THE IMPACT OF LOCAL OPTION SALES TAXES ON RETAIL SALES, EMPLOYMENT, PAYROLLS, AND ESTABLISHMENTS: THE CASE FOR KANSAS

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Abstract–This study examines the impact of local option sales tax differentials in the State of Kansas on retail sales, retail employment, retail payrolls, and the number of retail establishments. It was found that (1) the county tax rate is inversely and significantly related to retail sales per capita, retail sales per vendor, and retail employment per vendor; (2) the city tax rate is inversely and significantly related to the number of retail establishment per capita only; (3) there is a significant border effect for counties bordering another state on retail sales per capita, retail sales per vendor, retail employment per capita, retail employment per vendor, retail payrolls per capita, retail payrolls per vendor, and the number of retail establishments per capita; and (4) regional market dominance is directly and significantly related to retail sales per capita, retail employment per capita, retail payrolls per capita, and the number of retail establishments per capita.

I. INTRODUCTION

Over the past two decades, financially strapped local governments have been under pressure to develop revenue sources to supplement property taxes. Many local governments have altered their tax structures by reducing reliance on property taxes and instituting local sales taxes (Krmenec, 1991). Much of the increased reliance on local sales taxes can be attributed to (1) the increased demand for local government services, (2) the decreasing popularity of property taxes, (3) the reluctance of states to raise state taxes, and (4) increases on mandates placed on local governments from both the state and federal levels.

One of the major advantages of a local sales tax is its exportability beyond the taxing jurisdiction. The increased use of local sales taxes facilitates the exportation of a portion of the tax burden to suburban "free riders." Although sales taxes tend to be more regressive than property taxes, they tend to be more popular than property taxes with residents because their payment is spread across time. In addition, local sales taxes allow state governments to assist local jurisdictions without increasing the responsibility of the state for taxation.

A major issue in the local sales tax debate is that retail sales attracted to one jurisdiction because of a low or no tax may represent an equivalent loss to another jurisdiction. This phenomenon has been referred to as the "border effect," reflect-

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ing the impact of one jurisdiction on an adjoining one with a different sales tax rate. Businesses argue that these rate differentials encourage shoppers to patronize businesses in jurisdictions with no or low sales taxes. Local sales taxes affect retail sales in three ways. First, the imposition of a sales tax reduces consumer disposable income and hence reduces retail sales. Second, the imposition of a sales tax on some products but not others induces consumers to substitute tax- exempt goods for taxable goods. Finally, if some jurisdictions impose a tax while others do not, consumers are induced to substitute purchases in the low tax jurisdiction for purchases in the higher tax jurisdiction. However, transportation costs may be high enough to deter consumers from taking advantage of a sales tax rate differential. Consequently, tax rate differentials are more important for high-priced goods or goods that can be purchased in bulk (Fisher, 1980).

One major determinant of the impact of a local sales tax on retail sales is the relative regional market dominance of the taxing jurisdiction. Larger communities, with their greater relative concentration of retail establishments, tend to be affected less by increases in the local sales tax. This issue is especially relevant for jurisdictions in thinly populated rural areas. If there is a higher sales tax rate in a community in a sparsely populated area that is *not* market dominant than there is in a community in a densely populated area that *is* market dominant, the small community can expect sizable sales losses even if the market-dominant community is some distance away, especially for big-ticket items such as electronics, durables, and automobiles. In fact, there may even be an appreciable effect on everyday purchases, as some consumers may choose to take advantage of a greater selection and economies of scale in making occasional bulk purchases in the dominant jurisdiction.

Several studies have found that sales tax differentials between states do affect retail sales in border communities (Maliet, 1955; McAllister, 1961; Mikesell, 1970; and Walsh and Jones, 1988). Due and Mikesell (1983) conclude that for cities there is strong evidence that rate differentials lead to significantly lower per capita sales. It has been estimated that a 1 percentage point increase in the local sales tax rate decreases retail sales by between 6 and 7 percent (Hammovitch, 1966; Levin, 1966; and Mikesell, 1970). Mikesell and Zorn (1986) found that local sales tax rate differentials reduce retail sales in a city primarily by lowering sales per seller rather than by decreasing the number of sellers. In addition, Fox (1986) found that the lost employment induced by a local sales tax rate increase is generally about the same relative magnitude as lost sales. Of course, an increase in the local sales tax rate may generate additional revenue in the short run but result in a loss of retail sales in the long run. Although several studies have found a direct relationship between sales tax rates and sales tax revenues (Snodgrass and

Otto 1990; and Fisher 1988), the impact of local sales taxes on the overall economy may still be negative.

