

FISCAL POLICY IMPLICATIONS ON SMALL BUSINESS DECISIONS: An
Application to the Kansas Income Tax Initiative

BY

MICHAEL AUSTIN

Submitted to the graduate degree program Economics and the Graduate Faculty of the
University of Kansas in partial fulfillment of the
requirements for the degree of Master of Arts.

Chairperson Zongwu Cai

Joseph Sicilian

Ted Juhl

Date Defended: May 9th, 2016

The Thesis Committee for MICHAEL AUSTIN
certifies that this is the approved version of the following thesis:

FISCAL POLICY IMPLICATIONS ON SMALL BUSINESS DECISIONS: An
Application to the Kansas Income Tax Initiative

Chairperson Zongwu Cai

Date approved: May 9th, 2016

ABSTRACT

This paper attempts to identify the relationship between changes in marginal tax rates and Kansas small business owner decisions to invest in capital goods or hire workers due to Kansas House Bill 2117. This paper isolates the effects of the elimination of non-wage business income to business growth decisions. I found that elimination of tax rates for small businesses in 2013 increased the likelihood to hire workers, and invest in capital goods. These 2013 effects were also uniquely different than changes in hiring and investment in non-tax years. I found that a 6.7% reduction in marginal tax rates gave a 1% increase in the likelihood to hire, and a 25% increase in the likelihood to invest.

ACKNOWLEDGEMENTS

I would like to thank Professor Joseph Sicilian of the University of Kansas for guiding me throughout this process. I would also like to thank Professors Jennifer Ball and Dmitri Nizovtsev for being fantastic advisers throughout my undergraduate process.

TABLE OF CONTENTS

Executive Summary	1
Section One - Introduction	3
Section Two - The Model	4
Section Three - The Data	10
Section Four - The Results	11
Section Five - The Conclusion	15
References	17
Appendix A	19
Appendix B	21

EXECUTIVE SUMMARY

This paper attempts to identify the relationship between changes in marginal tax rates and small business owner decisions to invest in capital goods or hire workers.

Kansas Governor Sam Brownback and the Kansas state legislature passed and executed two bills that would reduce income tax brackets for all Kansans while exempting all non-wage business income for sole-proprietorships, partnerships, LLCs and S-corporations. This paper isolates the effects of the elimination of the nonwage business income.

There is research to suggest that access to funds and cash inflow are essential for entrepreneurial survival and activity. Cash inflow is essential for small businesses, as they lack the flexibility to weather large fluctuations in such access to funds. For small business owners that supply their own labor to their firms, the decision to hire stems from choice theory of the price of labor and leisure. While the decision to purchase capital goods, stems from expectations of the present value of revenue from the asset measured with its depreciation. The elimination of tax rates interacts with the decision to hire and invest through; affecting the opportunity costs, and the present value of asset profitability, respectively.

To capture the relationship of tax changes and business growth decisions, a probit regression was modeled with the dependent variable equaling “1” if the firm hired workers or made a capital purchase. Independent variables included changes in tax rates, and selected demographic characteristics. The model found that changes in tax rates for small businesses, in our 2012/2013 sample, created a statistically significant increase in the likelihood to hire workers and invest in capital goods. Taking an average of the

sample, it was found that a 6.7% reduction in marginal tax rates gave, on average, 1% increase in the likelihood to hire, and a 25% increase in the likelihood to invest.

SECTION ONE – INTRODUCTION

There has been plenty interest in Kansas’s fiscal situations as of late. Whether the judgement about the fiscal debacle is positive or negative, there seems to be a vested interest in observing many different economic aspects of the state tax policy. Governor Sam Brownback signed into law a comprehensive tax package with the intent of making Kansas a stronger economic area and an easier place to start a “small business” (Brownback for Governor, Inc., 2014). This tax package resulted in the largest income tax cut in the history of the state.

Under him and the Kansas legislature of the time, two bills were passed affecting individual income tax rates (Legislature, 2011-2012 Legislative Sessions, 2012) (Legislature, 2013-2014 Legislative Sessions, 2013) as can be seen in *Figure 1*. House bill 2117 (HB2117) collapsed the three –bracket structure for individual income tax rates into a two-bracket structure. In addition, HB2117 also completely exempted non-wage business income that had been subjected to state individual income tax. This is known as income reported on the federal tax form 1040 lines 12, 17 and 18. House bill 2059 (HB2059) created a mechanism by which individual income taxes would be reduced from the 2013 rates established by HB2117. Tax rates in the top and bottom brackets would fall incrementally until reaching 3.9 and 2.3 percent, respectively. *Table 1*, and *Table 2* show how marginal tax rates changed for all Kansas citizens.

This paper will be divided into 3 additional sections of analysis and a conclusion. Section Two will review and justify the theoretical relationship between marginal tax rates and proprietary business decisions for growth and present statistical models with the

intention of capturing that relationship. Section Three will describe the data used for purposes of this research. Section Four will outline the results of the model and the final section will summarize findings and outline areas for continued research and improvement.

