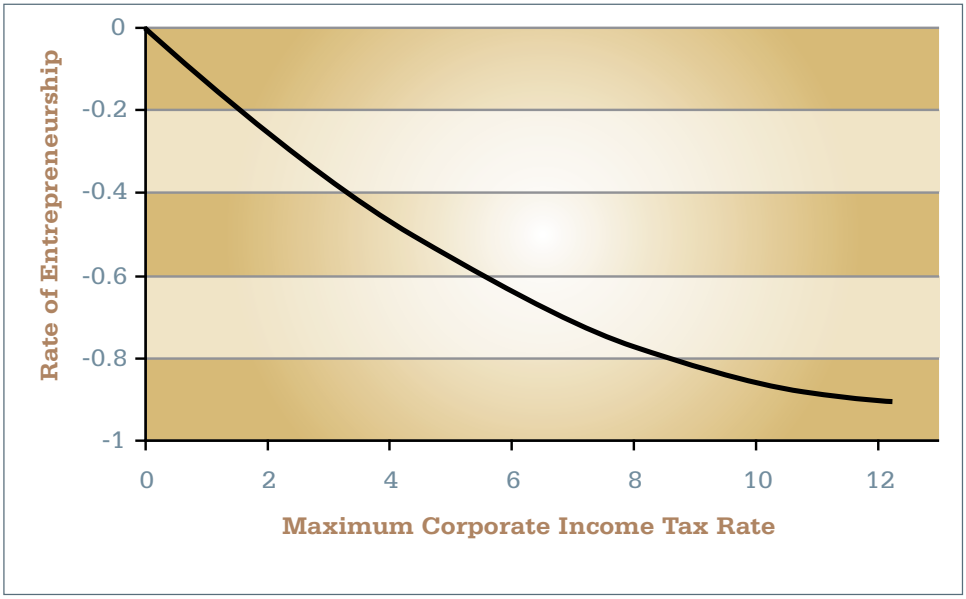
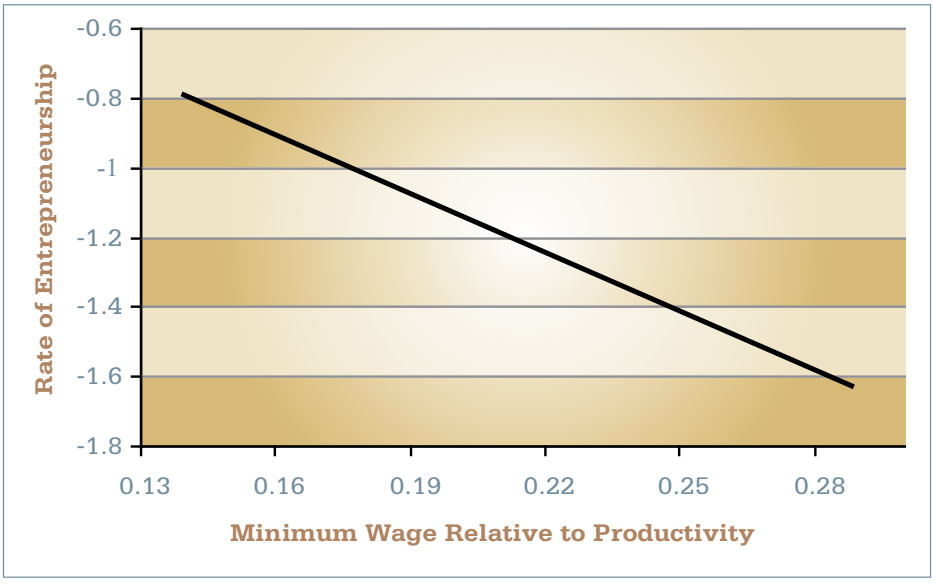


Figure 7. Minimum Wage



exemption rate. For homestead exemption rates between 0 and 22, the credit-access effect dominates the wealth-insurance effect, meaning that an increase in the homestead exemption should lead to a decrease in entrepreneurship. An increase in the homestead exemption rate from 0 to 22 will lead to a decrease in the rate of entrepreneurship of just over 0.9 percentage points. This is quite a large effect given that the mean entrepreneurship rate in the sample is 14.6 percent.