This study examines the impact of local option sales tax differentials in the State of Kansas on retail sales, retail employment, retail payrolls, and the number of retail establishments. It is postulated that the local sales tax will have a negative effect on retail sales, employment, payrolls, and the number of establishments.

II. DEFINITIONS AND DATA

Local governments can levy sales taxes only when specifically or implicitly authorized by their state's constitution or statutes. This authorization can be in the form of home rule charter powers, general licensing powers, or specific state enabling statutes (Due and Mikesell, 1983). As a general rule, in the State of Kansas, local sales taxes may be levied or increased only if voters approve through a referendum. Generally, cities and counties may levy a sales tax at the rate of 0.25 percent, 0.5 percent, 0.75 percent, or 1 percent. However, there are exceptions which allow certain jurisdictions to levy higher rates for specified purposes. Cities and counties may also levy a sales tax at the rate of 0.25 percent, 0.5 percent, 0.75 percent, or 1 percent for the purpose of financing the provision of health care services. Revenue from a countywide sales tax is apportioned among the county and cities within the county, with 50 percent allocated in proportion to total, unit-wide property tax levies and 50 percent in proportion to the respective city and non-city populations. There are also exceptions which allow certain jurisdictions to alter the distribution formula (K.S.A. 12-187 *et seq.*). Presently, 132 cities and 63 counties take advantage of the local option sales tax in Kansas.

Data were obtained for all 105 Kansas counties for the years 1981 through 1991. These years were used because they are the most recent years for which data were available for all variables. Data on city and county sales tax rates were obtained from the *Kansas Government Journal* (Drummond, 1993). Real taxable retail sales, population, and real per capita personal income were obtained from data compiled by the Center for Economic Development and Business Research at Wichita State University. Data on the number of retail employees, retail payrolls, and the number of retail vendors were obtained from *County Business Patterns*. Sales tax rates for Colorado, Missouri, Nebraska, and Oklahoma were obtained from the *Book of the States*.

III. MODEL

The focus of this model is to consider the impact of local option sales tax differentials in the State of Kansas on retail sales, retail employment, retail payrolls, and the number of retail establishments. First, it is hypothesized that there will be an inverse relationship between the local option sales tax rate and retail sales, retail employment, retail payrolls, and the number of retail establishments. Second, it is hypothesized that retail sales, retail employment, retail payrolls, and the number of retail establishments will be higher in counties that border on a state with a state retail sales tax higher than that of Kansas. Specifically, in 1990 Kansas had a state sales tax rate of 4.25 percent, Colorado 3 percent, Missouri 4.425 percent, Nebraska 4 percent, and Oklahoma 4 percent.

Because of the problems with autocorrelation and heteroskedasticity inherent in using pooled time series-cross sectional data, a variance component generalized least squares (GLS) model was employed (Fuller and Battese, 1974). This model assumes a variance component structure similar to the two-way random effect model with covariates. The following functional specification was used to evaluate the impact of local option sales taxes on retail sales, retail employment, retail payrolls, and the number of retail establishments:

$$\ln(Y^*) = f(\text{LPOP, LRPCPI, LIPDPCE, CNTYR, CITYR, DBCO,}$$
$$\text{DBMO, DBNE, DBOK, DKS86, DKS89})$$

(Y^1)	LRTRSPC:	Natural logarithm of total retail sales per capita
(Y^2)	LRTRSV:	Natural logarithm of total retail sales per retail vendor
(Y^3)	LREMPPC:	Natural logarithm of retail employment per capita
(Y^4)	LREMPV:	Natural logarithm of retail employment per retail vendor
(Y^5)	LRPAYPC:	Natural logarithm of retail payrolls per capita
(Y^6)	LRPAYV:	Natural logarithm of retail payrolls per retail vendor
(Y^7)	LRESTPC:	Natural logarithm of retail establishments per capita
	LPOP:	Natural logarithm of county population
	LRPCPI:	Natural logarithm of county real per capita personal income
	LIPDPCE:	Natural logarithm of the Implicit Price Deflator for Personal Consumption Expenditures
	CNTYR:	County sales tax rate
	CITYR:	City sales tax rate
	DBCO:	Dummy variable indicating a county bordering the state of Colorado
	DBMO:	Dummy variable indicating a county bordering the state of Missouri

> DBNE: Dummy variable indicating a county bordering the state of Nebraska
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> DBOK: Dummy variable indicating a county bordering the state of Oklahoma
>
> DKS86: Dummy variable indicating a change in the Kansas state retail sales tax from 3 percent to 4 percent in 1986
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> DKS89: Dummy variable indicating a change in the Kansas state retail sales tax from 4 percent to 4.25 percent in 1989

The population, income, and price level variables are included to capture prevailing economic conditions.