SECTION TWO – THE MODEL

Basic microeconomic teachings dictate the relationship between a person's income, and their subsequent budget allocation for consumption. Income taxes play a significant role here due to its inverse relationship to income available for discretionary purposes. For small business owners, income taxes are a factor in dictating the magnitude of available income that is to be plowed back into their business. In Kansas, there is a unique opportunity to measure the effects of the changes in personal income taxes to changes in propensity to hire and make capital investments. The question that this paper intends to answer is whether changes in hiring and investment decisions are related to changes in the small business marginal tax rate. Douglas Holtz-Eakin of Syracuse University, David Joulfaian of the U.S. Treasury, and Harvey S. Rosen of Princeton University attempted to isolate the survival rates of entrepreneurs and its relationship to access to capital. Their findings were notable, that access to liquidity provided a significant influence on the ability of an entrepreneur to survive (Holtz-Eakin, Joulfaian, & Rosen, 1994). The example given in their report was that a \$150,000 inheritance increases the probability that an individual will continue as a sole proprietor by 1.3 percentage points, and if survived, its receipts will increase by almost 20 percent.

While this paper spoke to the viability of businesses, David S. Evans of the National Economic Research Associates, and Boyan Jovanovic of New York University found the same positive signs between access to capital and starting a business. Evans and Jovanovic found that capital is material for those starting a business, and restricting access to capital disproportionately hurts those with little personal starting funds (Evans & Jovanovic, 1989). Bruce D. Meyer of Northwestern University found a similar conclusion when examining the lack of black entrepreneurs. Meyer found evidence suggesting that little capital is needed to start most businesses and that beginning entrepreneurs do not usually borrow funds (Meyer, 1990).

This paper uses the framework established by Robert Carroll and Mark Rider of the U.S. Treasury, Douglas Holtz-Eakin, and Harvey S. Rosen to measure 'entrepreneurs' personal income tax situations on their use of labor and investment. Carroll, Holtz-Eakin, Rider and Rosen examined the income tax returns of sole-proprietors before and after the Tax Reform Act of 1986. Their intention was to measure the effect of the substantial reductions in marginal tax rates associated with that law to their decisions to hire labor, change size of their wage bills, and to invest in capital goods. Carroll, Holtz-Eakin, Rider and Rosen found that individual tax rates exert a statistically significant effect on the probability that an entrepreneur hires workers and influences investment decisions (Carroll, Holtz-Eakin, Rider, & Rosen, *Income Taxes and Entrepreneurs' Use of Labor*, 2000) (Carroll, Holtz-Eakin, Rider, & Rosen, *Entrepreneurs, Income Tax, and Investment*, 1998).

This suggests there is considerable evidence to a sensitivity small businesses have to their cash flow. While the magnitude of cash flow is material for a small business to

start and grow, the volatility of the cash flow should not be ignored, either. In fact, if businesses need little capital to start a business, and continued access to capital can maximize potential incoming cash flow, then any expansion of that cash inflow is important for the business. The smaller the firm, the more vulnerable the business is to cash flow fluctuations (Carroll, Holtz-Eakin, Rider, & Rosen, *Income Taxes and Entrepreneurs' Use of Labor*, 2000). From this framework, it can be understood how increasing small business access to capital funds, by lowering or eliminating income taxes, can increase the likelihood of that small business growing. “Growing” a business, can manifest itself in terms of hiring workers or making capital investments for purposes of this paper.

A small business shall be characterized as a sole proprietor, limited liability corporation, partnership, or S-corporation. The decision criteria to hire or not hire workers for a small business owner is similar to an employee of a firm choosing between working and consuming leisure. For an employee, the choice between working and consumption is decided by opportunity costs. If the wages of the employee were to increase, then the price of leisure would also increase, and the employee would consume less leisure and work more (Varian, 2014). This same relationship applies to a small business owner who would supply their own labor. If the returns to providing labor were to increase, then the amount of labor would increase. By reducing or eliminating income taxes, returns to proprietor’s productivity would rise and that owner would be given incentive to provide more labor. This could even lead to additional hiring.

When it comes to a decision for the small business to make a purchase of a capital good, defined as inputs to production that are themselves produced goods (Varian,

2014) , the small business owner must weigh the expected value of future sales of that asset and the cost of the asset. Olivier Blanchard, formerly of the IMF, and David R. Johnson of Wilfrid Laurier University, outlined that the cost of capital goods is usually defined by depreciation, or the rate at which the capital goods loses usefulness (Blanchard & Johnson, 2013). Similar to behavior of consumers' consumption decisions due to the perception of future income, small businesses' perception of future income also affects their investment decisions. Blanchard and Johnson find that the more transitory small business owners expect a cash flow increase, the less they revise assessments of present value of revenue of purchased assets and the less likely they are to purchase more capital goods (Blanchard & Johnson, 2013). Though not a guarantee, it is reasonable to make the case that the elimination of non-wage business income is in a way, a signal of improving state and local business climate (Parkes, 2015) . If small business owners perceive that such a large tax cut is a concerted effort to improve the state business climate, then such small businesses would be more likely to increase purchase of capital goods as their expectation of the present value of future income would also increase.

The mechanism by which we can measure the probability of a small business making a capital investment or employment decision shall be through a probit model. This probit model will measure the probability of hiring at time t as a function of hiring at time $t-1$, the change in tax rates, and small business owner demographics (Carroll, Holtz-Eakin, Rider, & Rosen, Income Taxes and Entrepreneurs' Use of Labor, 2000). The following form is presented,

$$\begin{aligned}
(1) \quad & \text{Probability}(L_t = 1) \\
& = \beta_0^L + \beta_1^L \% \Delta \text{TaxPrice} + \beta_2^L (\% \Delta \text{TaxPrice} * L_{t-1}) + \beta_3^L (L_{t-1}) \\
& + \beta_4^L (\text{Dependents} = 1) + \beta_5^L (\text{Resident}_t = 1) \\
& + \beta_6^L (\text{Resident}_{t-1} = 1) + \beta_{6+I}^L (\text{Industry}_i)
\end{aligned}$$

where “ $L_t = 1$ ” means the small business has employees at time t ,

$$\% \Delta \text{TaxPrice} = [\ln(1 - \text{TaxRate}_t) - \ln(1 - \text{TaxRate}_{t-1})]$$

“Dependents” means the small business tax filer has claimed dependents,

“ $\text{Resident}_t=1$ ” means the tax filer did not file residence in Kansas at time t

“Industry” is the North American Industry Classification System code at a

“sector” level.

