EXAMINING THE 2013 KANSAS STATE INCOME TAX CHANGES AND THEIR IMPACT ON JOB CREATION

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Abstract

I analyze the impact of Kansas House Bills HB 2117 and HB 2059, which made changes to the personal income tax structure and sales tax rates in the state of Kansas in 2012 and beyond. Using county-level, quarterly data gathered from the Census Bureau and the Bureau of Economic Analysis, I examine a full sample of Kansas and its four bordering states; Colorado, Missouri, Nebraska, and Oklahoma in order to determine the impact the tax changes had on the private sector employment in the state of Kansas. I subsequently use Kansas county-level, quarterly data to create a sample of Kansas border counties and their border pair matches, which consist of their adjacent counties in the neighboring states, to employ a differencing model to examine those same effects. With this analysis I isolate the policy change taking place in Kansas in 2012 and assess its impact controlling for the impact of the state corporate income tax, individual income tax, and sales tax rates on private sector employment in Kansas counties. My findings indicate that Kansas has not experienced an increase in private sector employment due to this policy change, but rather has perhaps seen private sector employment levels fall in the year following the enactment of the policy change.

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Dedication

I dedicate my master's thesis to Labrina Blagg, my wife, who has always been my source of strength and inspiration. Thank you for your help and never ending support throughout my education.

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I would like to thank Dr. Turner for her help and advice throughout the course of this project. Her insight and willingness to help made this project possible, and for that I am very grateful. I would also like to thank Dr. Cassidy and Dr. Shen, my committee members, as well as the Economics Director of Graduate Studies Dr. Gayle for their help as well as their attendance and participation in my thesis defense.

1.) Introduction

There is a large amount of diversity in the way that individual states of the U.S. collect taxes. Typically, states collect taxes from three major categories – income tax, sales tax, and property tax. The means in which a state government chooses to apply these taxes is generally referred to as the state's tax structure. From an efficiency perspective, the goal is to design a tax structure which will take in a sufficient amount of revenue from taxation to fund desired government programs and activities, while having as little distortionary impact as possible. For example, it is important for states to structure their tax policy so that individuals are not influenced to decrease their economic activity or move their economic activity to a different state. Generally, an efficient tax structure is one with a low tax rate on a broad tax base. Reductions in taxes that increase work effort and economic growth are considered efficiency improving.

Equity in taxation is measured using the "tax burden", the burden of taxation on individuals relative to their economic standing. The tax burden is computed as the ratio of taxes paid to gross income, also known as the average tax rate. Tax structures that are considered progressive are imposed in a fashion in which the average tax rate rises with ability to pay. Regressive taxes are just the opposite, as they tend to shift the tax burden to those with a relatively low ability to pay. Thus, the way in which states structure their taxes has a significant impact on not only the amount of revenue brought in by the state, but also the quality of life of the people residing in a state, both through tax burden and amenities provided. (Fisher, 2007).

Some states rely heavily on sales/excise tax for revenue (such as Washington), while other states forgo the sales tax entirely, and compensate by gathering higher levels of revenue through the income tax (like its neighbor Oregon) (Fisher, 2007). The tax structures that are

ultimately decided upon are a reflection of the states' unique economic or physical characteristics. For instance, states that rely heavily on tourism may use a tax structure such that sales tax rates are comparatively high, especially on things related to tourism such as hotels and rental cars. Similarly, states that have an abundance of a natural resource have the opportunity to tax those resources in order to bring in greater percentages of revenue from non-residents. This method of taxation is common and is referred to as "exporting the tax burden". Tax exportation occurs when a tax imposed in a certain jurisdiction is paid by a taxpayer that belongs to a different jurisdiction. Exportation of taxes is beneficial to states, as decreasing the tax burden on its residents improves their economic standing, and thus quality of life. Fisher (2007) notes that the steps which each state takes towards exporting as much of its tax burden as possible account for a significant portion of the differences in state tax structures.

As of the 2010 fiscal year, U.S. state and local governments on average retained a fairly consistent and diversified tax structure since the early 1980's. In the 2010 fiscal year, state and local governments on average collected 35% of their total tax revenues from property taxes, 34% from sales tax, 20% from individual income tax, 3% from corporate income tax, and 8% from other sources.[1] There are seven states that did not collect any revenue from personal income tax – Alaska, Florida, Nevada, South Dakota, Texas, Washington, and Wyoming. Another two states – Tennessee and New Hampshire, collected only 1% and 1.6%, respectively, of their total revenue from personal income taxes. Oregon relied most heavily on personal income taxes, as it accounted for 37.7% of their total revenue. Within Kansas and its bordering states, Missouri gathered 24.3% of its total tax revenue from personal income, Kansas 23.6%, Nebraska 20.6%,

[1] Note that across states, unincorporated business income is taxed as personal income. Most businesses are unincorporated, including CPA, lawyers, doctor partnerships, restaurants, and many others. These businesses take the form of L.L.C., Sole Proprietorships, S Corps, and partnerships and their profits are passed through to the owner to be taxed as personal income.

Colorado 20% and Oklahoma 19.5%. All states took in at least some revenue from sales tax, with Oregon relying on sales tax the least, at 10% (Malm & Kant, 2013).

In addition to efficiency and equity issues, another way to characterize a tax system is by the extent to which the revenue portfolio is diversified. A diversified tax system generates a less volatile source of revenue. Of the three big tax sources, income tax revenues tend to be the most volatile, followed by sales tax revenues, and lastly property tax revenues. Felix (2008) measures states' diversification of their tax revenue portfolio. Like many other states, Kansas put an approximately equal weight on property, sales, and income tax, which boded well for a stable revenue flow. In fact, Felix (2008) reports that "Kansas had the least volatile tax revenues in the Tenth District over the past 40 years" (p. 78).[2] Growth rates and stability of taxes are important to understanding and measuring overall performance of tax revenues (Felix 2008).

From 1993 to 2012, Kansas had the same three bracket structure for their income taxes. For a couple living in Kansas, the first $30,000 would be taxed at a rate of 3.5%. For income earned between $30,000 and $60,000, the tax rate would be 6.25%. Any income earned above $60,000 was taxed at 6.45% (Tax Foundation, 2013). During this time period Kansas had what was considered to be a progressive tax structure. The tax brackets Kansas used from 1993 to 2012 were not indexed for inflation. This is important to note, as it means that as nominal income during this time period rose, even if real income stayed the same, Kansas would see an increase in revenues (Felix, 2008).

[2] The Federal Reserve Bank of Kansas City covers the 10th District of the Federal Reserve, which includes Colorado, Kansas, Nebraska, Oklahoma, Wyoming, and portions of western Missouri and northern New Mexico.

Kansas has recently altered its tax structure by making one of the larger income tax changes in history. Governor Sam Brownback signed House Bill 2117 on May 22, 2012, which enacted the largest tax cuts Kansas has ever seen. Proponents of the legislation argue that reducing the taxes that unincorporated businesses and farms would pay relative to other states will make Kansas a desirable place to create new businesses (and thus new jobs). The bill is designed to carry this out in a number of ways. First, non-wage "pass-through" incomes of unincorporated business owners taxed as personal income are now exempt (Pass-through incomes are not taxed at the corporate level, but are instead passed through to the owners to be taxed as personal income).[3] This exemption will phase in: the first $100,000 of income will be exempted in calendar year 2013-2014, the first $250,000 of income in 2015-2016, and starting in 2017, all pass-through income will be exempted. Secondly, the new tax policy changes Kansas from a three-bracket to a two-bracket income tax policy, while reducing tax rates considerably across all income levels. A couple living in Kansas post-policy change pays a 2.7% rate on any income under $30,000 (the pre-2013 rate was 3.5%). a 4.8% rate is applied on any income above $30,000, compared to the pre-2013 rate of 6.45%. This significantly "flatter" structure will shift the tax burden away from higher earning individuals. While a flatter structure improves efficiency, narrowing the tax base by excluding certain forms of income from taxation does not. Lastly, the 2012 policy change also raised the standard deduction, which is good for low income earners, but post-2013, low income families cannot claim both the Earned Income Tax Credit and the food sales tax rebate credit, but instead may only choose one (Kansas Legislative Research Dept., 2012). This section of the policy change makes for a more regressive tax

[3] Pass-through income is not taxed at the corporate level, but is instead passed through to the owners to be taxed as personal income.

structure, as lower income individuals bear a heavier portion of the tax burden than before the tax law changes.

The Kansas tax change narrows the tax base, which in turn creates deadweight loss through tax avoidance activities. For example, someone working as a consultant can become an L.L.C. (Limited Liability Company), and now take advantage of the pass through income exemptions. The opposition to this legislation argues that this change therefore may not create new economic activity, but instead shift current activity. However, the lower rates can also create an incentive for increased hours and job creation, potentially offsetting the negative effects of the narrower tax base.