IV. RESULTS

A. Retail Sales

The results from estimating Equations 1 and 2 are presented in Table 1. As expected, the county tax rate is inversely and significantly related to both retail sales per capita and retail sales per vendor. This indicates that, on average, each consumer spends less and each vendor receives less in high tax counties than low tax counties. However, the city tax rate is not significantly related to either retail sales per capita or retail sales per vendor. Interestingly, counties bordering on Colorado experience significantly higher retail sales per capita and retail sales per vendor, even though Colorado has a lower state sales tax rate, while counties bordering on Missouri experience significantly lower retail sales per capita, even though Missouri has a higher state sales tax rate. In the Colorado situation, higher retail sales in Kansas may be induced by Colorado's largely ad hoc and overlapping local sales taxation scheme, which is only loosely tied to the state's sales taxation system. In the Missouri situation, lower retail sales in Kansas may be induced by the high concentration of retail establishments and the regional market dominance of the Kansas City, Missouri metropolitan area and the large population base in Kansas within driving distance of this area. Not unexpectedly, Nebraska and Oklahoma border counties experience lower retail sales per vendor. In 1990, the Kansas state retail sales tax rate was 4.25 percent, while Nebraska and Oklahoma had 4 percent state retail sales tax rates.

B. Retail Employment

The results from estimating Equations 3 and 4 are presented in Table 2. As expected, the county tax rate is inversely and significantly related to retail

employment per vendor. This indicates that, on average, each vendor employs fewer employees in high tax counties than low tax counties. Differences in retail sales per vendor subsequently induce differences in retail employment per vendor. However, the city tax rate is not significantly related to either retail employment per capita or retail employment per vendor and the county tax rate is not significantly related to retail employment per capita. Interestingly, counties border-

TABLE 1
Parameter Estimates
Real Taxable Retail Sales

Variable	Parameter Estimate	Standard Error	T-Statistic	P-Value
Per Capita				
INTERCEPT	6.61	1.27	5.19**	0.0001
LPOP	0.15	0.01	11.74**	0.0001
LRPCPI	0.50	0.07	7.05**	0.0001
LIPDPCE	-0.75	0.27	-2.81**	0.0051
CNTYR	-0.11	0.03	-3.87**	0.0001
CITYR	-0.06	0.04	-1.51	0.1323
DBCO	0.13	0.05	2.56*	0.0107
DBMO	-0.21	0.05	-4.62**	0.0001
DBNE	-0.05	0.04	-1.23	0.2195
DBOK	-0.01	0.04	-0.19	0.8523
DKS86	-0.05	0.05	-1.04	0.2970
DKS89	0.07	0.05	1.42	0.1560
Per Vendor				
INTERCEPT	14.44	0.88	16.31**	0.0001
LPOP	0.22	0.01	24.78**	0.0001
LRPCPI	0.36	0.05	7.31**	0.0001
LIPDPCE	-1.15	0.18	-6.23**	0.0001
CNTYR	-0.09	0.02	-4.62**	0.0001
CITYR	0.03	0.03	1.04	0.2993
DBCO	0.20	0.04	5.51**	0.0001
DBMO	-0.00	0.03	-0.13	0.8995
DBNE	-0.18	0.02	-6.49**	0.0001
DBOK	-0.05	0.02	-2.06*	0.0399
DKS86	0.02	0.03	0.73	0.4638
DKS89	0.10	0.03	3.08**	0.0021

**Significant at the 1 percent level.
*Significant at the 5 percent level.

ing on Nebraska and Oklahoma experience significantly lower retail employment per vendor, while counties bordering on Colorado experience significantly higher retail employment per vendor. Again, this is likely due to the higher "effective sales tax rate" in Colorado and the lower state retail sales tax rates in Nebraska and Oklahoma. Counties bordering on Missouri experience lower retail employment per capita. This is likely the result of the intense competition from nearby Kansas City, Missouri, merchants. Differences in retail sales per capita subsequently induce differences in retail employment per capita.