Beyond a homestead exemption rate of 22 until a rate of about 62, the wealth-insurance effect dominates the credit-access effect and an increase in the homestead exemption should lead to an increase in entrepreneurship. An increase from 22 to 62 will lead to a 0.7 percentage point increase in the rate of entrepreneurship. Beyond a homestead exemption rate of 62, further increases in the homestead exemption would tend to reduce the number of entrepreneurs.

The highest rates of entrepreneurship are attained when the homestead exemption rate (and the homestead exemption) is zero. This is in contrast to previous research, which found that an increase in the homestead exemption would lead to an increase in entrepreneurship for

all starting levels. We find that this is true only within some ranges of the homestead exemption.

Personal Income Tax Rate

Although the maximum personal income tax variable is not statistically significant, our point estimates do suggest a U-shaped relationship between it and the rate of entrepreneurship. At lower tax rates, the labor-supply effect dominates; but, at higher tax rates, the tax-avoidance effect dominates (Figure 5). It is clear from the vertical scale of the figure, however, that even if these effects were statistically significant, they would have very little economic significance. The highest and lowest rates of entrepreneurship along the curve differ by only about 0.08 percentage points.

Corporate Income Tax Rate

Unlike the personal income tax rate, the corporate income tax rate appears to have very large effects on entrepreneurship (Figure 6). Up to the highest rate in our sample (12.25 percent), an increase in the maximum corporate income tax rate will push more people out of entrepreneurship than it will push into it by reducing wage-and-salary employment at corporations. The effect of the corporate income tax rate can be substantial. All else equal, a state that does not levy a tax on corporate income will tend to have a rate of entrepreneurship that is about 0.9 percentage points higher than a state that levies a maximum corporate income tax rate of 12.25 percent.[23]

Minimum Wage

Our final policy variable, the minimum wage relative to productivity, is negatively related to the rate of entrepreneurship (Figure 7).[24] All else equal, a state with a relative minimum wage of 0.29 will have a rate of entrepreneurship that is 0.8 percentage points lower than a state that has a relative minimum wage of 0.14. These results suggest that a reduction in the federal minimum wage would increase entrepreneurship across states. They also point out how the federal minimum wage hits poorer states especially hard. Entrepreneurs in these states, where productivity is lowest, are required to pay the same level of minimum wage as in the richest states, even though workers with the corresponding level of productivity to warrant being paid the minimum wage are more difficult to find. Consequently, all else equal, in the relatively poor states, the federal minimum wage results in fewer entrepreneurs and fewer of the benefits that entrepreneurship can bring.

IV. Quantifying the Effect of the Policy Environment for Eighth District States

We have found that corporate income tax rates, bankruptcy law and minimum wage legislation have statistically and economically significant effects on rates of entrepreneurship across U.S. states. These results show that great gains in entrepreneurship are possible when government-imposed burdens on entrepreneurs and other businesses are reduced. These gains in entrepreneurship likely dwarf those that can be attained by direct intervention (i.e., subsidies or tax breaks) aimed at entrepreneurs.

To highlight further the effects of the policy environment on entrepreneurship, this section of the report focuses on the states in the Eighth Federal Reserve District. Table 3 summarizes the levels of entrepreneurship and the policy environment for each of the seven District states for the last year of our data set. At that time, all seven states had rates of entrepreneurship that

Table 3. The States of the Eighth Federal Reserve District

State	Rate of entrepreneurship 1998	Homestead exemption rate 1997	Maximum corporate income tax rate, 1997	Minimum wage relative to productivity, 1997
Arkansas	14.5	66.7	3.75	0.25
Illinois	13.2	7.7	4.8	0.18
Indiana	12.9	12.1	3.4	0.22
Kentucky	12.0	8.6	6.13	0.22
Mississippi	11.4	73.7	4	0.25
Missouri	14.8	7.6	6.25	0.22
Tennessee	15.1	4.6	6	0.22
50-state average	**15.4**	**29.2**	**6.06**	**0.21**

Table 4. Entrepreneurship with Different Policy Environments Eighth District States, 1998

State	No homestead exemption (percent change)	No corporate income tax (percent change)	No productivity bias in minimum wage (percent change)	Total (percent change)
Arkansas	1.8	3.1	3.8	8.6
Illinois	4.3	4.1	1.3	9.7
Indiana	5.9	3.2	3.0	12.1
Kentucky	5.2	5.4	3.3	13.9
Mississippi	4.2	4.1	4.7	13.1
Missouri	3.8	4.5	2.7	11.0
Tennessee	2.5	4.2	2.7	9.4

were below the average across all states. Missouri, Tennessee and Arkansas were the most entrepreneurial states, each with a rate of entrepreneurship above 14.5 percent. Mississippi and Kentucky were easily the least entrepreneurial, with rates of entrepreneurship of 11.4 percent and 12 percent, respectively.