HB2059, signed into law in June 2013, can be viewed as an extension of HB2117 in that it further reduces the personal income taxes in Kansas. HB2059 freezes the state sales tax at 6.15% (presumably looking to offset some of the revenue losses projected from the income tax cuts). The sales tax rate, which had been 6.3% since July 2010, was scheduled to drop to 5.7% starting July 2013. The most significant portion of this bill makes further cuts to personal income taxes, putting the rates on a gradual decline from 2013 until 2018 (Shown in Table 1), when they would settle at rates of 2.3% for the bottom income bracket and 3.9% for the top bracket. The bill schedules further income tax cuts provisionally after 2018, conditional upon the rate at which personal income tax revenue grows. Specifically, any income tax revenue growth exceeding 2% triggers an automatic reduction in the marginal tax rates. Since Kansas income tax revenues tend to shrink in recessions and grow above 2% in expansions, this provision amounts to a phasing out of the Kansas personal income tax. HB2059 also reinstates some of the food sales tax rebate eliminated by HB2117 (KLRD, 2013).

This new tax policy is expected to have a large effect on the amount of revenue the state of Kansas brings in over the next 5 plus years. Projections by Mark Robyn (2012) estimated that the cuts would decrease Kansas' revenue by $4.54 billion total from 2013-2018 compared to the prior income tax structure. These predictions are now being realized in the data. For example, the Kansas City Star reported in May 2014 that Kansas' revenue fell short of its official projections for July 2013 through May 2014 by $310 million, roughly 6 percent (Abouhalkah, 2014). Proponents of the new tax structure maintain that the revenue losses are only short run, maintaining that in the longer run, the tax cuts will grow the economy by bringing in new businesses and encouraging existing businesses to expand, thereby creating new jobs. Kansas Governor Sam Brownback stated in May of 2012, "Today's legislation will create tens of thousands of new jobs and help make Kansas the best place in America to start and grow a small business. Now is the time to grow our economy, not state government, and that's what this tax cut will do." (Kansas Dept. of Commerce, 2012). In contrast, Johnson & Mazerov (2012) argue that the bill will not achieve growth effects, as the bill is targeting the wrong type of jobs. They contend that the type of businesses this bill will attract are in large part companies that hire very little or no other employees. By comparing Kansas to its neighboring states, as well as the rest of the U.S., we can discern whether or not these tax structure changes have in fact began to create enough jobs to counteract the loss of revenue from the tax cuts.

In this thesis, I focus on the potential efficiency improving aspects of the tax policy changes in terms of promoting private sector employment growth. Specifically, using county-level, quarterly data for Kansas and its neighboring states, I test whether the policy change has increased private sector employment in Kansas. The remainder of my thesis is organized as follows. Section 2 provides background on the tax structure of these states. In section 3, I review

the relevant literature and research, and discuss aspects of methodology from other research papers that I utilize. Section 4 outlines the data used to perform the econometric analysis, and summarizes the models. The empirical results are then presented and analyzed in section 5. Section 6 contains the conclusion of my thesis.

2.) Tax Structure

Colorado, from 2003-2013, has had the lowest tax rates among the five states focused on in this paper. This remains true for all three of the types of tax rates we are observing, individual income tax rate, corporate income tax rate, and sales tax rate. Colorado had no changes to their tax structure over the time period of 2003-2013 concerning either sales, individual income, or corporate tax rates. The state sales tax remained a steady 2.9% for every year 2003-2013. This was the lowest state sales tax in the nation in 2013 (among states that have a sales tax), but it is worth noting that local sales taxes within the state will also influence consumer behavior. All references to tax rates from each of these 5 states from 2003-2013 are represented visually in Table 2. Colorado has a unique structure concerning their individual and corporate income tax rates. Both individual and corporate income are taxed at 4.63% of the federal taxable income. Federal taxable income refers to the amount of total income that is taxable at the federal level. This includes any income earned from wages, salaries, tips, interest received, dividends, business income, capital gains/losses, gambling winnings, as well as many other less common sources. These rates are once again both the lowest among Kansas and its four bordering states for each of their respective categories.

The Tax Foundation "State Business Tax Climate Index" comes out annually and represents the effectiveness of the tax structure of all fifty states (and Washington D.C.). This study uses the differences within state tax structures to rank each state in terms of how attractive they are to businesses. According to the 2015 rankings released in October 2014, Colorado ranked 17th overall in 2012, 19th in 2013, and 20th in 2014 (Drenkard, 2014). According to Ivan Moreno of The Associated Press, Colorado is now within the top ten states in terms of reliance on income tax (2014). This report was released by the credit agency Standard and Poor's. The

article goes on to say that recently, income inequality has played a key role in the amount of revenue that Colorado brings in from taxation. The S&P report also spoke of the volatility of relying on capital gains for income tax revenue. "As income inequality has risen over time, the overall mix of personal income has shifted in favor of capital gains and away from labor sources," the report said. "Those at the top obtain more of their income from capital gains, which on the whole, fluctuate much more than income from wages." (Moreno, 2014). Felix (2008) also identifies Colorado as a state that "places less reliance on general sales taxes and more on personal income taxes than the national averages".

Looking forward at the future of tax structure in Colorado, the state recently rejected a proposal to increase income taxes that would have netted Colorado approximately $1 billion. However, residents overwhelmingly supported an increase in taxes on the recreational sale of marijuana, which is estimated to bring in $70 million per year (Moreno & Wyatt, 2013). Colorado is currently one of two states to allow the sale of recreational marijuana.

For sales tax rates, Kansas increased from 4.9% to 5.3% in 2004, then again from 5.3% to 6.3% in 2011. The sales tax rate was scheduled to be reduced to 5.7% starting in July of 2013, but was held at 6.15% as part of House Bill HB2059, supposedly with the intention of offsetting some of the revenue loss created by the income tax cuts (KLRD, 2013). Kansas was the only among it and its bordering states to have a sales tax change between 2004 and 2013.

Income tax rates are where the largest changes for Kansas occurred. Concerning corporate income tax, Kansas was the only among the 5 states to have any change in its rates from 2003-2013. In 2009, corporate income tax rates decreased from 7.35% to 7.05%, and in 2011 from 7.05% to an even 7%. Personal income tax rates in Kansas had remained the same from 2003 until 2012, when the changes from House Bill HB 2117 and HB 2059 went into

effect. These changes were discussed at length in the introduction section of this paper. According to the State Business Tax Climate Index (2014), Kansas ranks as the 24th most attractive tax structure for businesses in 2012, 25th in 2013, up to 19th in 2014, and the most recent rankings have Kansas slotted at 22nd for 2015. The report makes note that for Kansas's 2015 score, "Despite income tax cuts that are phasing in, Kansas dropped three rankings overall, from 19th to 22nd, as North Carolina jumped several spaces, and West Virginia's score continued to improve as property tax and corporate tax improvements phased in."

Missouri had no changes in their tax rates for any of the individual income, corporate income, or sales tax rates from 2003 to 2013. Their sales tax rate was 4.225%, individual income tax was 6%, and the corporate income tax rate was 6.25%. Missouri is scheduled to have income tax cuts start phasing in during 2017 (Missouri Senate, 2014). These tax cuts will decrease Missouri's personal income tax rate by 0.1% per year for five years from its current level of 6% to an eventual 5.5%. In order for a decrease to take effect at each year, the bill notes that "A reduction in the rate of tax shall only occur if the amount of net general revenue collected in the previous fiscal year exceeds the highest amount of net general revenue collected in any of the three fiscal years prior to such fiscal year by at least one hundred fifty million dollars." (S.B. 509 & 496). The bill also will create an income tax deduction, which it will phase in at 5% each year beginning in 2017, giving Missouri's taxpayers at its end the opportunity to deduct 25% from their business income taxes (Missouri Senate, 2014). Missouri in the Business Climate Index ranked 15th in 2012, 16th in 2013, and 16th again in 2014. The Index makes note of the tax change enacted by S.B. 509 & 496, and states that these changes will be reflected in the 2018 rankings (Tax Foundation, 2014).

Overall, Missouri draws 30.2% of its total tax revenue from property taxes, which is the 34th highest rate among states. It also relies on sales tax for 37.7% of its total revenue, the 16th highest mark. 24.3% of Missouri's revenue comes from personal income tax, which is also the 16th highest margin in the state. Corporate income taxes make up just 1.4% of its total, the 9th lowest mark in the U.S (Tax Foundation, 2013).

Nebraska saw increases in both the sales tax rate (from 5% to 5.5%) and individual income tax rate (from 6.68% to 6.84%) in 2004, but had no changes in these three rates from then through 2013. Sales tax rate has held at 5.5%, corporate income tax rate at 7.81%, and individual income tax rate at 6.84%. Nebraska has made a move upwards in the Tax Foundation's Index since though, going from 35th in 2012 to 34th in 2013 and 2014 to now being ranked 29th in the most recent year, due to recent improvements in the structure of corporate and individual tax rates, "including reform of corporate net operating loss carryforwards, a repeal of the individual alternative minimum tax, and indexation of the brackets of the individual income tax code" (Drenkard, 2014). During the 2010 fiscal year, Nebraska gathered 31.9% of their revenue from general sales taxes, and 20.6% from personal income taxes. Nebraska is close to the median in both categories among U.S. states (Malm & Kant, 2013).