TABLE 2
Parameter Estimates
Retail Employment

Variable	Parameter Estimate	Standard Error	T-Statistic	P-Value
Per Capita				
INTERCEPT	8.82	1.42	6.22**	0.0001
LPOP	0.20	0.01	14.01**	0.0001
LRPCPI	0.24	0.08	3.05**	0.0024
LIPDPCE	-0.18	0.30	-0.60	0.5519
CNTYR	-0.06	0.03	-1.94	0.0533
CITYR	-0.048	0.04	-1.16	0.2462
DBCO	0.07	0.06	1.120	0.2312
DBMO	-0.18	0.05	-3.63**	0.0003
DBNE	0.02	0.04	0.50	0.6164
DBOK	-0.04	0.04	-0.96	0.3372
DKS86	0.06	0.05	1.20	0.2321
DKS89	0.11	0.05	1.97*	0.0490
Per Vendor				
INTERCEPT	2.84	0.92	3.09**	0.0020
LPOP	0.27	0.01	29.28**	0.0001
LRPCPI	0.10	0.05	1.98*	0.0477
LIPDPCE	-0.58	0.19	-3.04**	0.0025
CNTYR	-0.04	0.02	-2.09*	0.0369
CITYR	0.03	0.03	1.30	0.1937
DBCO	0.14	0.04	3.62**	0.0003
DBMO	0.02	0.03	0.68	0.4952
DBNE	-0.11	0.03	-3.78**	0.0002
DBOK	-0.09	0.03	-3.21**	0.0013
DKS86	0.14	0.04	4.01**	0.0001
DKS89	0.14	0.03	4.05**	0.0001

**Significant at the 1 percent level.
*Significant at the 5 percent level.

C. Retail Payrolls

The results from estimating Equations 5 and 6 are presented in Table 3. Interestingly, neither the county tax rate nor the city tax rate is significantly related to either retail payrolls per capita or retail payrolls per vendor. Counties bordering

TABLE 3
Parameter Estimates
Retail Payrolls

Variable	Parameter Estimate	Standard Error	T-Statistic	P-Value
Per Capita				
INTERCEPT	-1.71	1.51	-1.13	0.2588
LPOP	0.28	0.02	18.49**	0.0001
LRPCPI	0.40	0.08	4.75**	0.0001
LIPDPCE	0.71	0.32	2.25*	0.0247
CNTYR	-0.05	0.03	-1.39	0.1662
CITYR	-0.09	0.04	-1.96	0.0508
DBCO	0.20	0.06	3.19**	0.0015
DBMO	-0.19	0.05	-3.52**	0.0004
DBNE	-0.03	0.05	-0.73	0.4640
DBOK	-0.01	0.04	-0.23	0.8150
DKS86	0.01	0.06	0.23	0.8158
DKS89	0.05	0.06	0.84	0.3980
Per Vendor				
INTERCEPT	-0.79	0.99	-0.79	0.4281
LPOP	0.35	0.01	35.15**	0.0001
LRPCPI	0.26	0.06	4.71**	0.0001
LIPDPCE	0.31	0.21	1.47	0.1409
CNTYR	-0.03	0.02	-1.27	0.2030
CITYR	-0.00	0.03	-0.12	0.9043
DBCO	0.27	0.04	6.48**	0.0001
DBMO	0.02	0.03	0.45	0.6509
DBNE	-0.16	0.03	-5.32**	0.0001
DBOK	-0.06	0.03	-1.95	0.0515
DKS86	0.09	0.04	2.34*	0.0192
DKS89	0.08	0.04	2.21*	0.0274

**Significant at the 1 percent level.
*Significant at the 5 percent level.

on Colorado experience significantly higher retail payrolls per capita and retail payrolls per vendor, while Missouri border counties experience significantly lower retail payrolls per capita, and Nebraska border counties experience significantly lower retail payrolls per vendor. Again, the Colorado border effect is likely to be the result of the higher effective sales tax rate, the Missouri border effect is largely the result of the market dominance of Kansas City, Missouri, and the Nebraska border situation is the result of the lower state retail sales tax in Nebraska. Differences in retail sales per capita or retail sales per vendor subsequently induce differences in retail employment per capita and retail employment per vendor, which in turn, induce differences in retail payrolls per capita and retail payrolls per vendor.