There was a great deal of variation across District states in the three policies that we have found to have significant effects on entrepreneurship.

Homestead exemption rates in Arkansas and Mississippi were more than twice the national average and were by far the highest among District states, while the five other states had homestead exemption rates lower than half the national average. As with their homestead exemption rates, District states can be put into two groups in terms of the rates at which they taxed corporate income. Three states—Kentucky, Missouri and Tennessee—taxed corporate income roughly at or slightly above the national average, whereas the other four states had maximum corporate income rates well below the national average. Finally, because of differences in productivity, minimum wages

relative to productivity spanned a wide range. Illinois, with the highest average productivity, had by far the lowest relative minimum wages, whereas Arkansas and Mississippi, the two states with the lowest average productivity, had the highest relative minimum wages.

We performed a series of counterfactual exercises to determine the levels of entrepreneurship that would have occurred in District states had they had different policies in place. Specifically, for each state, we calculated the difference in the number of entrepreneurs if there had been (1) no homestead exemption, (2) no corporate income tax and (3) a state minimum wage set at a level to eliminate the productivity bias.[25] The results of our counterfactuals are provided in Table 4. Note that the homestead exemption and the corporate income tax are policies directly under the control of states, but that the relative minimum wage is, for most states, only under indirect control. Because none of the District states set their minimum wage above the federally mandated level, state governments can affect their relative minimum wage by (1) convincing the federal government to eliminate the minimum wage (or to let states choose their own minimum wage), or (2) increasing the average productivity of their state's work force through education and other means.

Of the seven District states, it was Arkansas' policy environment that had the smallest total effect on its level of entrepreneurship. Even so, different policies would have meant a very different level of entrepreneurship: If Arkansas had no homestead exemption, no corporate income tax and there was no productivity bias in the minimum wage, the state would have had 8.6 percent more entrepreneurs than it did. Nearly half of these entrepreneurs were kept out by the productivity bias of the minimum wage, while over one-third were kept out by the corporate income tax. Arkansas' homestead exemption rate, despite being relatively high, had a much smaller effect on the number of entrepreneurs than did the other policies. This is because its homestead exemption was high enough for the positive influence of the wealth-insurance effect to largely compensate for the negative influence of the credit-access effect.

The policy environment in Illinois was somewhat more important in affecting entrepreneurs than it was for Arkansas. Illinois' relatively low homestead exemption rate was along the steepest portion of Figure 4, where the credit-access effect is most severe. As a result, elimination of even Illinois' modest homestead exemption would have meant 4.3 percent more entrepreneurs. A similar effect on entrepreneurship was due to the corporate income taxes, without which Illinois would have had 4.1 percent more entrepreneurs. Because it had the highest average productivity among District states, Illinois was relatively less affected by the productivity bias of the minimum wage. Still, elimination of the bias would have meant 1.3 percent more entrepreneurs. The total effect of these policy variables was a 9.7 percent decrease in the number of entrepreneurs.

For Indiana, the levels of three policy variables meant that there were 12.1 percent fewer entrepreneurs than there would have been otherwise. Even the relatively moderate productivity bias in the minimum wage meant 3.0 percent fewer entrepreneurs. An even larger decrease in the number of entrepreneurs, 5.9 percent, was due to the state's homestead exemption, which was at a level where the credit-access effect was most dominant. Finally, Indiana's corporate income taxes, which were the lowest in the District, nevertheless meant that there were 3.2 percent fewer entrepreneurs.

Of the seven District states, it was

the policy environment of Kentucky that was most harmful to entrepreneurship. In total, the levels of three policy variables in Kentucky meant that there were 13.9 percent fewer entrepreneurs. Kentucky's homestead exemption rate, while low, was in the range where the credit-access effect is largest and meant 5.2 percent fewer entrepreneurs. The state's relatively high corporate tax rates contributed to a further loss of 5.4 percent in the number of entrepreneurs. The remaining 3.3 percent reduction in the number of entrepreneurs was due to the productivity bias of the minimum wage.