Oklahoma had multiple changes to their individual income tax rates between 2003 and 2013. In 2003 the individual income rate was 6.65%, and increased to 7% in 2004. From there, the rate starts decreasing almost yearly before settling at 5.25% in 2012 and 2013. The corporate income tax rate in Oklahoma was exactly 6% for every year 2003-2013. The sales tax rate in Oklahoma also did not change and was 4.5% throughout this time period. Oklahoma ranked 30th in 2012 of the Business Climate Index, 35th in 2013, and 33rd in 2014. Oklahoma governor Mary

Fallin signed into effect income tax cuts for Oklahomans starting with a reduction to 5% in 2015 and to 4.85% in 2016, so long as the state meets a certain level of revenue (Olafson, 2013).

In the 2010 fiscal year, Oklahoma drew 41.9% of their revenue from sales tax, good for the fourteenth highest rate among states in the U.S. Only 19.5% of their revenue came from personal income tax, though, which was the nineteenth lowest rate in the U.S. at the time (Malm & Kant, 2013). Oklahoma is unique among Kansas and its bordering states in the sense that it draws a large portion of its revenue from severance taxes (Oklahoma Policy Institutes, 2008). Severance tax is a specialized type of income tax that applies to owners who sell natural resources gathered within a jurisdiction. Whenever natural resources such as oil and coal are gathered in Oklahoma, the agents selling these goods must pay this severance tax to the state. Severance taxes can be beneficial to Oklahoma, since most of the goods are sold out of state, this is a way of exporting the tax burden, thus helping Oklahoma residents. However, severance tax can experience volatility, and therefore revenue taken in from this method may fluctuate greatly from year to year. In the early 1980's, severance taxes were Oklahoma's greatest source of tax revenue. Since then, it dropped off significantly in the 1990's and has rebounded recently to now become a large portion of Oklahoma's income once again (Oklahoma Policy Institute, 2008). Felix (2008) confirms these findings, and lists Oklahoma's severance tax revenues as its most volatile source of income.

3.) Literature Review

The effects of tax changes on employment have long been a heavily researched area in economics. The following papers examine this effect, attempting to isolate different types of tax policy changes in effort to view how these changes affect the corresponding employment outcomes. The papers in review use a method of comparing county level data across state borders in order to mitigate the unobserved heterogeneity and create an appropriate control group for testing policy effects.

Mikesell & Ross (2014)

In this paper, Mikesell and Ross estimate the effect of a manufacturing machinery and equipment tax on the level of manufacturing employment. The manufacturing machinery and equipment tax (MME tax) operates similarly to a sales tax, but applies only to machinery and equipment used for manufacturing products. The MME tax varies from state to state, and between the years of 2000 and 2012, 16 different states levied the tax to some degree. Having a sample of states that do and do not participate in the tax provides an opportunity to view the effects of the tax against a control group.

Mikesell and Ross use a national sample of county level data from 2000 to 2012. The variables included in the model, along with their sources, are as follows. Manufacturing employment, which is the total employment listed as NAICS Industry Code 31-33, comes from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages. The wages per manufacturing worker is the average compensation of workers within this group, and comes from the same source. The MME tax is the rate of taxation on Manufacturing Machinery and Equipment, and the data for this variable were obtained by authors' research. Each state's

income tax rate and corporate income tax rate are used as well, with these data coming from the Tax Foundation. Sales apportionment weight is the share of corporate net income in the state given their nation-wide sales, which was obtained from Bernthal et al., 2012. Lastly, the population is simply county population from the U.S. Census.

The paper speculates that the MME tax has a significant impact on the level of manufacturing employment within a state. The identification strategy used is to observe the variation in MME across states and within states over time in order to isolate and identify the impacts of the MME on manufacturing employment. One problem the paper addresses is the fact that in certain areas which have higher level of manufacturing employment, political opposition to the MME tax is likely to be more profound, as manufacturing plants will want to minimize their costs, and are willing to pay up to the net present value of the costs that they would incur from the tax to prevent the tax change, whether it be through political pressure applied to their area representative or some other means. This occurrence presents a problem of a heterogeneous policy effect. Areas that have higher levels of manufacturing employment will raise higher opposition to the MME tax, this means that manufacturing employment, which is a function of the MME, could also itself be feeding back into the MME due to political resistance, thus creating the heterogeneity problem. Mikesell and Ross attempt to deal with this issue by creating a variable ϑ_{it} to represent this unobservable effect. Since this effect is unobservable in nature, it simply becomes part of the error term, causing the estimated coefficient of the MME tax to contain negative bias. The use of cross-pair county level data analysis rather than state level is an attempt to mitigate this bias by eliminating as much geographical differences between observations as possible.

After performing analysis on fixed effects regressions, the paper found that there was a negative effect of capital tax on wages and employment, following intuition. However, when differencing a cross-border pair analysis, the results were less negative than they were in the model using fixed effects. They also noted that by differencing random border county pairs, rather than the border adjacent pairs, they produced results comparable to the original fixed effects rather than the adjacent border differencing. This would seem to be supportive, the paper points out, of utilizing the identification strategy of differencing cross border pairs of counties adjacent to one another.

The results of the cross border differencing analysis shows that there is no significant effect of the MME tax on manufacturing employment or wage levels. They go on to claim that if anything, there may actually be a positive correlation between the two, suggesting that a higher tax on machinery and equipment does not in fact cause businesses to cut jobs, but rather perhaps substitute away from the capital expenditures of this equipment and towards labor.

Thompson & Rohlin (2012)

Thompson & Rohlin explored a similar scenario, this paper focusing more on sales tax in general and its effect on employment rather than the more specific MME tax of the Mikesell and Ross paper. In areas near the border, if there are discrepancies in the rates at which sales taxes are applied, it may be relatively easy for residents of one state to simply cross the border into the adjacent state in order to make purchases, thus recognizing a lesser sales tax to be paid. The purpose of Thompson and Rohlin's paper is to examine these tax rate differences among states, specifically by examining border counties, and determine whether or not these policy differences lead to an effect on the level of employment of each state.

Thompson and Rohlin uses Quarterly Workforce Indicator (QWI) data from the Longitudinal Employer-Household Dynamics program of the U.S. Census Bureau for every county throughout 47 states (excludes Massachusetts in addition to Alaska and Hawaii). These data range from 2004 to 2009. These data are said to be sufficiently reliable and accurate due to the fact that they come from Unemployment Insurance records rather than surveys. The study uses a difference in difference model to estimate the effects of the difference in sales tax policies on the difference in employment. They further extend the study to examine the differences in impact among different age, gender, and industrial groups.

By using a county fixed effect model, and employing cross-border differencing, they view groups of people within the same labor market who are influenced by the same economic factors, with the only difference being the arbitrary separation of the two states, and therefore different policies concerning sales tax. The paper utilizes quarterly data, stating that previous studies that had used annual data risk losing the timeliness of policy changes and could perhaps miss some of the results due to aggregation bias.

One of the main assumptions needed when choosing cross-border pairs to examine is that transportation costs are low. This means that people have the ability to easily travel back and forth from state to state in order to do their shopping, thus making the difference in policy between the two states a recognizable option for consumers to exploit. Thompson and Rohlin insert a variable accounting for a county's distance from the border, electing to use binary variables to indicate whether a county falls under the categories of "border", "border-interior", or simply "interior". If the concept introduced above concerning transportation costs holds true, then the differences in employment should be the heaviest in border counties, where people can more easily cross the border, and lesser in the interior counties. The paper also incorporates the

level of cross-border employment between the two counties, which is used as a further indicator of low transportation costs. For people who live in one state and commute to the adjacent for work, transportation costs would obviously be low, as they are already making the trip over, perhaps daily. Cross state counties with higher levels of cross state employment should therefore realize larger effects of cross state differences in sales tax. Each county is put into one of four groups, based on what percent of cross border employment it exhibits.

The panel fixed effect results showed a coefficient between the sales tax variable and an indicator for state border counties of -3.6. This implies that for all border counties, an increase in the sales tax of one percentage point leads to a 3.6 percent decrease in employment. While running the analysis under cross-border differenced panels, results show that for border counties, a one percentage point increase in the sales tax led to a 5.8 percent decrease in employment. Thompson and Rohlin also used this section to view the effects on different demographics and industries, finding that the greatest decrease in employment came to the retail industry, and the demographics associated with it, which should come as little surprise.

The results also showed that in areas with heavier amounts of cross-border employment, the effects of sales tax changes on employment was greater, supporting a claim originally made by the paper that transportation costs would factor in to peoples' behavior significantly. This is further supported by the fact that the coefficients for "interior" and "border-interior" counties were less negative, again leading to the conclusion that transportation costs and accessibility each play a large role in determining the effect of sales tax policy changes on the level of employment within those areas.