To capture the likelihood of a small business making a capital investment, the following form is presented,

$$\begin{aligned}
(2) \quad & \text{Probability}(I_t = 1) \\
& = \beta_0^I + \beta_1^I \% \Delta \text{TaxPrice} + \beta_2^I (\% \Delta \text{TaxPrice} * I_{t-1}) + \beta_3^I (I_{t-1}) \\
& + \beta_4^I (\text{Dependents} = 1) + \beta_5^I (\text{Resident}_t = 1) + \beta_6^I (\text{Resident}_{t-1} = 1) \\
& + \beta_{6+I}^I (\text{Industry}_i)
\end{aligned}$$

where “ $I_t = 1$ ” means the small business has made a purchase of a capital good.

The two probit models assume normality. The term *TaxPrice* is a linear combination of a marginal tax rate, and its percent change is the difference of logs

between the *TaxPrice* of the two reference years. The inclusion of an interaction term allows us to measure whether the changes in *TaxPrice* are discriminate towards those small businesses who did not make a business growth decision at time t-1 and those that have. Equation (1) is of a very similar structure to Carroll, Holtz-Eakin, Rider, & Rosen 's work on measuring hiring decisions, however access to small business demographics and characteristics were limited in my case to resident status and industry classifications. By incorporating the $\% \Delta TaxPrice$ between 2012 and 2013, the hope is to observe a statistically significant sensitivity to the opportunity for business growth. In addition, this same method will be applied to a sample of small businesses in 2011 and 2012.

Comparing the coefficients from two different samples can serve as an additional test as to whether the elimination of income tax from 2012 to 2013 is uniquely different than from 2011 to 2012. However there is a potential complication that can arise from calculating $\% \Delta TaxPrice$ and analyzing its effects on employment or investment. If the gross receipts or taxable income of the small business owner were to increase, due to growing demand as an example, that could also increase the likelihood of the small business owner hiring or making a capital investment. For that small business, the growth of product/service sales enticed business growth decisions, not $\% \Delta TaxPrice$. This endogenous growth could be mis-identified to the change in tax rates by the equations (1) and (2). To adjust for this endogeneity, an instrument is needed. Instead of calculating $\% \Delta TaxPrice$ based off of income and tax rates in time t, an instrument of $\% \Delta TaxPrice$ will be calculated with income in time t-1 and tax rates at time t. This method removes the influence of taxable income growth, and gives a pure change in income tax rates.

Regressing $\% \Delta TaxPrice$ on this new instrument and a constant using OLS, gave a statistically significant relationship.

This model also assumes that there is a level of interaction between changes in marginal tax rates and the condition that an investment or hiring decision has already been made. This interaction was used by Carroll, Holtz-Eakin, Rider, & Rosen and it also relates to the findings of Holtz-Eakin, Joulfaian, & Rosen which found additional business growth on the condition that the firm survived. Including whether or not the small business owner filed residence in Kansas might also be beneficial in detangling the effects of the changes in tax rates. However it is of note that an individual who is not a resident of Kansas but has Kansas business income must still pay taxes to the non-Kansas state in which they reside (Lathrop & Gage, LLP, 2012). This may suggest a level of self-selection, in which a large number of the small business sample are Kansas residents. Including industry NAICS can remove proclivities to invest or hire that may be tied to the industry environment and not to changes in tax rates.

SECTION THREE – THE DATA

Data for the tax simulation came from the federal income tax returns filed from the state of Kansas. Federal income tax returns were pulled for tax year 2011, 2012 and 2013. Since the income tax returns of interest had to be of sole proprietorships, partnerships, and LLCs, Schedule C's and Form 4562's were pulled in conjunction with the 1040's. On line 26 of the Schedule C form, the owner of the business marks the amount of wages paid to employees. By simply coding wage information on Line 26 as a

dummy term; “1” for positive wages and “0” for non-positive wages, that can serve as the dependent variable for equation (1) . In “Part 1” of the Form 4562, the business owner can mark any depreciation expenses made on capital goods. By coding this term as a dummy variable as well, it can serve as the dependent variable for equation (2).

There were a little more than 300,000 observations for all three years. The sample was then split into two. One sample only included small businesses in both 2011 and 2012. The other sample only included small businesses in both 2012 and 2013. In both samples, individuals who were not present in both reference years were removed. Individuals who changed their filing status were also removed. Once all observations were assigned a sector NAICS code, the observations in which NAICS code changed were removed¹. After data was cleaned, 97,535 small businesses remained in the 2011/2012 sample, and 110,798 small businesses remained in the 2012/2013 sample.

SECTION FOUR – THE RESULTS

A preliminary look at the two samples seems to have supporting signs of some movement into business growth. *Figure 2* shows that out of the small businesses that had zero wages, or zero employment, in the first year, around one percent grew to have positive wages, or employment, in the second year. In both samples, the percent of businesses that grew increased with higher marginal tax rates, until the tax rate of 6.45%.