D. Retail Establishments

The results from estimating Equation 7 are presented in Table 4. As expected, the city tax rate is inversely and significantly related to the number of retail establishments per capita. This indicates that, on average, there are fewer vendors in high tax cities than low tax cities. However, the county tax rate is not significantly related to the number of retail establishment per capita. Counties bordering on Missouri have significantly fewer retail establishments per capita, while counties bordering on Nebraska have significantly more retail estab-

TABLE 4
Parameter Estimates
Retail Establishments Per Capita

Variable	Parameter Estimate	Standard Error	T-Statistic	P-Value
INTERCEPT	5.99	1.01	5.91 **	0.0001
LPOP	-0.07	0.01	-6.88 **	0.0001
LRPCPI	0.14	0.06	2.47 *	0.0135
LIPDPCE	0.40	0.21	1.91	0.0561
CNTYR	-0.02	0.02	-0.82	0.4134
CITYR	-0.08	0.03	-2.80 **	0.0052
DBCO	-0.07	0.04	-1.60	0.1105
DBMO	-0.21	0.04	-5.70 **	0.0001
DBNE	0.13	0.03	4.12 **	0.0001
DBOK	0.05	0.03	1.56	0.1184
DKS86	-0.08	0.04	-1.95	0.0512
DKS89	-0.04	0.04	-0.90	0.3662

**Significant at the 1 percent level.
*Significant at the 5 percent level.

lishments per capita. The Missouri border effect is largely the result of the concentrated Kansas City, Missouri, regional market. First, a large concentrated regional market facilitates the viability of large discount retailers. Second, large concentrated regional markets facilitate the viability of small specialty retailers. The combination of these two factors increases the number of retail establishments in the more densely populated area and decreases the number of retailers in the less densely populated area. The Nebraska border effect may be due largely to the higher concentration of population on the Kansas side of the border relative to the Nebraska side. This in turn attracts a larger concentration of retail establishments on the Kansas side.

V. CONCLUSIONS

In this study, it was found that (1) the county tax rate is inversely and significantly related to retail sales per capita, retail sales per vendor, and retail employment per vendor; (2) the city tax rate is inversely and significantly related to the number of retail establishments per capita only; (3) for counties bordering another state there is a significant border effect on retail sales per capita, retail sales per vendor, retail employment per capita, retail employment per vendor, retail payrolls per capita, retail payrolls per vendor, and the number of retail establishments per capita; and (4) regional market dominance is directly and significantly related to retail sales per capita, retail employment per capita, retail payrolls per capita, and the number of retail establishments per capita.

The major implications of the imposition of a county sales tax are that it will (1) decrease the volume of overall retail activity; (2) decrease the volume of retail activity per retail establishment; and (3) decrease the level of retail employment per retail establishment. Thus, the reduction in retail activity will likely result in lower profit margins for retailers and fewer jobs in the retail sector. On the other hand, the imposition of a city sales tax will only decrease the volume of overall retail activity. Generally, the impact of the city sales tax is less pervasive, because only cities with a high degree of market dominance tend to adopt such a tax.

The border effect between two states occurs at two levels. At the macro level, (1) there will be a decrease in the volume of overall retail activity in the high tax jurisdiction, (2) inducing a decrease in the level of overall retail employment, (3) inducing a decrease in overall retail payrolls, and finally (4) inducing a decrease in the number of retail establishments. At the micro level, (1) there will be a decrease in the volume of retail activity per retail establishment in the high tax jurisdiction, (2) inducing a decrease in the level of retail employment per retail establishment, and finally (3) inducing a decrease in retail payrolls per estab-

lishment. Thus, the border effect will likely reduce both the number of retail establishments and the size of retail establishments in the high tax jurisdiction.

The major effects of regional market dominance are that it will (1) decrease the volume of overall retail activity in the non-dominant jurisdiction, (2) inducing a decrease in the level of overall retail employment, (3) inducing a decrease in overall retail payrolls, and (4) finally inducing a decrease in the number of retail establishments.

Local governments in general have a strong incentive to substitute sales taxes for unpopular property taxes. Small communities suffering from fiscal stress face an even stronger temptation to institute a local retail sales tax to enhance revenues. However, in making decisions concerning imposing or increasing local sales taxes, communities must not ignore the possibility of substantial sales losses resulting from sales tax rate differentials. This issue is especially relevant for states with large rural populations such as Kansas. If a non-market-dominant jurisdiction in a rural state imposes a local sales tax, it can expect sizable sales losses, especially in major purchases, even if the market dominant community is some distance away. Evidence from the State of Kansas indicates that only large regional retail centers are positioned to use local sales taxes effectively.

Overall, local governments must weigh and balance the benefits and costs of imposing a local retail sales tax. While the institution of a local sales tax may result in the loss of some retail sales, jobs, and income, many communities are in fiscal dire straits and in need of revenue from any source. It must be kept in mind that the fortunes of the public and private sectors are intertwined. If local government revenues are zero and there are no public services or infrastructure, the question of the impact on local retail sales, employment, and income essentially becomes moot.

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