Patrick (2014)

Instead of focusing on the effects that taxes have on employment, Patrick focuses on how non-tax incentives for capital investment can create effects on employment, a topic which she claims is understudied in literature. One of the main ideas this paper is exploring is the concept that tax policy changes are not the only significant way to support local economic growth, and that non-tax incentives have great effects as well. Patrick uses a variation method on state and local non-tax incentives to examine their job creation ability. The paper attempts to determine whether or not providing a private enterprise with an increased level of public aid availability will generate employment increases and job creation. The data gathered are U.S. county level panel data spanning from 1970-2006, annually, to account for short term effects, and from 1972-2002, every five years, to examine the more medium term and long term effects. These data are gathered from the Bureau of Economic Analysis and the U.S. Census Bureau for all 48 contiguous U.S. states. Patrick looks specifically, like the papers discussed previously, at U.S. counties sharing a state border. The reasoning behind this is familiar, as Patrick states that "restricting analysis to locations on either side of a policy border further removes local sources of level and heterogeneity". She also utilizes a variable to account for unobservable county level fixed effects. By using a random trend model, she also allows the county level and trend unobservable effects to be correlated with those that are observable, thus mitigating heterogeneity.

Patrick creates an Incentive Environment Index (IEI) for every state for every year from 1970-2000. The IEI was created by Patrick through author's research, and is made up of characteristics for each state and time gathered from things such as state constitutional provisions pertaining to the ability of state and local governments to provide aid to public entities. It serves

as a scoring system for each state and year's propensity to provide aid. The paper goes into depth discussing the mechanisms of the IEI in greater detail.

Patrick runs regression analysis for both first difference and random trend models, using both the annual panel data and again using the five year panel data, for both full analysis and border-specific analysis, producing coefficients for the effect of IEI on employment levels and the effects of IEI on employment growth rates. The results from running the first difference estimation of the IEI on employment growth rates show no statistically or economically significant results on growth levels in either the annual or five year data. When running the analysis for the border samples only, the results were similarly insignificant at the whole. The coefficient of the effect of the IEI on the employment level for the five year sample does end up being significant at the 5% level, but the coefficient is small in magnitude (-.028). The paper closes by raising the concern that due to the results presented, policy makers should perhaps call into question the effectiveness of incentive programs as they pertain to increasing employment levels or employment growth rates.

4.) Data & Empirical Models

The data used in this paper come from several sources. The data examined are primarily quarterly county level data from 2003 to 2013. I focus on Kansas and its bordering states, Colorado, Missouri, Nebraska, and Oklahoma, and all of the counties individually within each of these states. All data are assigned to states and counties by their Federal Information Processing Standards (FIPS) codes, which are identifiers for state and counties created and used by the United States Federal Government.

Quarterly Workforce Indicator data are drawn from the U.S. Census website, through the Longitudinal Employer-Household Dynamics Extraction Tool. This site provides quarterly data on county employment, earnings, payroll, and job change. The data pertain to all jobs covered under states' unemployment insurance (UI) programs and are collected through states' UI wage reporting systems. It is noteworthy here that QWI data do not include all self-employed individuals, as they are not always covered by Unemployment Insurance. Data are available from 2003 Q1 to 2013 Q4 for most variables. I select variables pertaining to private sector employment. State corporate income tax rates, individual income tax rates, and sales tax rates are all acquired from the Tax Foundation. The tax rates are reported as of the start of the calendar year.

Income, per capita income, and population data are from the Bureau of Economic Analysis, regional data department. All three of these variables are available for all states and counties, but are only available yearly rather than quarterly. To remedy this issue, I use linear interpolation populate the quarterly data. I compute per capita income by dividing annual income by population. After generating annual per capita income, I then linearly interpolated to fill the quarterly data. Note that per capita income – even though it is reported in each quarter – is a

measurement of annual per capita income within the county, shown as gradually increasing throughout the four quarters of a year. Data for income (and per capita income) are available only from 2003 Q4 to 2012 Q4. Population data are available from 2003 Q4 to 2013 Q4. I control for population in my regression models, which are run on data through 2013 quarter 4. I use the income data only in descriptive analysis. It is noteworthy here that in order to experience the lower tax rates offered by Kansas, a small business owner from another state would have to both relocate their business and their place of residence to Kansas, as states have a reciprocity agreement in place.

I used two samples of data to examine how the impacts Kansas private sector employment. I use a full sample of data spanning ten years that includes all counties in Kansas and its four neighboring states from 2003 Q4 to 2013 Q4. I also examine a second sample of border county pairs, in which I match each Kansas border county with the corresponding adjacent county from the neighboring state. I describe this matching process below. For the full sample, I begin with the following simple econometric model:

$$(1)\ emp_{ijt} = \beta_0 + \beta_1 KS2013_{jt} + \beta_2 Pop_{ijt} + \phi_i + \lambda_t + \varepsilon_{ijt},$$

where emp_{ijt} is private sector employment, measured in number of jobs, in county i and state j at time t, $KS2013_{jt}$ represents a dummy variable that is equal to 1 when state j equals Kansas and year equals 2013, 0 otherwise. *Pop* denotes population. ϕ_i is a county fixed effect to control for factors that are unique to a county, but do not change over time. The county fixed effect controls for unobserved heterogeneity at the county and state level that is not time varying. λ_t is a quarter-year fixed effect to control for quarter and year effects that may impact county employment levels for all states. For example, in a national recession, private sector employment tends to decrease across all states, whereas in an expansion, employment tends to increase across all

states. ε_{it} is the error term. Note that the total private sector employment measure includes employment of both incorporated and unincorporated businesses. The policy change provides a tax break only to unincorporated businesses. This model is useful for isolating the change in employment stemming from the tax policy change that affects the counties in Kansas in 2013, and $KS2013_{jt}$ measures the impact of the policy change on private sector employment levels, relative to the counties in its neighboring states. It is a difference in difference estimator. If β_1 is statistically significant and positive, then we infer that the policy change is associated with an increase in the private sector employment levels in Kansas.

I run an expanded econometric model to control for the other time varying factors that may affect employer location and expansion decisions: the state's top corporate income marginal tax rate, top individual income marginal tax rate, and the sales tax rate:

$$(2)\ emp_{ijt} = \beta_0 + \beta_1 KS2013_{jt} + \beta_2 Pop_{ijt} + \beta_3 Corp_{jt} + \beta_4 MTR_{jt} + \beta_5 Sales_{jt} + \phi_i + \lambda_t + \varepsilon_{ijt}$$

where $Corp_{jt}$ is the top corporate income marginal tax rate in state j at time t, MTR_{jt} is the top individual income marginal tax rate in state j at time t, and $Sales_{jt}$ is the sales tax rate in state j at time t. Changes in each of these tax rates may also have an effect on employment. I would expect each of the coefficients of the tax rates to be negative, as a higher tax rate tends to be a disincentive for workers and employers. Here it is important to note that since variables are included for corporate income, individual income, and sales tax rates, $KS2013_{jt}$ now only captures the effect of the tax base change of the Kansas policy change (since the tax rate changes are now accounted for elsewhere in this model).

For the Kansas border county sample, I used a differencing model in order to capture the changes observed in a Kansas county compared directly with its adjacent county match. This

approach has been used to control for a heterogeneous response bias (Mikesell & Ross, 2014) that can arise because of political economy considerations. An employer would be willing to pay as much as the net present value of its expected tax break to secure a tax decrease. This cannot be observed, so it is captured in the error term. In the full sample, the control group is all counties in other states. In the border differencing sample, though, the county specific control group is the adjacent county. As in Mikesell and Ross, the identification strategy of using cross-state border county pairs differences out the potential bias as long as the cross-border match is a useful counterfactual. The presence of agglomeration economies suggests a cross border match is an appropriate control group, and Mikesell and Ross provide evidence of this. Letting emp_{ijt} represent Kansas county employment and emp_{kmt} represent the neighboring states matching county employment,

$$(3a)\ emp_{ijt} = \beta_0 + \beta_1 KS2013_{jt} + \beta_2 Pop_{ijt} + \phi_i + \lambda_t + \varepsilon_{ijt}$$

$$(3b)\ emp_{kmt} = \gamma_0 + \gamma_2 Pop_{kmt} + \phi_k + \lambda_t + \varepsilon_{kmt},$$

where *i* represents the Kansas county, *j* represents the state of Kansas. *k* represents the matching county in the neighboring state *m*. $KS2013_{jt}$ equals 1 when the state is Kansas and year is 2013, 0 otherwise. This is similar to how the variable was used in equations (1) and (2), but *KS2013* appears only in equation (3a), the Kansas equation, and not in equation (3b), which pertains to the cross border match. Thus equation (3a) is the treatment group and equation (3b) is the control group. By subtracting (3b) from (3a), we get:

$$(4)\ \Delta emp_{pt} = (\beta_0 - \gamma_0) + \beta_1 KS2013_{jt} + (\beta_2 - \gamma_2) Pop_{pt} + (\phi_i - \phi_k) + \varepsilon_{pt}$$