¹ NAICS code assignment was only of the two digit sector. Small businesses who changed industry code at such a high level was likely due to an error at assignment.

Figure 3 shows the percent of businesses with no purchases of capital goods in the first year that made capital goods purchases in the second year. However the percent growth seen here is much higher than the employment growth in *Figure 2*. This may speak to the ease in making a capital purchase as opposed to hiring. Investment decisions may have more of a flexible range of options relative to employment decisions. In terms of economic output, employment is usually a lagging indicator, suggesting that during the business cycle, employers view employment decisions as more permanent relative to others (Blanchard & Johnson, 2013) . Just like in *Figure 2*, more firms make investment decisions the higher their marginal tax rate; from 6 percent under the lowest tax rate, to over 8.5% under the highest tax rate.

Table 3 gives descriptive statistics of the 2012/2013 small business sample by wages, depreciation, and other identifiers. The number of small businesses with employment increased over the year by 0.98%, but the number of small businesses with depreciations expenses fell by 1.8%. A large percent of small businesses have dependents, this may suggest that having dependents may not be a significant factor to decide to hire workers or buy capital goods. Average wages paid grew by 4.8%, and depreciation expenses grew 1.0%. Nearly the entire sample was filled by Kansas residents. In terms of NAICS classification, the largest number of small businesses that could be classified fell into “Other services, except public administration”, “Professional and technical services” and “Retail trade”. “Other services” primarily include equipment and machinery repairing, personal care services, and other services not specifically classified and provided by private households. “Professional and technical services” require high degree of expertise and training. Examples of businesses under this category

could provide legal advice, accounting/bookkeeping, research, and engineering services to name a few (U.S. Census Bureau, 2012) .

Results of the probit model is outlined in *Table 4*. Two specifications were run for the 2011/2012 and 2012/2013 samples on hiring decisions. “Model 1” limits the independent variables to *TaxPrice*, L_{t-1} , $\% \Delta TaxPrice * L_{t-1}$, *Resident_t*, and *Resident_{t-1}*. “Model 2” includes the same co-variates in “Model 1” but expands to measure contributions of dependents, and NAICS industry. For the 2011/2012 sample in Model 1, only the intercept and L_{t-1} were found to have a statistically significant relationship to small businesses having employment in 2012. The lack of a significant impact from the change in tax rates is straightforward, as there has been no change in marginal tax rates between 2011 and 2012. With the inclusion of industry and dependent covariates, the significance of $\% \Delta TaxPrice$ did not change.

For the 2012/2013 sample, $\% \Delta TaxPrice$ was also not statistically significant in Model 1. However its interaction with L_{t-1} was significant at a 1% level. This suggests that if a small business did not have employees, the elimination of income taxes could not reliably increase the chance of hiring. However, conditional on having employees in the previous year, the elimination of tax rates increased the likelihood of hiring in current term by 7.4%. Model 2 doesn't materially change the effect of $\% \Delta TaxPrice$, however *Dependents* is close to significance at a 10% level.

Table 5 displays results of the probit model when it comes to investment decisions. For the 2011/2012 sample, $\% \Delta TaxPrice$ is barely statistically significant at the 5% level. Another difference from the probit model on hiring decisions, the 2011/2012 sample does have resident status providing a statistically significant effect on

investment decisions in the current term. Model 2 for the 2011/2012 sample pushes $\% \Delta TaxPrice$ over the 5% level significance threshold, and nearly all NAICS industries have a positive significant effect on the likelihood of purchasing capital goods. The largest industry effect comes from Transportation and Warehousing, followed by Accommodation and Food Services.

On *Table 5* for the 2012/2013 small businesses, $\% \Delta TaxPrice$ was statistically significant in raising the chances of capital goods purchases. The interaction $\% \Delta TaxPrice * I_{t-1}$ was also statistically significant, but had a negative sign. For a small business owner that made an investment decision last period, the overall effect from the elimination of income tax is a slight negative ($\beta_1^I + \beta_2^I + \beta_3^I < 0$). It may be the case in which making an investment decision in one year has a negative relationship with investment in the next year due to the need to reap in future profit from its use. This could be an avenue for future research. Reviewing Model 2 for the 2012/2013 sample yields similar results to Model 1 and has strong proclivities to invest in nearly all industries.

Though changes in tax rates, for the most part, affected decisions to hire employees or invest in capital goods, a concern still remains as to whether this growth is uniquely different to yearly changes in which tax changes did not occur. *Table 6* compares the coefficients of $\% \Delta TaxPrice$ of the two samples. In the Model 1 panel, the elimination of income tax rates increases the probability of hiring more than the 2011/2012 sample by 2.71 percentage points. In terms of investment, tax cuts in 2013 dampened the growth in the opportunity to invest by 6.41 percentage points, but comparing $\% \Delta (TaxPrice * I_{t-1})$, likelihood increases by nearly 1 percentage points

above 2011/2012 sample. Including industry and dependent covariates in Model 2, a higher increase in hiring decision likelihood is present for 2012/2013 businesses, around 3.28%. Investment decision difference remains similar to Model 1.

With statistically significant findings on the relationship between changes in tax rates and business growth decisions, what has been the overall effect on the 2012/2013 sample. To estimate this, I take a cue from Carroll, Holtz-Eakin, Rider, & Rosen and calculated the probability to hire and invest for every observation in the 2012/2013 sample using only variables significant at the 5% level at least. I also kept the $\% \Delta TaxPrice$ equal to 0. This average probability sample to hire and invest could be considered as a baseline probability. Then I repeat the process but I set $\% \Delta TaxPrice = 0.067$. Calculating the difference between baseline and alternative probabilities, I show that a 6.7% reduction in marginal tax rates give a 1% increase in the likelihood to hire, and a 25% increase in the likelihood to invest².

