

## **Examining the Effectiveness of State Funded Angel Investor Tax Credits: Initial Empirical Analysis**

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Many states are issuing tax credits for qualifying angel investments in order to encourage economic growth and development. While this policy makes intuitive sense, there has been no systematic evaluation of the outcomes of these programs. This study is a first step toward empirically examining the effectiveness of angel investment tax credit programs. We utilize the Kauffman Entrepreneurial Activity Index as an outcome to measure the initial statewide impact of the introduction of angel tax credit programs. Initial results support the introduction of angel tax credit programs does increase entrepreneurial activity on a state level.

Why should policy makers consider providing angel investment tax credits? The intuitive answer is to provide an incentive to increase early stage investment in high growth potential new ventures. This should in turn lead to the creation of higher paying knowledge-based jobs, and ultimately, an increase in tax revenue. But this chain of events is based upon the assumption that angel investment tax credits lead to an increase in entrepreneurial activity. Therefore, research that investigates this linkage is needed.

The purpose of this paper is to empirically examine the relationship between angel investment tax credits and corresponding, state-specific entrepreneurial activity. First, we review angel investment and the angel tax credit programs. Next, we outline our proposed method for examining the relationship between angel investment tax credits and entrepreneurial activity. Finally, we report the results of these analyses and discuss the findings and implications for researchers, practitioners, and policy makers.

### **LITERATURE REVIEW**

#### **ANGEL INVESTORS**

Both scholars and practitioners of entrepreneurship alike have been known to repeat the old saying that the first place to look for investors is the three F's: Family, Friends, and Fools. It has also been joked that angel investors did not receive their title because they are like angels helping entrepreneurs to finance their emerging businesses, but instead because they are more likely to receive their return on investment in the afterlife. These two rather cynical epigrams highlight two unique features of angel investment. First, seeking funding for start-ups and early stage ventures is both difficult and necessary for aspiring entrepreneurs and angel investors can fill that important need (Brinlee, Franklin, Bell & Bullock, 2004). Second, because angels provide equity investments as opposed to loans, they assume a great deal of risk, and therefore require high returns from their successful investments (Bell, 2007). In order for policy makers to provide incentives that will encourage greater investments it is necessary to understand the nature and motivations of angel investors in general.

Angel investors vary widely in the range of equity investments they provide to entrepreneurs who are launching, expanding, or acquiring a new business. Typically, angels provide equity investment ranging from about \$25,000 to \$2,000,000. The angels will generally expect to receive their investments back with a significant return either through a share of a successful venture's profits, or through the company's eventual exit strategy, such as being acquired by a larger firm, or through an Initial Public Offering. While angel investors may have many secondary motivations, such as the thrill of

entrepreneurship, to support their local community, to search for a balanced investment portfolio, to remain engaged in the business community beyond retirement, or out of a desire to keep learning, their primary motivation is financial return (Bell, 2007). This leads to the likely conclusion that anything that policy makers can do to increase the likelihood of financial returns will encourage more investment. One method that many state lawmakers have used to increase financial incentives for angels is to provide them tax credits for their investments in new ventures within their states.

## **ANGEL INVESTMENT TAX CREDITS**

Hendon, Bell, Blair, and Martin (2012) found that more than 20 states offered angel investment tax credit programs for the purpose of increasing entrepreneurial activity. These programs varied widely in terms of the maximum credit allowed from a low of 10% in Vermont to a high of 100% in Hawaii. Additionally, some states impose a cap on the total amount available for the tax credit, either per investment by company, or as a total for the state itself.

The authors (Hendon et al., 2012) noted that two other key factors on which these equity tax credits varied by state was whether or not they were refundable, transferable, both, or neither. Refundable tax credits are those for which the investor can receive cash back from the state government if the credit exceeds the amount owed to the state in income tax for the year. In other words, the investor can receive a refund back from the state in excess of the investor tax liability for that year. Transferrable tax credits are those for which credits for out of state investors in partnerships with in-state investors can be transferred (Hayter, 2008). This is often accomplished by the out of state investor selling the tax credit at a discount which is typically 10-20% on the dollar

In addition to the variance in the manner in which the angel tax credit programs are implemented from state to state, there is also a great deal of difference in the way these states attempt to measure the outcomes of these programs. For example, the New Mexico Development Department reported \$736,468 in new investment that they attributed to the Angel Investment Tax Credit (New Mexico Development Department, 2012). However, opponents of angel tax credits point out that it is difficult to determine how much of this amount would have been invested anyway without the program in place. The difficulty in providing quantifiable evidence of the outcomes of these programs has led to some policy makers questioning the need for these programs (Hendon et al., 2012). Thus, the primary contribution of this study will be to provide a first step in the evaluation of evidence of the effectiveness of angel investment tax credit programs in terms of promoting entrepreneurial activity.