In this model we use *p* to identify each unique difference of cross state adjacent county pairs. Note that the quarter-year time fixed effect λ_t has dropped out. This model should give us insight

into how a Kansas county's private sector employment numbers change with compared solely to its most closely geographically associated cross state county. As in model (1), a positive and significant β_1 would indicate that Kansas counties on average experience an increase in employment post policy, relative to neighboring states, controlling for population and unobserved heterogeneity. I then use the expanded model:

$$(5)\ \Delta emp_{pt} = \Pi_0 + \beta_1 KS2013_{jt} + \Pi_1 \Delta Pop_{pt} + \Pi_2\, \Delta Corp_{pt} + \Pi_3\, \Delta MTR_{pt} + \Pi_4\, \Delta Sales_{pt} + \varepsilon_{pt}$$

where $\Delta Corp_{pt}$, ΔMTR_{pt}, and $\Delta Sales_{pt}$ are the respective tax rates in the Kansas counties minus the tax rates in their matching counties. Π denotes the difference in parameters across the border pair. For example, $\Pi_0 = (\beta_0 - \gamma_0)$. Note, in equation (5), I expect $(\phi_i - \phi_k)$ to be zero or very near zero, as it representative of the common unobserved heterogeneity experienced by counties that are located adjacent to each other. In this expanded model, as in equation (2), the $KS2013_{jt}$ variable now captures only the non-tax rate changes of the policy change. Equations (4) and (5) are additionally analyzed using Kansas City Metro county data only, as this is by far the most heavily populated region among the Kansas border.

I run each equation will as a linear model, a log-linear model, and a per capita model. The variable representing the control for population is dropped in the per capita models. When selecting border county pairs, all Kansas counties were assigned exactly one adjacent county. As shown in Figures (3) and (4), the counties don't always have a unique match, so in some instances, multiple Kansas counties will be matched to the same neighboring cross border county. I chose the match based first off of geographical standards, i.e. the approximate percent of the border shared. However in some cases, namely the Kansas City area, it was necessary to use population as a tiebreaker when geographic borders were approximately equal.

5.) Empirical Results

Table 2 displays the tax structures of each of the five states between 2004 and 2013. When tax structure changes occurred in each of these states is essential to modelling the policy changes' effect on employment. Table 3 provides summary statistics for each state in 2013. Note that the business climate index variable is the rating given to each state in the 2015 publication of the Tax Foundation's "2015 State Business Tax Climate Index". These summary statistics are all presented as county-quarter averages. Table 4 provides summary statistics for all counties of the five states from 2004-2013. Table 5 shows the difference in variables from 2012 to 2013 (the years before and after Kansas' policy change) for each state. Figure (1) displays the trend of population in each state from 2004-2013. The trend of real per capita income for each of the five states is shown in Figure (2). Note that the dotted vertical line is inserted to indicate the beginning of a recession. Note that results may have downward bias due to the QWI data not encapsulating all self-employed individuals, as some individuals may respond to the policy change by leaving their jobs from UI qualifying employers and begin self-employed work.

Equation (1) models the impact of the 2013 tax policy change in Kansas on the level of private sector unemployment. This model controls for population differences and unobserved heterogeneity using a county fixed effect and quarter-year fixed effect. The results from this model give insight into how Kansas' 2013 private employment levels (post tax change) compare to what we would expect them to be had there not been the change, relative to employment levels in the counties of Colorado, Missouri, Nebraska, and Oklahoma.

I first estimate equation (1) using quarterly data from 2004 to 2013. The results from the base models are mixed and are reported in columns (1), (3), and (5) of Table 6. Using employment level as the dependent variable, I find no statistical significance at the 10% level for

the coefficient of the policy change variable.[4] Similarly, the model for the log of employment is not affected by the policy change, once population is controlled for. In the per capita base model for employment, however, a statistically significant coefficient exists, suggesting that per capita employment in Kansas has risen by 0.00489. The coefficient estimate implies that the policy change increases employment in Kansas counties on average by 4.9 jobs per 1000 people. Running these same models for a robustness check by using data from only 2010-2013 (in order to remove data from within the U.S. recession) returned statistically insignificant results, as shown columns (1), (3), and (5) of Table 7.

Equation (2) adds in variables for the three types of tax rates that may also affect employment outcomes: top corporate income marginal tax rate, top individual income marginal tax rate, and the sales tax rate. The results for 2004-2013 are presented in columns (2), (4), and (6) of Table 6, and the variables have statistical significance. The employment level model shows in column (2) that the tax base change portion of the policy has led to approximately 946 fewer jobs on average in Kansas counties in 2013 compared to counties of the neighboring states. The log-linear and per capita models display similar results, showing average decreases of 6.7% in county employment, and 0.011464 in per capita county employment, respectively, both also significant at 1%. Across models, corporate income, individual income, and sales tax rates are negatively correlated with employment. We can see that in each model, the magnitude of the corporate income tax rate coefficient is larger than that of the individual income tax rate, suggesting that a 1 percentage point corporate income tax rate change has a larger impact on employment. Kansas Governor Sam Brownback has stated publicly that "…if you want to

[4] The "raw" effect, controlling for only KS2013 and the fixed effects, in the employment level model is statistically significant at 10% with a coefficient of -316, and the log model is not significant.

expand your economy, you've got to get small business growing" (Lowry, 2014), yet the data suggest lowering corporate tax rates may have a larger effect on employment growth.

Running the model for years 2010-2013 also shows negative correlations for each variable, but the corporate tax rates were omitted for collinearity reasons (corporate income tax rates had almost no change during this time period and so are collinear with fixed effects). Impacts of the tax base change variable showed no statistical significance in the employment level model, but had a quite large -17.27% effect on employment in the log-linear model, and -0.025 on per capita employment at a significance level of 5%. The per capita model coefficient suggests that jobs have decreased at a rate of 24.6 jobs per 1,000 people post tax base change.

While almost all of the full sample analysis returned variable coefficients suggesting negative relationships between employment and the tax policy change, the border differencing models gave mixed results. When running equation (4), I regressed the 2013 policy change against the difference in employment between a given Kansas county and its cross border matching county, with results displayed in Table 8a. When doing this for the 2004-2013 sample, in Table 8a, columns (1), (3), and (5), the base models, controlling for only KS2013 and population, indicate that the tax change policy had a more positive effect on employment. For example, in the employment level model, column (1), the policy variable assumes a coefficient of 685.97, interpreted to mean that Kansas border counties had on average a difference of almost 686 more jobs than their cross state border matched counties, controlling for population. The policy change variable also has a positive impact on the per capita employment difference, 0.0048497. These models were then run again for the 2010-2013 border county sample, but returned no significant results, displayed in Table 9, columns (1), (3), and (5).

In the full models controlling for tax structure, as shown in columns (2), (4), and (6) of Table 8a, the results indicate a statistically significant negative correlation between the tax base change and employment levels in Kansas relative to its neighbors. Across models, the policy change variable returned values of -1002.821 on the employment variable, -9.9% in the log-linear model, and -0.012 in per capita employment. When running those same models for 2010-2014, the results for employment level and per capita employment were again insignificant, as depicted in columns (2) and (6) of Table 9. Column (4), displaying the log-linear model, was -12.9%. Table 8b returned similar, yet largely insignificant results.

It is noteworthy that, where results show significance, there seems to be a pattern of negative correlation between the tax base change in Kansas 2013 and employment. This is counter-intuitive, as the exemptions were enacted with job creation in mind, so it would be expected that even in the new policy's first year, we would start to see some influx of small business jobs into Kansas' economy. It is possible that small business jobs, which is what the tax cuts are targeted at, have in fact been increasing, but others such as perhaps corporate jobs have decreased at a faster rate. It is also possible that, since self-employed individuals are not included in the data, some workers could be leaving their employee jobs in order to become self-employed, and would therefore appear in our results as negative employment. However, since self-start-up projects tend to decrease in areas with lower individual income tax rates, it is unlikely that this would cause a negative bias in our results (Cullen & Gordon, 2007).

6.) Conclusion

In this paper I analyze the effects of the changes to the 2013 Kansas state income tax laws on employment. I used a county and quarter-year fixed effects model to view overall employment changes, logarithmic employment changes, and per capita employment changes in Kansas counties compared to counties in its four neighboring states: Colorado, Missouri, Nebraska, and Oklahoma. I ran data from 2004-2013 and reran the models using 2010-2014 data to check for more recent effects. In the full models controlling for tax structure, results indicate a negative correlation between the Kansas tax policy change and private. Using border matched differencing models examining the same effects, pairing each Kansas county with its adjacent county from a neighboring state, I found negative effects similar in magnitude.