SECTION FIVE – THE CONCLUSION

While these results are fruitful, there is considerable room for improvement. Firstly, the restriction of the sample to only businesses present in both years could have mis-identified the true effects of changes in tax rates. Expanding the sample size to include businesses at time t-1, regardless of whether the business survived to time t, may better reflect population characteristics and may lower the magnitude of $\% \Delta TaxPrice$

² The choice to reduce income tax rates by 6.7% is due to the highest marginal tax rate before elimination being 6.45%. $\% \Delta TaxPrice = \ln(1) - \ln(1 - 0.0645) = 0.0666$

coefficients. There also may be other variables lurking in the relationship of business growth decisions and $\% \Delta TaxPrice$ that may not have been covered by the instrument used. Including more covariates can help to disentangle the effects of $\% \Delta TaxPrice$ on hiring and investment. Some notable examples to include for future research could be whether the small business owner is married, has capital gains, or has sold capital goods. Comparing the $\% \Delta TaxPrice$ coefficients of the two samples isn't a robust method of equating. Tests should be done on the independence of the two slopes in order to substantiate the claim of a unique difference.

The elimination of income tax rates raised the chances of small businesses' hiring workers and making capital investments in 2013. In addition, decreasing income taxes by 6.7% increased the likelihood to purchase capital goods by 25%, suggesting an elastic sensitivity. The decision to hire due to changes in tax rates is considerably more inelastic, as the same reduction in tax rates raised likelihood to hire by 1%.

References

- Blanchard, O., & Johnson, D. R. (2013). *Macroeconomics* (6 ed.). Pearson Education Inc.
- Brownback for Governor, Inc. (2014). *Brownback Road Map for Kansas*. Retrieved from
Brownback Governor: <http://brownback.com/road-map-kansas/>
- Carroll, R., Holtz-Eakin, D., Rider, M., & Rosen, H. (2000). Income Taxes and
Entrepreneurs' Use of Labor. *Journal of Labor Economics*, 18(2), 324-351.
Retrieved from
http://www.jstor.org/stable/10.1086/209961?seq=1#page_scan_tab_contents
- Carroll, R., Holtz-Eakin, D., Rider, M., & Rosen, H. S. (1998). Entrepreneurs, Income
Tax, and Investment. *National Bureau of Economic Research*.
- Evans, D. S., & Jovanovic, B. (1989, August). An Estimated Model of Entrepreneurial
Choice under Liquidity Constraints. *The Journal of Political Economy*, 97(4),
808-827. Retrieved from <http://www.jstor.org/stable/1832192>
- Holtz-Eakin, D., Joulfaian, D., & Rosen, H. S. (1994, February). Sticking It Out:
Entrepreneurial Survival and Liquidity Constraints. *The Journal of Political
Economy*, 102(1), 55-75. Retrieved from <http://jstor.org/stable/2138793>
- Lathrop & Gage, LLP. (2012, July). *Lathrop & Gage Alert, New Kansas Tax Legislation*.
Retrieved from LathropGage: <http://www.lathropgage.com/newsletter-72.html>
- Legislature, K. (2012). *2011-2012 Legislative Sessions*. Retrieved from Bills and
Resolutions, HB2117:
http://www.kslegislature.org/li_2012/b2011_12/measures/hb2117/

- Legislature, K. (2013). *2013-2014 Legislative Sessions*. Retrieved from Bills and Resolutions, HB2059:
http://www.kslegislature.org/li_2014/b2013_14/measures/hb2059/
- Meyer, D. B. (1990). Why are there so few black entrepreneurs? *National Bureau of Economic Research*. Retrieved from <http://www.nber.org/papers/w3537.pdf>
- Parkes, P. (2015, May 22). *Recent News*. Retrieved from Kansas Policy Institute:
<https://kansaspolicy.org/new-survey-shows-kansas-business-owners-feeling-increasingly-positive-about-state-business-climate/>
- U.S. Census Bureau. (2012). *United States Census*. Retrieved from Industry Statistics Portal:
<http://www.census.gov/econ/isp/sampler.php?naicscode=54&naicslevel=2#>
- Varian, R. H. (2014). *Intermediate Microeconomics with Calculus* (1 ed.). W.W. Norton & Company.