Mississippi, which had the lowest rate of entrepreneurship within the District, had the second most harmful policy environment for entrepreneurs. Because of Mississippi's status as the state with the lowest average productivity, the minimum wage was especially deleterious, leading to 4.7 percent fewer entrepreneurs. The state's relatively high homestead exemption rate meant that there were 4.2 percent fewer entrepreneurs, while its below-average corporate income tax burden led to a further 4.1 percent decrease. In total, the levels at which these three policy variables were set meant that Mississippi had over 13 percent fewer entrepreneurs than if there were no homestead exemption rate, no corporate income tax and no productivity bias in the minimum wage.

For Missouri, its above-average corporate income tax was the largest contributor to the reduction in entrepreneurship. If Missouri did not tax corporate income, it would have had 4.5 percent more entrepreneurs. In common with several other District states, Missouri's homestead exemption, although relatively low, had a large (3.8 percent) negative effect on entrepreneurship. Including the 2.7 percent reduction in the number of entrepreneurs due to the productivity bias of the minimum wage, Missouri's policy environment meant 11 percent fewer entrepreneurs.

The policy environment of Tennessee had an overall smaller effect on the number of entrepreneurs than for all District states except Arkansas. But because Tennessee's policy environment differed a great deal from that of Arkansas, Tennessee's entrepreneurship was suppressed for quite different policy-related reasons. For example, because average productivity is higher in Tennessee, the productivity bias of the minimum wage had less of an effect on entrepreneurs than it did in Arkansas, although the 2.7 percent decrease in the number of entrepreneurs is still large in absolute terms. For Tennessee, it was its relatively high corporate income taxes that had the largest effect on entrepreneurs (a 4.5 percent reduction). In addition, although Tennessee's homestead exemption rate was fairly low, it is at the very steep portion of the relationship illustrated by Figure 4, where the credit-access effect is dominant. As a result, even Tennessee's modest homestead exemption rate meant 2.5 percent fewer entrepreneurs.

V. Summary and Conclusions

Governments can conduct both active and passive policies to encourage entrepreneurship. Although active policies, such as targeted tax breaks and subsidies, are the most common policies pursued, we argue that passive policies create an entrepreneur-friendly environment that will generate higher rates of entrepreneurship. The passive policies discussed in this report include an overall reduction in corporate and income tax rates, reduced regulation on business operation, a reduction in business startup costs (filing fees, regulations, etc.) and freer access to capital. In addition, attention was given to the importance of private property rights and a legal

system that protects these rights as essential ingredients to business and economic growth.

The importance of passive policies toward fostering entrepreneurship was confirmed through an empirical analysis on rates of entrepreneurship across the U.S. states. The empirical results revealed that states having lower corporate income tax rates are rewarded with higher rates of entrepreneurship. We also found evidence that homestead exemptions influence rates of entrepreneurship—states having no homestead exemptions are predicted to have higher rates of entrepreneurship. This result suggests that the credit-access effect—namely that banks and other creditors are aware of bankruptcy exemptions and adjust the availability of credit accordingly—is an important determinant of entrepreneurship. Finally, our models also reveal a negative relationship between entrepreneurship and the minimum wage relative to productivity. This result has two interpretations, namely that (1) increases in productivity, holding the minimum wage constant, will result in higher rates of entrepreneurship, and (2) increases in the minimum wage, holding productivity constant, will result in lower rates of entrepreneurship.

We also used our empirical results to explore how changes in passive policies would affect rates of entrepreneurship in states of the Eighth Federal Reserve District. Specifically, we predicted what the rate of entrepreneurship would be in each state if each state eliminated its corporate income tax and homestead exemption and had higher levels of productivity (or a lower minimum wage). The individual effects from each resulting passive policy were presented along with the cumulative effect from implementing all three policies. On average, the rate of entrepreneurship would increase by 11.1 percent in District states as a result of implementing all policies. However, because each state has different corporate income tax rates, homestead exemption levels and productivity, there was considerable variation in the gains in entrepreneurship across the states.