It is noteworthy that the individual income tax rate independent from the tax cut had a significant negative relationship with employment levels. These results suggest that Kansas could be experiencing an increase in employment due to the income tax rate cuts, but perhaps a decrease in employment due to the tax base change. Since 2013 is only the first year of the tax change, and since it along with the pass-through exemption amounts will be phasing in over the next 5 years, it would be important to monitor employment effects over the next decade, and see if those effects start to take place. It would also be necessary to closely monitor the employment changes near the Kansas City area between Kansas and Missouri. This is by far the most populated area of any Kansas border, and once more data become available it would be helpful to see how unincorporated businesses and their owners make choices with regard to the border and relocation.

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TABLES

Table 1. Kansas Top Individual Income Marginal Tax Rates: 2012-2018

Year	Minimum Tax Rate	Maximum Tax Rate
2012	3.50%	6.45%
2013	3.00%	4.90%
2014	2.70%	4.80%
2015	2.70%	4.60%
2016	2.40%	4.60%
2017	2.30%	4.60%
2018	2.30%	3.90%

Source: KLRD (2013).

Table 2. Recent History of Tax Rates: Kansas and Neighboring States

State Sales Tax Rate (%)					
Year	CO	KS	MO	NE	OK
2003	2.90	4.90	4.23	5.00	4.50
2004	2.90	5.30	4.23	5.50	4.50
2005	2.90	5.30	4.23	5.50	4.50
2006	2.90	5.30	4.23	5.50	4.50
2007	2.90	5.30	4.23	5.50	4.50
2008	2.90	5.30	4.23	5.50	4.50
2009	2.90	5.30	4.23	5.50	4.50
2010	2.90	5.30	4.23	5.50	4.50
2011	2.90	6.30	4.23	5.50	4.50
2012	2.90	6.30	4.23	5.50	4.50
2013	2.90	6.30	4.23	5.50	4.50
State Top Corporate Income Marginal Tax Rate (%)					
Year	CO	KS	MO	NE	OK
2003	4.63	7.35	6.25	7.81	6.00
2004	4.63	7.35	6.25	7.81	6.00
2005	4.63	7.35	6.25	7.81	6.00
2006	4.63	7.35	6.25	7.81	6.00
2007	4.63	7.35	6.25	7.81	6.00
2008	4.63	7.35	6.25	7.81	6.00
2009	4.63	7.05	6.25	7.81	6.00
2010	4.63	7.05	6.25	7.81	6.00
2011	4.63	7.00	6.25	7.81	6.00
2012	4.63	7.00	6.25	7.81	6.00
2013	4.63	7.00	6.25	7.81	6.00
State Top Individual Income Marginal Tax Rate (%)					
Year	CO	KS	MO	NE	OK
2003	4.63	6.45	6.00	6.68	6.65
2004	4.63	6.45	6.00	6.84	7.00
2005	4.63	6.45	6.00	6.84	6.65
2006	4.63	6.45	6.00	6.84	6.65
2007	4.63	6.45	6.00	6.84	6.25
2008	4.63	6.45	6.00	6.84	5.65
2009	4.63	6.45	6.00	6.84	5.50
2010	4.63	6.45	6.00	6.84	5.50
2011	4.63	6.45	6.00	6.84	5.50
2012	4.63	6.45	6.00	6.84	5.25
2013	4.63	4.90	6.00	6.84	5.25

Source: Tax Foundation (2013).

Table 3. County Characteristics by State: 2013

Variable	**CO**	**KS**	**MO**	**NE**	**OK**
Private Emp.	30342.58	10383.41	19094.02	8312.4	15973.74
Population	81844.88	27532.74	52485.67	20039.19	49833.28
Private Earnings ($1000s)	2902.5	2746.17	2421.07	2532.09	2905.9
Corp MTR	0.0463	0.07	0.0625	0.0781	0.06
Ind MTR	0.0463	0.049	0.06	0.0684	0.0525
Sales Tax Rate	0.029	0.063	0.04225	0.055	0.045
Climate Index	5.21	5.21	5.48	4.85	4.85
State Min Wage	7.78	7.25	7.35	7.25	7.25

Notes: County-quarter averages are reported.

Table 4a – Summary Statistics for Full Sample: County Averages, All States 2004-2013.

Variable	Mean	Std. Dev.	Min	Max
Private Empl.	15589.68	51371.92	10	577428
Population	42057.10	105579.80	428	1010712
Priv Earnings (in $1000s)	2554.40	593.69	690.64	12256.19
Corp MTR	0.0652	0.0101	0.0463	0.0781
Ind. MTR	0.0603	0.0074	0.0463	0.0700
Sales Tax Rate	0.0466	0.0094	0.0290	0.0630
State Min Wage	6.4504	1.5109	2.8673	7.9051

Data Sources: Census Bureau, QWI, BEA, Tax Foundation. MTR indicates top marginal tax rate. There are 18,160 county-quarter observations. All dollar amounts adjusted to 2013 dollars using urban CPI.

Table 4b – Summary Statistics for Border Sample: County Averages, All States 2004-2013.

Variable	Mean	Std. Dev.	Min	Max
Private Empl.	12676.09	46631.43	95	327391
Population	32775.09	94836.52	1210	679996
Priv. Earnings (in $1000s)	2397.18	553.51	1302	5694
Corp MTR	0.068	0.009	0.0463	0.0781
Ind. MTR	0.062	0.007	0.0463	0.07
Sales Tax Rate	0.051	0.009	0.029	0.063
State Min Wage	5.87	1.92	2.87	7.91

Data Sources: Census Bureau, QWI, BEA, Tax Foundation. MTR indicates top marginal tax rate. There are 3,240 county-quarter observations. All dollar amounts adjusted to 2013 dollars using urban CPI.

Table 5. Changes in County Characteristics by State: 2012 to 2013

Variable	**CO**	**KS**	**MO**	**NE**	**OK**
Private Emp.	919.62	191.4	296.57	151.97	233.76
Population	1262.26	76.69	192.9	139.69	464.26
Private Earnings ($1000s)	19.955	18.95	-2.362	63.85	-34.624
Corp MTR	0	0	0	0	0
Ind MTR	0	-0.0155	0	0	0
Sales Tax Rate	0	0	0	0	0
State Min Wage	0.03	-0.11	-0.01	-0.11	-0.11

Notes: Change in a variable is computed at the county level as the 4th quarter change (2013:Q4 – 2012:Q4) and averaged over counties. All dollar amounts are adjusted to 2013 dollars using urban CPI.

Table 6. Effect of Tax Policy Change on Private Sector Employment: Full Sample 2004-2013

	Full Sample 2004 to 2013					
	Employment Level		Log of Employment		Per Capita Employment	
	(1)	(2)	(3)	(4)	(5)	(6)
KS 2013	-165.65	-946.02***	-0.0014	-0.067***	0.00489*	-0.0115***
	(148.88)	(300.55)	(0.011)	(0.02)	(0.0027)	(0.0039)
Corp		-1617.77**		-.08255**		-.03526***
		(778.9563)		(.0346)		(0.00886)
MTR		-452.80***		-.0432***		-0.008044***
		(146.4978)		(.0126)		(0.002326)
Sales		-229.89**		-.0141*		-0.002620
		(101.72)		(0.0074)		(0.00177)
Population	0.1106***	0.111***	0.00101***	0.0011***		
	(0.0320)	(0.032)	(0.00037)	(0.00037)		
Constant	10368.***	24833***	7.91***	8.785***	0.2399***	0.5333***
	(1311.24)	(5953.35)	(0.014)	(0.2644)	(0.0013)	(0.066)
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample size is 18,160 county-quarter observations. ***p<0.01, **p<0.05, *p<0.1. For the log-linear models, population was replaced with population in thousands. Cluster-robust standard errors in parentheses (cluster county). Models include county and quarter-year fixed effects. Corp, MTR, and Sales tax rates are multiplied by 100 (displayed is the coefficient estimate corresponding to 1 percentage point increase in the tax rate).

Table 7. Effect of Tax Policy Change on Private Sector Employment: Full Sample 2010-2013

	Full Sample 2010 to 2013					
	Employment Level		Log of Employment		Per Capita Employment	
	(1)	(2)	(3)	(4)	(5)	(6)
KS 2013	-22.184	-267.40	-0.0053	-0.1727***	0.00045	-0.0246**
	(72.83)	(579.52)	(0.0072)	(0.059)	(0.0016)	(0.0123)
Corp						
MTR		-165.1237		-0.1124***		-0.0167**
		(383.8551)		(0.3806)		(0.008)
Sales		-14.1195		-0.00843		-0.00054
		(69.62)		(0.00621)		(0.0015)
Population	0.6877***	0.6876***	0.00106***	0.000989**		
	(0.0501)	(0.0501)	(0.0004)	(0.000415)		
Constant	-14558.6***	-13499***	7.897***	8.613***	0.2327***	0.33512***
	(2164.87)	(3485.73)	(0.0157)	(0.229)	(0.0009)	(0.048)
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample size is 7,264 county-quarter observations. ***p<0.01, **p<0.05, *p<0.1. For the log-linear models, population is replaced with population in thousands. Corporate tax rate is omitted as it did not change significantly over this time period. Cluster-robust standard errors in parentheses (cluster county). Models include county and quarter-year fixed effects. Corp, MTR, and Sales tax rates are multiplied by 100 (displayed is the coefficient estimate corresponding to 1 percentage point increase in the tax rate).