Appendix A

Figure 1

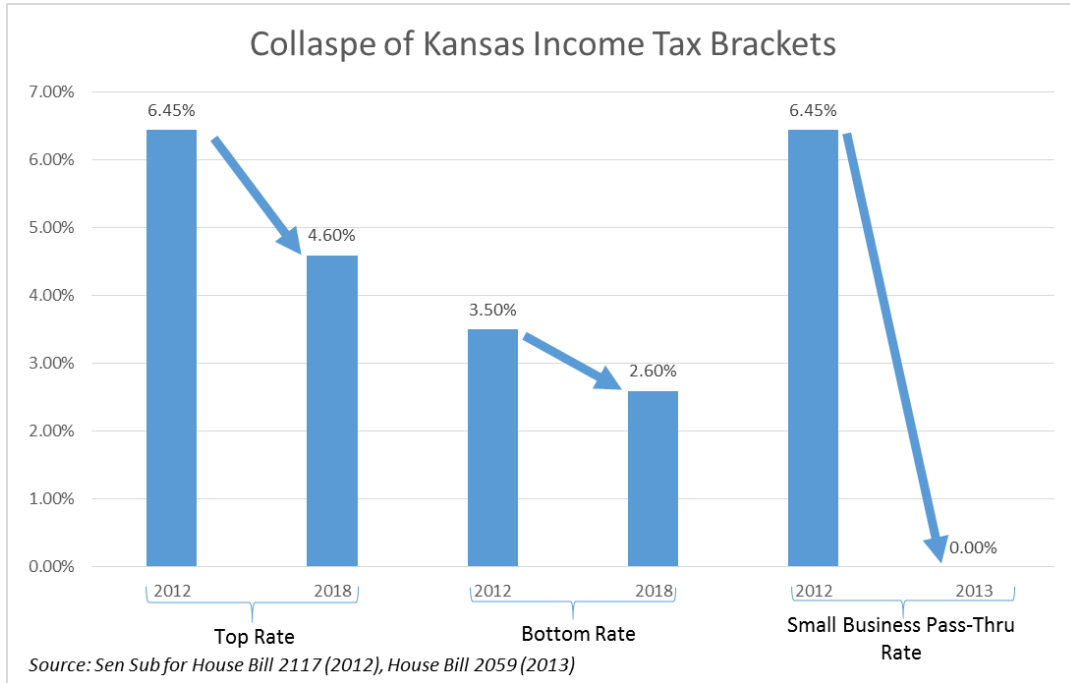


Figure 2

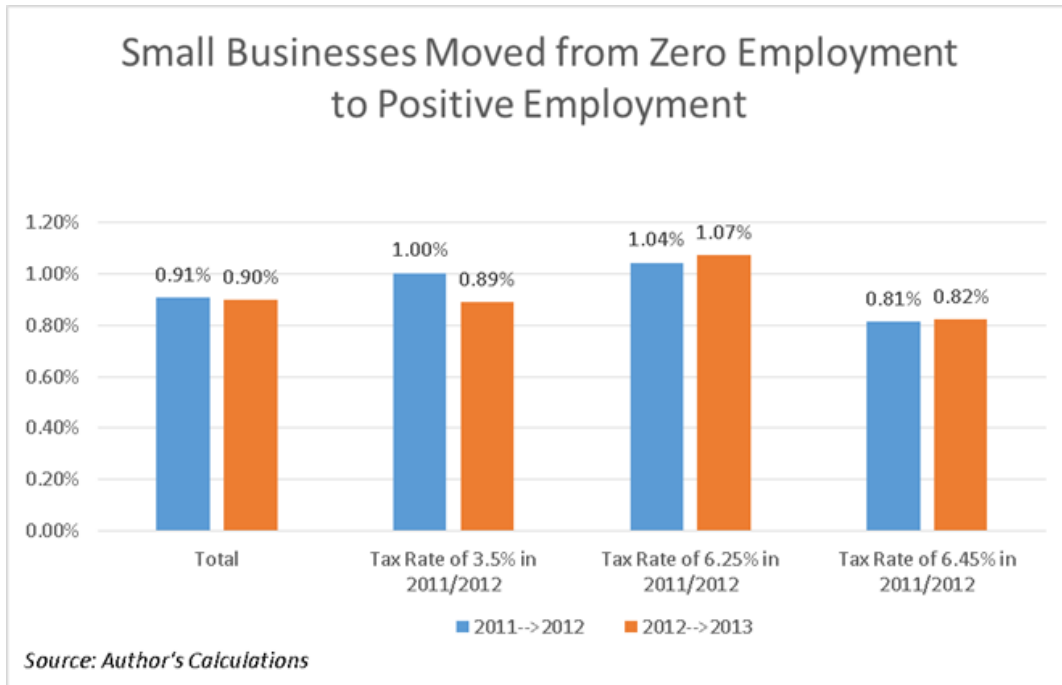
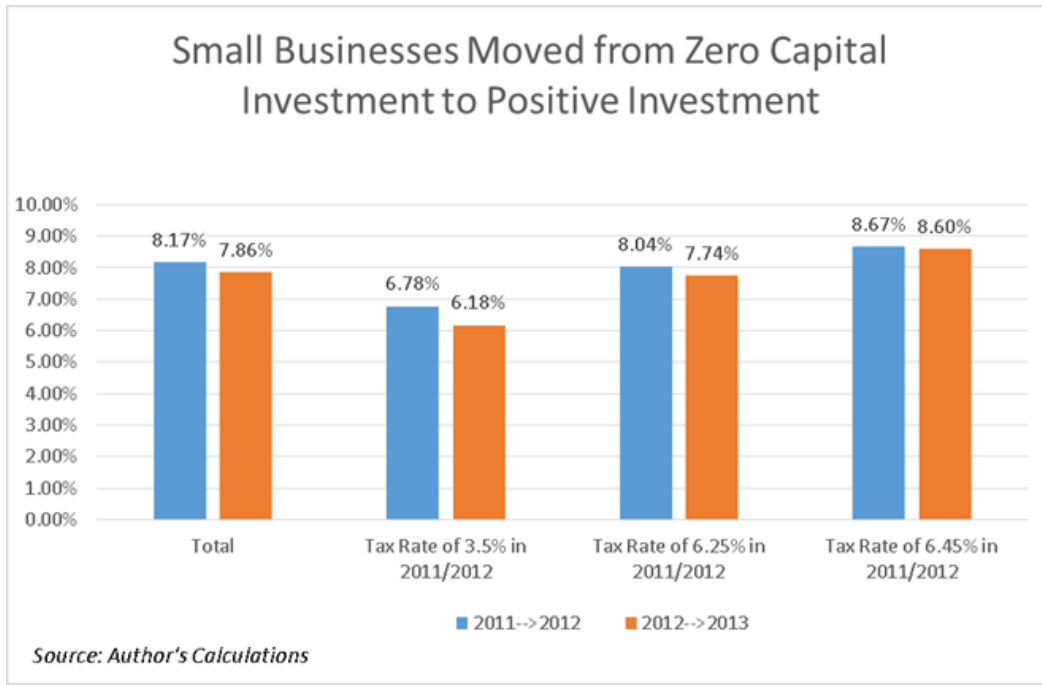