The key argument in favor of state angel investment tax credits is that they will increase entrepreneurial activity within the state. The primary research question for this study is whether or not there is any empirical evidence to support this assertion. In order to test this assertion, we will utilize both descriptive statistics and tests of statistical significance. Thus, our primary hypothesis reads as follows.

*Hypothesis: The rate of increase in entrepreneurial activity will be significantly greater after the introduction of a state angel investment tax credit programs.*

## **METHODOLOGY**

The data for the sample were collected from multiple sources. The data for angel investment tax credit incentives, which include all 50 states in the United States of America, were collected by systematic online search for information for angel investment tax credit programs. For each state, data were recorded for: 1) the status of their angel investment tax credit program or lack thereof; 2) the maximum credit % allowed; 3) whether or not the tax credits are refundable; and 4) whether or not the tax credits are transferable.

The data utilized as a proxy for *entrepreneurial activity* are publicly available from the website of the Ewing Marion Kauffman Foundation ([www.kauffman.org](http://www.kauffman.org)). The Kauffman Index of Entrepreneurial Activity (KIEA) has been capturing new business owners in their first month of significant business activity from 1996 to the present. The KIEA measures new business development across the country by tracking the percentage of adult, non-business owners that start businesses each month. The data is available by state by year, as well as in many other demographic categories (Fairlie, 2012). As of the time of this study, the data are publicly available for each of the 50 states for the years 1996 to 2011.

In addition to the data for state angel investment tax credit programs and entrepreneurial activity by state, data for the real annual GDP growth percentage for the nation were collected for the years 1996 to 2011 (The World Bank, 2012). This allows greater insight into the effectiveness of angel tax credits by allowing us to consider the national economy each year as we track the changes in entrepreneurial activity by state over time.

## RESULTS

The general descriptive statistics for the sample are presented in Table 1. Thirty-two states have implemented Angel Investor Tax Credit Programs, and 29 are still in operation. Oklahoma's program expired on the first day of 2012 and Vermont's expired in 2008. New Mexico's program expired in 2011, but in 2012 it was extended to 2016 by unanimous vote in the New Mexico state legislature (NewMexicoVotes.org, 2012). Louisiana's program was also allowed to expire in 2009, but was reinstated in 2011 (Louisiana Economic Development, 2012). The maximum tax credit percentage of the 31 states ranged from 10-100% with a mean of 35% and a standard deviation of 18%. Three states, Maryland, Minnesota, and Nebraska offered refundable tax credits to angel investors. Five states, Arkansas, Hawaii, Kansas, Kentucky, and Maine offered transferable tax credits to angel investors.

Table 1: *Study Overview Descriptive Statistics*

Total Number of States That Have Attempted Angel Investment Tax Credit Programs	32
Total Number of States That Have Angel Investment Tax Credit Programs in Operation as of 2012	30
Maximum Credit %	
Range	10-100%
Mean	35%
Standard Deviation	18%
Total Number of States with Refundable Tax Credit Programs	3
Total Number of States with Transferable Tax Credit Programs	5

The change in entrepreneurial activity for states with angel investment tax credit programs within the first two years of implementation are reported in Table 2. Of the 31 states that have implemented angel investment tax credit programs, 29 states have full data to compare entrepreneurial activity before and after implementation. North Dakota began its angel tax credit program in 1989 and Ohio began its 1996. The Kauffman Organization began collecting data on entrepreneurial activity in 1996 and therefore data for 1988 and 1995 are unavailable to be used as controls to measure change for North Dakota and Ohio.

Table 2: *Change in Entrepreneurial Activity after Angel Tax Program Introduction*

Number of States with an <u>Increase</u> in Entrepreneurial Activity within first two years of Program	22
Of these 22:	
Transferable	4
Refundable	2
Implemented during downturn in National GDP growth	8
Number of States <u>Without Increase</u> in Entrepreneurial Activity within first two years of Program	7
Of these 7:	
Less than a year since program implementation	4
Credit % less than or equal to 35	4
Implemented during downturn in National GDP growth	7

Of the 29 states that implemented angel investment tax credit programs between 1997 and 2011, 22 (75%) displayed an increase in entrepreneurial activity within the first two years of the program. Of these 22 successful programs, four had the feature of being transferable, and 2 were refundable. Additionally, eight of these states implemented their program during a slowdown in the national economy as measured by USA GDP per capita annual growth and still managed to demonstrate an increase in entrepreneurial activity. It should be noted that all 7 of the states that did not increase their entrepreneurial activity within the first two years implemented their programs during a downturn in the economy. Additionally, four of these seven states implemented their program in 2011 and the data on entrepreneurial activity for 2012 is not yet available as of the time of this study. Therefore, they may still display an increase in entrepreneurial activity within the timeframe of the 22 successful states.