Table 8a. Effect of Tax Policy Change on Private Employment: Border Sample 2004-2013

Border County Sample

2004 to 2013

	Employment Level		Log of Employment		Per Capita Employment	
	(1)	(2)	(3)	(4)	(5)	(6)
KS 2013	685.97***	-1002.8***	0.00172	-0.0992***	0.00485**	-0.012***
	(202.7843)	(373.12)	(0.0109)	(0.0205)	(0.00231)	(0.0043)
ΔCorp		-2752.3***		-0.076***		-0.0157***
		(491.12)		(0.0297)		(0.0058)
ΔMTR		-601.97***		-0.0708***		-0.0094***
		(192.97)		(0.0107)		(0.0022)
ΔSales		416.93**		-0.01107		0.0017
		(192.02)		(0.011)		(0.0023)
ΔPopulation	0.4136***	0.4119***	0.0045***	0.00438***		
	(0.0129)	(0.013)	(0.001)	(0.001)		
Constant	140.73	2354.79	-0.2342	-0.1253	0.0024	0.0188
	(1402.8)	(1565.12)	(0.197)	(0.2028)	(0.0187)	(0.0196)

Notes: Sample size is 1,600 county-quarter observations. ***p<0.01, **p<0.05, *p<0.1. For the log-linear models, population is replaced with population in thousands. Corp, MTR, and Sales tax rates are multiplied by 100 (displayed is the coefficient estimate corresponding to 1 percentage point increase in the tax rate).

Table 8b. Effect of Tax Policy Change on Private Employment: KC MSA Sample 2004-2013

KC MSA Border County Sample

2004 to 2013

	Employment Level		Log of Employment		Per Capita Employment	
	(1)	(2)	(3)	(4)	(5)	(6)
KS 2013	3888.9**	-2484.8	-0.0168	-0.008	0.0025	-0.0027
	(1554.4)	(2113.8)	(0.014)	(0.02)	(0.003)	(0.005)
ΔCorp		-17637***		0.133***		.0128
		(3612)		(0.036)		(.0089)
ΔMTR		-697.95		-0.002		-0.001
		(1446.4)		(0.014)		(0.0036)
ΔSales		2048.3		0.0175		0.0079**
		(1505.5)		(0.015)		(0.0037)
ΔPopulation	0.408***	0.377***	0.0017***	0.0019***		
	(44.37)	(0.041)	(0.0005)	(0.0005)		
Constant	-1632.85	8495.7	-0.650**	-0.776***	-0.0496	-0.071
	(13872)	(14555)	(0.258)	(0.262)	(0.054)	(0.055)

Notes: Sample size is 200 county-quarter observations. ***p<0.01, **p<0.05, *p<0.1. For the log-linear models, population is replaced with population in thousands. Corp, MTR, and Sales tax rates are multiplied by 100 (displayed is the coefficient estimate corresponding to 1 percentage point increase in the tax rate).

Table 9. Effect of Tax Policy Change on Private Sector Employment: Border Sample 2010-2013

Border County Sample

2010 to 2013

	Employment Level		Log of Employment		Per Capita Employment	
	(1)	(2)	(3)	(4)	(5)	(6)
KS 2013	-15.65	855.14	0.0037	-0.129*	0.00234	-0.0213
	(81.05)	(839.83)	(0.0067)	(0.069)	(0.0016)	(0.017)
ΔCorp		-231.139		-0.062		0.01
		(1327.54)		(0.184)		(0.019)
ΔMTR		614.11		-0.0905**		-0.016
		(552.38)		(0.046)		(0.011)
ΔSales		139.18		-0.012		0.0016
		(11115.22)		(0.0118)		(0.002)
ΔPopulation	0.4712***	0.4731***	0.00343*	0.0033*		
	(0.0147)	(0.015)	(0.0018)	(0.0018)		
Constant	2288.7	1894.5	-0.263	-0.1472	0.00495	0.0054
	(1423.7)	(1764.5)	(0.204)	(0.25)	(0.019)	(0.0231)

Notes: Sample size is 640 county-quarter observations. ***p<0.01, **p<0.05, *p<0.1. For the log-linear models, population is replaced with population in thousands. Corp, MTR, and Sales tax rates are multiplied by 100 (displayed is the coefficient estimate corresponding to 1 percentage point increase in the tax rate).