Figure 3



Appendix B

Table 1

Kansas Personal Income Tax Bracket				
Tax Year 2011 and 2012				
Filing Status	Less than \$15,000	\$15,001-\$30,000	\$30,001-\$60,000	More than \$60,000
1	3.50%	6.25%	6.45%	6.45%
2	3.50%	3.50%	6.25%	6.45%
3	3.50%	6.25%	6.45%	6.45%
4	3.50%	6.25%	6.45%	6.45%
5	3.50%	6.25%	6.45%	6.45%
6	3.50%	6.25%	6.45%	6.45%
7	3.50%	6.25%	6.45%	6.45%

Source: Kansas Department of Revenue

Table 2

Kansas Personal Income Tax Bracket			
Tax Year 2013			
Filing Status	Less than \$15,000	\$15,001-\$30,000	More than \$30,000
1	3.00%	4.90%	4.90%
2	3.00%	3.00%	4.90%
3	3.00%	4.90%	4.90%
4	3.00%	4.90%	4.90%
5	3.00%	4.90%	4.90%
6	3.00%	4.90%	4.90%
7	3.00%	4.90%	4.90%

Source: Kansas Department of Revenue

Table 3

Summary Statistics	
Kansas Small Businesses Present in 2012 and 2013	
No. of Small Businesses with Wages in 2012	7,415
No. of Small Businesses with Wages in 2013	7,488
No. of Small Businesses with Depreciation Expenses in 2012	42,020
No. of Small Businesses with Depreciation Expenses in 2013	41,250
No. of Small Businesses with Dependents	98,334
Average of Wages Paid 2012	\$ 3,894.62
Average of Wages Paid 2013	\$ 4,084.82
Average of Depreciation Expenses 2012	\$ 2,433.81
Average of Depreciation Expenses 2013	\$ 2,459.18
No. of Residents in 2012	114,720
No. of Residents in 2013	111,874
<i>No. of Small Businesses classified into;</i>	
Agriculture, forestry, fishing and hunting	1,867
Mining, quarrying, and oil and gas extraction	4,358
Utilities	ND
Construction	9,785
Manufacturing	1,548
Wholesale trade	1,449
Retail trade	11,830
Transportation and warehousing	3,118
Information	1,159
Finance and insurance	4,253
Real estate and rental and leasing	4,192
Professional and technical services	13,289
Management of companies and enterprises	ND
Administrative and waste services	6,362
Educational services	2,196
Health care and social assistance	9,490
Arts, entertainment, and recreation	5,081
Accommodation and food services	1,530
Other services, except public administration	16,960
Public Administration	ND
Unclassified	18,360
N	110,798
<i>ND - Not Disclosable</i>	
<i>Source: Author's Calculations</i>	

Table 4

Binary Probit Analysis of Hiring Decisions				
	2011/2012 Small Businesses		2012/2013 Small Businesses	
	Model 1	Model 2	Model 1	Model 2
Intercept	-2.3546 [0.0147]	-3.0274 [0.6981]	-2.296 [0.0604]	-2.6611 [0.0746]
%ChgTaxPrice	-2.2407 [9.8118]	-0.5529 [9.9443]	-1.0199 [0.9943]	-0.1742 [1.0256]
%ChgTaxPrice*L_t-1	4.7375 [17.9683]	4.0961 [181465]	7.4464 [1.9137]	7.373 [1.9381]
L_t-1	3.5148 [0.0255]	3.4707 [0.0259]	3.0965 [0.1176]	3.0378 [0.1192]
Dependents (Having Dependents = 1)		0.4007 [0.6963]		0.0504 [0.0309]
Resident_t-1 ("No" = 1)	0.0821 [0.09655]	0.1031 [0.0986]	-0.0138 [0.0977]	-0.0092 [0.1016]
Resident_t ("No" = 1)	-0.142 [0.0968]	-0.1392 [0.0989]	-0.0804 [0.0979]	-0.0684 [0.1017]
Agriculture		0.4549 [0.0889]		0.3769 [0.0824]
Mining		0.0488 [0.0842]		0.0956 [0.0754]
Utilities		0.3674 [0.4247]		0.2339 [0.4611]
Construction		0.4809 [0.0603]		0.5206 [0.0468]
Manufacturing		0.3281 [0.0982]		0.2691 [0.0922]
Wholesale Trade		0.1174 [0.1141]		0.3687 [0.0938]
Retail Trade		0.3263 [0.0603]		0.3226 [0.0474]
Transportation and Warehousing		0.3527 [0.0789]		0.2733 [0.0698]
Information		-0.0247 [0.1489]		-0.025 [0.1471]
Finance and Insurance		0.4017 [0.0682]		0.4924 [0.0566]
Real Estate and Rental and Leasing		0.1227 [0.0824]		0.2215 [0.0695]
Professional and Technical Services		0.2286 [0.0609]		0.2463 [0.0483]
Management of Companies		-1.7701 [41.664]		-1.7792 [39.4055]
Administrative and Waste Services		0.2094 [0.0698]		0.2545 [0.0577]
Educational Services		-0.0109 [0.1182]		-0.0697 [0.1181]
Health Care and Social Services		0.3481 [0.0618]		0.274 [0.0505]
Arts, Entertainment, and Recreation		0.0869 [0.0834]		0.057 [0.0752]
Accommodation and Food Services		0.6214 [0.0843]		0.825 [0.0702]
Other Services		0.2309 [0.0595]		0.2551 [0.0458]
Public Administration		-1.734 [92.7217]		-1.7704 [55.7093]
N	97535	97535	110798	110798
Wald Chi-Square	22974.0529	22545.1224	24239.8768	23602.2605