Although our analysis focused on state-level policies, the results here also have implications for county- and city-level entrepreneurship. For example, it is likely that local sales tax rates, property tax rates, zoning regulations and startup costs also influence rates of entrepreneurship. The availability of appropriate data on which to test this hypothesis statistically remains a challenge. However, the results of this study reveal that passive policies, regardless of which level of government imposes them, are likely to result in higher rates of entrepreneurship. As shown here, gains in entrepreneurship from implementing passive policies can be quite large and are likely to be larger than those gains from targeted policies.

Appendix

The empirical model is:

$$E_{it} = \alpha_i + \tau_t + \beta' \mathbf{X}_{it} + \theta' \mathbf{Z}_{it} + \gamma' \mathbf{G}_{it} + \varepsilon_{it}$$

In the equation, the dependent variable E_{it} is the rate of entrepreneurship in state i during year t, where E_{it} is measured as the proportion of the nonfarm employment that is classified as proprietors.[26] The parameter α_i denotes state fixed effects and τ_t denotes fixed year effects. The vector $\mathbf{X}_{it}$ measures average demographic characteristics whereas the vector $\mathbf{Z}_{it}$ measures business conditions. The error term is represented by ε_{it}.

The passive policy variables are included in the vector $\mathbf{G}_{it}$. The four variables in $\mathbf{G}_{it}$ are the homestead exemption rates, personal income tax rates, corporate income tax rates and the minimum wage relative to productivity. We also include the square of the first three variables and the cube of the homestead exemption to allow for a nonlinear relationship between each policy variable and rates of entrepreneurship. (See the main text for a theoretical discussion of each variable.) Data sources and summary statistics for all variables used in the estimation are provided in Appendix Tables 1A and 2A. (See Pages 27 and 28.)

We cannot estimate the effect of the policy environment on entrepreneurship without controlling for demographic and economic conditions across the states. The demographic variables in $\mathbf{X}_{it}$ measure the age, sex and racial compositions of state employment, categories across which rates of self-employment differ a great deal.[27] For example, men are nearly twice as likely as women to be self-employed, and blacks are less than one-third as likely to be self-employed as whites or Asians. Our vector of business conditions, $\mathbf{Z}_{it}$, includes the state's unemployment rate, per capita real income, industry employment shares, real proprietor's wage, per capita real wealth (as proxied by dividends, interest and rent), and the real median house price weighted by the rate of home ownership. These last two variables control for differences in the levels of assets that the average person has to support an entrepreneurial venture.

Care needs to be taken when interpreting the estimated coefficients for the variables in $\mathbf{X}_{it}$ and $\mathbf{Z}_{it}$. These variables might simultaneously measure differences across states in the supply of entrepreneurs and the demand for the products that are more likely to be produced by entrepreneurs.[28] Therefore, because supply and demand cannot be separated by the variables in $\mathbf{X}_{it}$ and $\mathbf{Z}_{it}$, we include these variables only as controls and do not interpret their coefficients.

We can interpret the coefficient on the unemployment rate, however. A low unemployment rate suggests relatively low risks and high returns for entrepreneurial ventures, thereby pulling a higher share of the population into entrepreneurship. However, a high unemployment rate indicates the number of people with limited opportunities for wage-and-salary employment who might, out of necessity, be pushed into self-employment.[29] Thus, the sign of the coefficient on the unemployment rate has been interpreted as a measure of the relative strengths of the pull and push effects of the unemployment rate.

We estimated our model with Feasible Generalized Least Squares (FGLS) and controlled for state-specific autocorrelation and heteroskedasticity. Although the magnitudes of the estimated coefficients using FGLS do not differ substantially from those estimates ordinary least squares would provide, the richer error structure allowed for by FGLS makes it superior for estimating state panels of entrepreneurship. To avoid issues of simultaneity and to capture the lag between the decision to become an entrepreneur

and its realization, we used lagged values of all of our independent variables. The reference variables are the adult share of the population aged 18 to 24, the white share of the population, government share of employment, and the year 1992. Data from the 50 states for the period 1992 to 1998 were used. The empirical results are shown in Appendix Table 3A. (See Page 29.)