FIGURES

Figure 1. Population Trends by State

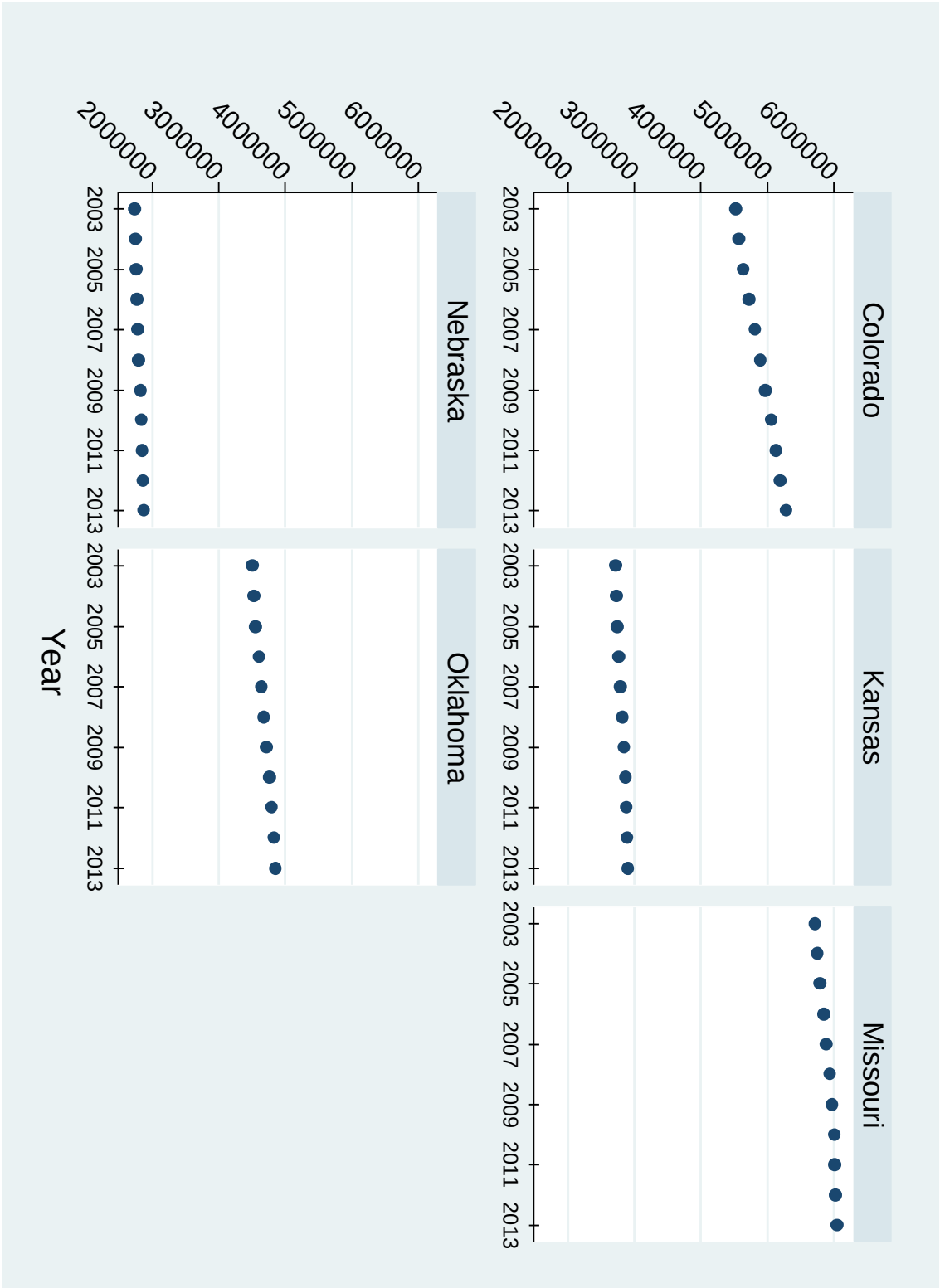


Figure 2. Growth in Real per Capita Income by State

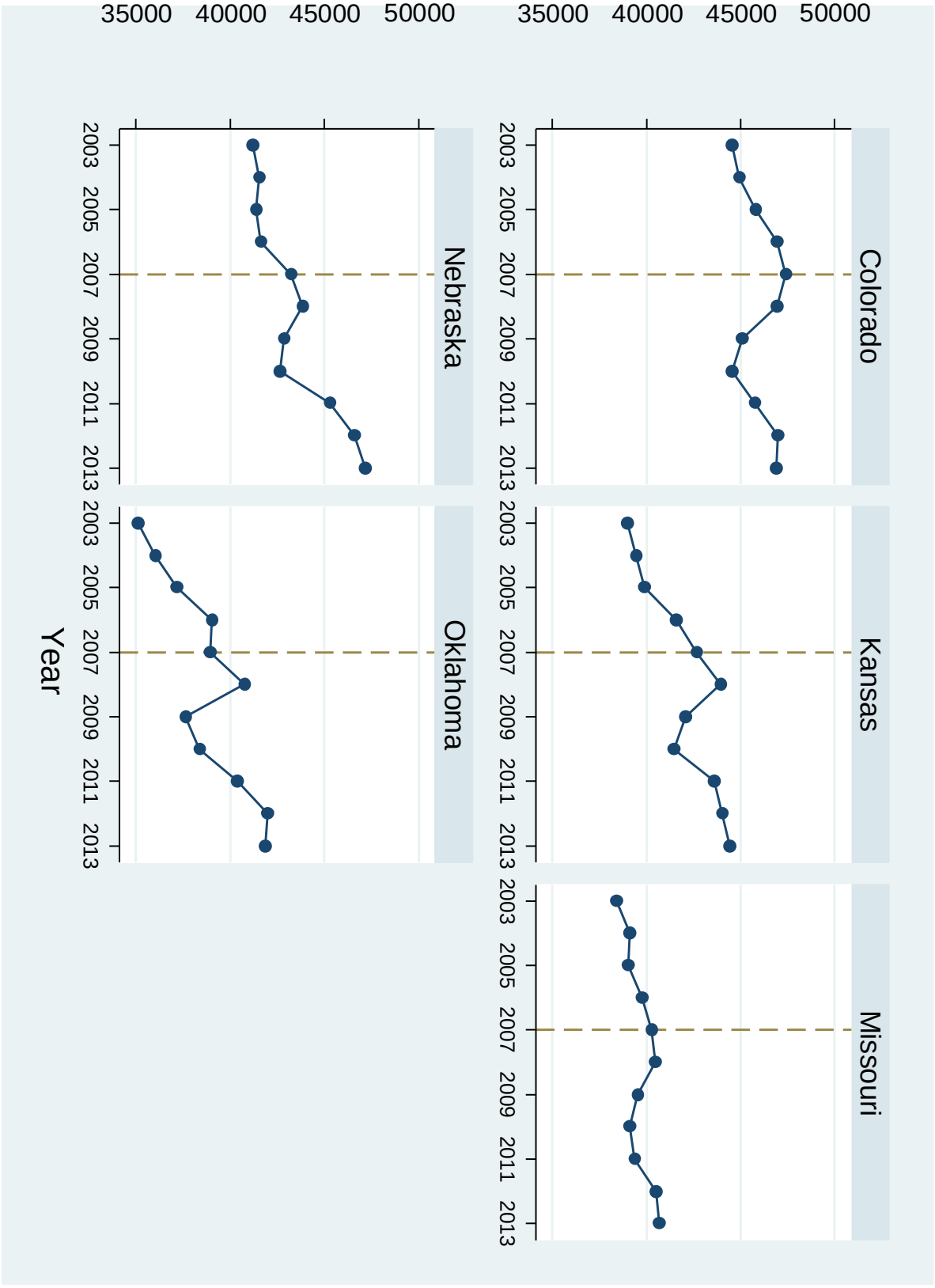
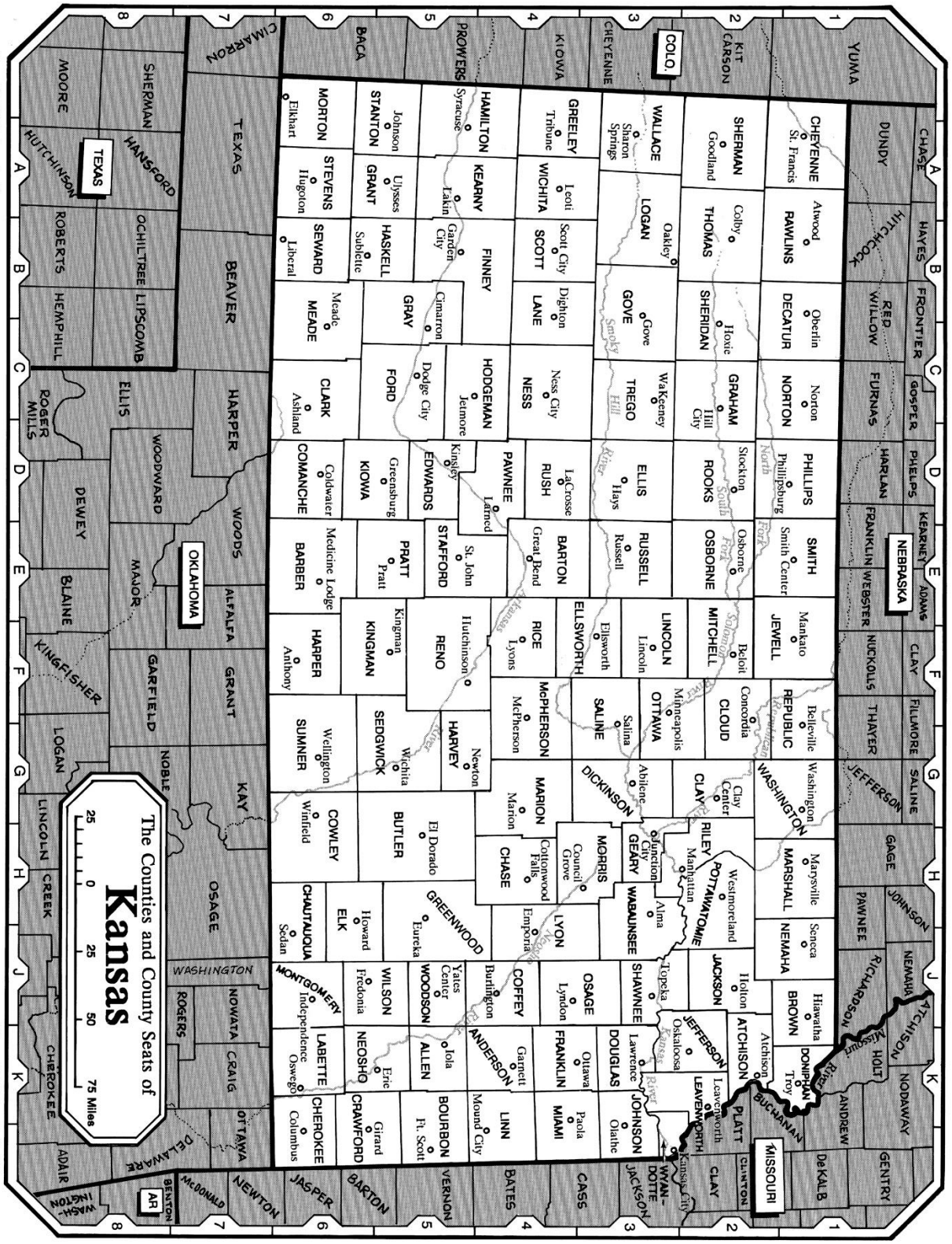


Figure 3. Map of Counties



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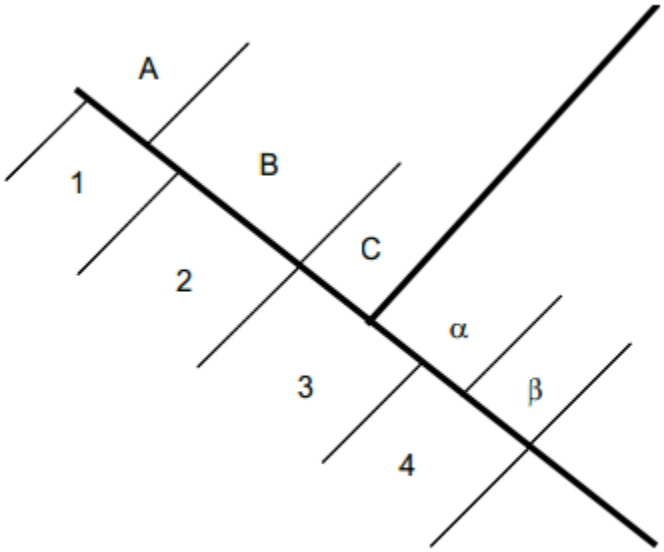
Drawn by William Dollarhide

Figure 4. Example of County Pairs



Source: Mikesell and Ross (2014).