Figures in brackets are standard errors. The dependent variable takes a value of 1 if the small business hired labor in time t, and zero otherwise.

Table 5

Binary Probit Analysis of Capital Investment Decisions				
	2011/2012 Small Businesses		2012/2013 Small Businesses	
	Model 1	Model 2	Model 1	Model 2
Intercept	-1.4016 [0.00877]	-1.6683 [0.2329]	-1.7902 [0.0381]	-2.0861 [0.0421]
%ChgTaxPrice	12.6242 [6.6417]	13.1833 [6.6732]	6.2192 [0.6171]	6.7426 [0.6282]
%ChgTaxPrice*L _{t-1}	-12.0969 [8.9807]	-10.4411 [0.0187]	-11.2716 [0.9182]	-11.3178 [0.9237]
L _{t-1}	2.3399 [0.0119]	2.3159 [0.012]	3.1151 [0.0571]	3.0869 [0.0574]
Dependents (Having Dependents = 1)		0.0685 [0.2321]		0.0804 [0.0146]
Resident _{t-1} ("No" = 1)	0.0888 [0.0447]	0.091 [0.449]	0.00554 [0.0436]	0.0104 [0.0438]
Resident _t ("No" = 1)	-0.131 [0.0445]	-0.1263 [0.0448]	-0.0572 [0.0436]	-0.0582 [0.0438]
Agriculture		0.4825 [0.0443]		0.3978 [0.0416]
Mining		0.3159 [0.0327]		0.302 [0.0293]
Utilities		0.00274 [0.2398]		0.0141 [0.2511]
Construction		0.3829 [0.0267]		0.3848 [0.0224]
Manufacturing		0.3118 [0.0473]		0.435 [0.0452]
Wholesale Trade		0.236 [0.0489]		0.2908 [0.0468]
Retail Trade		0.1454 [0.0259]		0.1607 [0.0214]
Transportation and Warehousing		0.4637 [0.037]		0.4533 [0.0339]
Information		0.1647 [0.0545]		0.19889 [0.0535]
Finance and Insurance		0.128 [0.0334]		0.1639 [0.0302]
Real Estate and Rental and Leasing		0.2415 [0.0333]		0.2671 [0.0299]
Professional and Technical Services		0.158 [0.0253]		0.1897 [0.0207]
Management of Companies		0.963 [0.6436]		-0.1357 [0.8175]
Administrative and Waste Services		0.1268 [0.0301]		0.207 [0.0261]
Educational Services		0.00307 [0.0443]		0.1133 [0.0416]
Health Care and Social Services		0.1975 [0.0269]		0.2263 [0.0227]
Arts, Entertainment, and Recreation		0.2147 [0.0321]		0.1941 [0.0285]
Accommodation and Food Services		0.4621 [0.049]		0.5702 [0.0462]
Other Services		0.2165 [0.0244]		0.1979 [0.0195]
Public Administration		-1.9796 [20.803]		-2.3003 [19.1305]
N	97535	97535	110798	110798
Wald Chi-Square	48355.9994	48126.5143	55989.2034	55593.5668

Figures in brackets are standard errors. The dependent variable takes a value of 1 if the small business hired labor in time t, and zero otherwise.

Table 6

	Model 1		Differences
	2012	2013	2013-2012
Tax Price effect on Labor	-2.24	-1.02	1.22
Standard Error	9.81	0.99	
Tax Price effect on Labor Labor in prev yr	4.74	7.45***	2.71
Standard Error	17.97	1.91	
Tax Price effect on Investment	12.62*	6.22***	-6.41
Standard Error	6.64	0.62	
Tax Price effect on Investment Investment in prev yr	-12.10	-11.27***	0.83
Standard Error	8.98	0.92	
Note - *, **, and *** represent significance at the 10%, 5%, and 1% level			
Source: Author's Calculations			
	Model 2		Differences Test Statistic
	2012	2013	2013-2012
Tax Price effect on Labor	-0.55	-0.17	0.38
Standard Error	9.94	1.03	
Tax Price effect on Labor Labor in prev yr	4.10	7.37***	3.28
Standard Error	18.15	1.94	
Tax Price effect on Investment	13.18**	6.74***	-6.44
Standard Error	6.67	0.63	
Tax Price effect on Investment Investment in prev yr	-10.44	-11.32***	-0.88
Standard Error	9.02	0.92	
Note - *, **, and *** represent significance at the 10%, 5%, and 1% level			
Source: Author's Calculations			