Appendix Table 1A: Data Sources

Data series	Source
Nonfarm proprietors' employment, total nonfarm employment	Regional Economic Information System, Bureau of Economic Analysis, Table CA25
Unemployment rate	Household Survey, Bureau of Labor Statistics
Dividends, interest and rent	Regional Economic Information System, Bureau of Economic Analysis, Table CA05
Per capita gross state product	Bureau of Economic Analysis
Average nonfarm proprietors' income, average wage and salary disbursements	Regional Economic Information System, Bureau of Economic Analysis, Table CA30
Industry employment shares; age, race and sex employment shares	Establishment Survey, Bureau of Labor Statistics
Maximum marginal tax rates	TAXSIM, National Bureau of Economic Research
Maximum corporate tax rate	Council of State Governments, The Book of the States, various editions
Minimum wage	"State Labor Legislation Enacted in 199X," *Monthly Labor Review*, various issues, 1990-98
Homestead bankruptcy exemptions	Elias, S.; Renaur A.; and Leonard R., *How to File for Chapter 11 Bankruptcy*, various editions, Berkeley, Calif: Nolo Press
Median house price	Derived using median house price from 1990 census and the Home Price Index from the Office of Federal Housing Enterprise Oversight
Home ownership rate, median house price, metro population, total population	Census Bureau
Share of households with householder and spouse	Census Bureau, derived from 1990 and 2000 census assuming constant state-level rates of change

Appendix Table 2A: Summary Statistics

	Mean	Standard Deviation	Maximum	Minimum
Rate of entrepreneurship	14.61	2.91	21.56	9.66
Homestead exemption rate	28.67	24.72	75.40	0.00
Max. personal income tax rate	38.37	4.07	44.87	28.00
Max. corporate income tax rate	6.09	2.85	12.25	0.00
Minimum wage relative to productivity	0.20	0.03	0.29	0.14
Unemployment rate	5.76	1.54	11.40	2.50
Real income per capita	21.25	3.68	35.95	13.38
Relative proprietor's wage	0.74	0.11	1.05	0.51
Real wealth per capita	4.13	0.84	6.99	2.30
Real median house price	59.93	21.40	147.59	31.37
Ag. services, forestry, fishing	1.50	0.73	5.74	0.70
Mining	6.58	1.06	10.04	4.49
Construction	8.39	1.70	14.94	5.54
Manufacturing	15.21	5.56	27.43	3.51
Transportation and public utilities	1.12	1.70	10.10	0.03
Wholesale trade	20.98	1.72	24.98	16.61
Retail trade	35.00	3.94	50.52	26.84
Finance, insurance and real estate	5.87	1.13	10.49	3.56
Services	5.34	0.89	7.75	3.44
Share of population in metro areas	67.63	20.35	100.00	29.62
Adult share aged 45 to 65	26.73	1.51	31.49	22.36
Adult share aged 65+	17.16	2.55	24.31	6.23
Female share of employment	46.16	1.31	49.25	41.63
Black share of employment	9.93	9.36	36.37	0.31
Native American share of employment	1.66	2.94	16.05	0.13
Asian share of employment	3.15	8.73	63.30	0.44
Hispanic share of employment	5.98	7.92	39.95	0.47

Number of observations = 350

Appendix Table 3A: Regression Results

	Coefficient	Std. Error	*t*-statistic
Policy environment			
Homestead exemption rate	-0.096*	0.022	-4.33
Homestead exemption rate squared	0.003*	0.001	3.81
Homestead exemption rate cubed	-0.00002*	0.00001	-3.65
Max. personal income tax rate	-0.037	0.054	-0.70
Max. personal income tax rate squared	0.001	0.001	0.79
Max. corporate income tax rate	-0.138*	0.082	-1.68
Max. corporate income tax rate squared	0.005	0.006	0.90
Min. wage relative to productivity	-5.661*	2.091	-2.71
Business environment			
Unemployment rate	0.120*	0.022	5.53
Real income per capita	-0.162*	0.091	-1.77
Relative proprietor's wage	0.163	0.380	0.43
Real wealth per capita	0.150	0.243	0.62
Real median house price	0.027*	0.008	3.44
Industry shares	yes		
Demographics			
Share of population in metro areas	-0.174*	0.063	-2.77
Adult share aged 45 to 65	0.102*	0.049	2.06
Adult share aged 65+	0.318*	0.097	3.26
Female share of employment	0.052*	0.019	2.72
Black share of employment	0.063	0.098	0.64
Native American share of employment	-0.142*	0.309	-0.46
Asian share of employment	-0.104	0.193	-0.54
Hispanic share of employment	0.040	0.067	0.60
Year Effects			
1993	0.088	0.073	1.21
1994	0.352*	0.103	3.41
1995	0.701*	0.134	5.24
1996	1.139*	0.162	7.03
1997	1.374*	0.191	7.19
1998	1.631*	0.224	7.29
State Fixed Effects	yes		