In addition to the preliminary empirical evidence provided by the above descriptive statistics, t-tests were performed (Cohen, Cohen, West, & Aiken, 2003) in order to test for statistical significance in the change in entrepreneurial activity for those states that introduced angel investment tax credits during the time span of the study sample. The results appear in Table 3 and Table 4 below:

Table 3: *Paired Sample t-Test*

	Mean	Std. Deviation	Std. Mean Error
Entrepreneurial Activity Year Prior	28.35	5.373	1.303
Average of 2 Years After Implementation	32.65	8.215	1.993

Table 4: *Entrepreneurial Activity Year Prior Vs. Average of 2 Years After Implementation*

	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Dev.	S.E. Mean			
Entrepreneurial Activity Year Prior vs. Average of 2 Years After Implementation	-4.294	7.81	1.89	-2.267	16	.038

As indicated in Table 3 and Table 4 above, the mean entrepreneurial activity index across the two years following implementation of an angel investment tax credit was significantly higher than the mean entrepreneurial activity index for the year prior to implementation. Thus, Hypothesis 1 was fully supported.

## DISCUSSION AND IMPLICATIONS

The purpose of this study is to empirically examine the relationship between angel tax investment credits and state-level entrepreneurial activity. This answers the call to, “focus upon any identifiable impact that states may receive as a result of the credit” (Hendon et al., 2012). The results support the theory that state angel investment tax credits influence state level entrepreneurial activity. Twenty-two out of 29 states that implemented an angel tax credit program displayed an increase in entrepreneurial activity within two years. Fifteen of the 29 states implemented their programs during times of economic slowdowns and eight of them increased in entrepreneurial activity in spite of this. All seven that did not see an increase in entrepreneurial activity launched their programs during economic slowdowns. It is quite possible that their economic situation would have been worse without the investment incentives provide by the angel tax credits. We believe that this is the first study that systematically examines the outcomes of angel tax credits as measured by entrepreneurial activity.

This stream of research is an attempt to understand both the effectiveness of equity investor state allocated tax credits and the economic return to the state. Historically, one of the strongest arguments opposing tax credit programs is the lack of valid measures of effectiveness. This study is a first step toward objectively measuring the outcomes of angel investment tax credits; our findings suggest that the tax credit programs can increase entrepreneurial activity. This has important implications for policy makers because entrepreneurship creates new businesses and new jobs, increases technological competition, and improves the productivity of the state (Holden, 2007).

In addition to the relevance of this research for assisting policy makers in understanding the true impact of tax credits upon entrepreneurial activity, the credits will arguably also impact a nascent venture’s ability to raise capital. The availability of tax credits may ease the pathway to raise early stage funding. Conversely, the absence of credits may impede or delay early stage fund raising. In addition to examining whether or not tax credits enhance the ability to raise funds, this research also has implications for examining the possibility that credits provide mechanisms to speed up the funding process and/or offer investment to ventures once thought to be outside the risk profile of the angel investor community.

Finally, with limited resources, particularly in regard to allocation of precious time, early stage ventures are required to embark on a bureaucratic red tape adventure to qualify for tax credits. This research could well assist nascent ventures in the time allocation decision-making process to pursue or not to pursue tax credits.

Future research should expand upon this study and examine the link between angel tax credits and entrepreneurial activity. Additional outcome variables such as new jobs, new firms, increased investment, and creation of high growth potential ventures should be investigated. The impact of the angel tax credits upon states in times of economic downturn should be examined as well. In addition, structural equation modeling and hierarchical time series regression analyses controlling for the economy may provide new insights and could provide stronger evidence of the effectiveness of the angel investment tax credit programs.

In addition, more qualitative data regarding investor perception and influences of the tax credits should be explored. This vein of research, in conjunction with the quantitative assessment data, may offer insights into aspects of the psychology of angel decision-making, perceptions of risk and risk aversion, and triggering events for actual investment.

## CONCLUSION

The purpose of this study was to empirically examine the relationship between angel tax investment credits and state level entrepreneurial activity. These preliminary results support the argument that state angel investment tax credits influence state level entrepreneurial activity. This is important because lawmakers continually debate the benefits of these programs in light of the cost in lost tax revenue. While more research is needed in this area, this preliminary study suggests that the angel tax credits do provide an incentive to increase early stage investment in high growth potential new ventures, which should in turn lead to the creation of higher paying knowledge based jobs and ultimately an increase in tax revenue.

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