** Indicates significance at the 10 percent level or higher.*
Note: The Feasible Generalized Least Squares estimation corrects for state-specific heteroskedasticity and autocorrelation. Number of observations = 350. The dependent variable is the rate of entrepreneurship, defined as the ratio of nonfarm employment to working age population. Sample is 1992 to 1998.

Endnotes

[1] Kirzner, I.M. "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach." *Journal of Economic Literature* 1997;35(1):60-85.

[2] While entrepreneurship and small businesses are often referred to synonymously, not all small businesses are entrepreneurial and not all entrepreneurial enterprises are small businesses. We argue that this distinction is not important because passive policies rather than active policies will encourage all types of businesses, regardless of whether they can be classified as entrepreneurial.

[3] Blanchflower, D.; Oswald, A., and Stutzer, A. "Latent Entrepreneurship Across Nations." *European Economic Review* 2001;45(4-6):680-691; Georgellis, Y., and Wall, H.J. "Entrepreneurship and the Policy Environment." Federal Reserve Bank of St. Louis, 2004, Working Paper No. 2002-019B; Georgellis, Y., and Wall, H.J. "What Makes a Region Entrepreneurial? Evidence from Britain." *Annals of Regional Science* 2000; 34(3):385-403.

[4] Blanchflower, D.; Oswald, A.; and Stutzer, A. "Latent Entrepreneurship Across Nations." *European Economic Review* 2001;45(4-6):680-691.

[5] Global Entrepreneurship Monitor. *National Entrepreneurship Assessment United States of America*, 2002 Executive Report. Available at www.kauffman.org/pdf/us_gem_2002.pdf.

[6] Crain, M.W., and Lee, K. "Economic Growth Regressions for the American States: A Sensitivity Analysis." *Economic Inquiry* 1999;37(2):242-257.

[7] Kayne, J. "State Entrepreneurship Policies and Programs." Kauffman Center for Entrepreneurial Leadership at the Ewing Marion Kauffman Foundation, Kansas City, Mo. November 1999.

[8] Poole, W., and Wall, H.J. "Entrepreneurs in the U.S. Face Less Red Tape." *The Regional Economist*, Federal Reserve Bank of St. Louis 2004:5-9.

[9] World Bank. *Doing Business in 2004: Understanding Regulation*. Washington 2004, World Bank and Oxford University Press. Available at http://rru.worldbank.org/DoingBusiness.

[10] See www.fraserinstitute.ca and www.freetheworld.com.

[11] 2002 values are from *The Economic Freedom of the World: 2004 Annual Report*, The Fraser Institute. Also see Sobel, R.; Clark, J.; and Lee, D. "Freedom, Barriers to Entry, Entrepreneurship, and Economic Progress." Entrepreneurship Center, College of Business and Economics, West Virginia University. Available at www.be.wvu.edu/ec/Papers/SobelClarkLee.pdf.

[12] Rees, H., and Shah, A. "An Empirical Analysis of Self-Employment in the U.K." *Journal of Applied Econometrics* 1986;1(1):95-108; Hamilton, B.H. "Does Entrepreneurship Pay? An Empirical Analysis of the Returns to Self-Employment." *Journal of Political Economy* 2000;108(3):604-631; Evans, D.S., and Leighton, L.S. "Some Empirical Aspects of Entrepreneurship." *American Economic Review* 1989;79(3):519-535; Holtz-Eakin, D.; Joulfaian, D.; and Rosen, H.S. "Sticking it Out: Entrepreneurial Survival and Liquidity Constraints." *Journal of Political Economy* 1994;102(1):53-75.

[13] Taylor, M.P. "Earnings, Independence or Unemployment: Why Become Self-Employed?" *Oxford Bulletin of Economics and Statistics* 1996;58(2):253-266; Blanchflower, D.G. "Self-Employment in OECD Countries." *Labour Economic* 2000;7(5):471-505.

[14] Georgellis, Y., and Wall, H.J. "What Makes a Region Entrepreneurial? Evidence from Britain." *Annals of Regional Science* 2000;34(3):385-403; Beugelsdijk, S., and Noorderhaven, N. "Entrepreneurial Attitude and Economic Growth: A Cross-Section of 54 Regions." *Annals of Regional Science* 2002;38:199-218.

[15] Berkowitz, J., and White, M.J. "The Effect of Personal Bankruptcy Law on Small Firms' Access to Credit." *RAND Journal of Economics* 2004;35(1):69-84; Georgellis, Y., and Wall, H.J. "Entrepreneurship and the Policy Environment." 2004. Federal Reserve Bank of St. Louis Working Paper 2002-019B.

[16] The federal homestead exemption was $15,000 in 1997.

[17] To construct the homestead exemption rate, we took the state exemption level or, if the state allows the federal

option, the maximum of the state and federal exemption levels. If this exemption level is greater than the average house price in the state, we used the average house price instead. We then multiplied this by the state's home ownership rate and, if the state allows married householders to double the exemption, we multiplied by 1 plus the state's share of households in which both spouses reside together. The homestead exemption rate is this result divided by the average house price.

[18] Long, J.E. "The Income Tax and Self-Employment." *National Tax Journal* 1982;35(1):31-42; Gentry, W.M., and Hubbard, R.G. "Tax Policy and Entrepreneurial Entry." *American Economic Review* 2000;90(2):283-287; Fan, W., and White, M.J. "Personal Bankruptcy and the Level of Entrepreneurial Activity." *Journal of Law and Economics* 2003;46(2):543-567.

[19] There may be another explanation for the positive relationship between personal income tax rates and rates of entrepreneurship. The tax system provides a net subsidy to risk-taking because entrepreneurs have the option of whether or not to incorporate their business. Because personal income tax rates are higher than corporate ones, an entrepreneur facing losses would prefer to face personal income tax rates so that the deduction of the losses against other income would have greater value. An increase in personal income tax rates makes this option more valuable and makes it more likely that someone would choose to become an entrepreneur. See Cullen, J.B., and Gordon, R.H. "Taxes and Entrepreneurial Activity: Theory and Evidence for the U.S." NBER Working Paper 9015, June 2002.

[20] Retail; business, auto, and repair services; personal services; and entertainment and recreation (Bureau of Labor Statistics, *Characteristics of Minimum Wage Workers* and Georgellis and Wall, 2000b).

[21] Note that, although some states do not have a minimum wage, the federal minimum wage law supersedes state laws.

[22] Wald tests of the joint significance of these variables indicate that only the personal income tax rate does not have statistically significant effects on the estimation.

[23] In contrast, in their time-series study of aggregate rates of entrepreneurship, Bruce and Mohsin (2003) find that the effect of the maximum federal corporate income tax rate is statistically significant but small.

[24] Some authors have found that changes in the real federal minimum wage have been related to changes in the aggregate rate of entrepreneurship over time. See Bruce, D., and Mohsin, M. "Tax Policy and Entrepreneurship: New Time Series Evidence." Working paper, University of Tennessee-Knoxville, 2003. Their minimum wage variable differs from ours in that it does not account for changes in productivity.

[25] For the predictions, the productivity bias in the minimum wage was set to 0.15, which is the lowest value in the sample of states.

[26] A proprietor is defined as a person employed in his or her own business. We exclude farm proprietors, as does previous research, on the basis that the decision to become a farm proprietor depends upon different factors than the decision to become a nonfarm proprietor.

[27] Georgellis, Y., and Wall, H.J. "Who Are the Self-Employed?" Federal Reserve Bank of St. Louis *Review* 2000;82(6):15-24.

[28] For one example, more than 10 percent of self-employed women in 1997 were in the child-care business, while virtually no men were. On the one hand, a state with a relatively high share of women might have a relatively high supply of child-care providers and, therefore, have more self-employed women. On the other hand, the state also has relatively more women demanding child-care services, thereby making the state a relatively lucrative market for self-employed child-care providers.

[29] Parker, S.C. "A Time Series Model of Self-Employment Under Uncertainty." *Economica* 1996; 63(251):459-475.


FEDERAL RESERVE BANK
OF ST. LOUIS