

The Effect of Wal-Mart on the Tax Base: Evidence from New Jersey

David Kababik

Advisor: Donald Vandegrift

Spring 2010

Abstract: *Studies of the effect of Wal-Mart store opening have often looked at the big box chain's impact on the consumer, local labor markets and the retail sector. This paper expands on the current available literature by examining the effect of Wal-Mart stores on the tax base. Using panel data analysis, we measure the impact of 21 Wal-Mart openings on municipal tax base data in New Jersey over a ten-year period from 1998-2007, reviewing the impact on the municipalities they locate in as well as adjoining municipalities. The paper concludes that Wal-Mart store openings raise growth in the tax base in the municipalities they enter about 1.5 percentage points in the first year and 1.2 percentage points in the subsequent year. For adjacent municipalities, there is no immediate effect on the tax base, but after a year the tax base grows 1.8 percentage points faster.*

I. Introduction

Municipal officials are often motivated by a desire to expand the tax base because tax base expansion results in more revenue used to fund municipal services and may even allow officials to cut the tax rate. To expand the tax base, public officials tend to pursue economic development. Economic development focuses on increasing standard of living through job creation or commercial development. These two areas of public policy, however, do not always coexist without conflict. In some cases, economic development may result in tax base contraction because of a negative impact on property values.

Gscottschneider (1998) cites three ways in which local economic development may conflict with tax base expansion. First of all, new developments, such as a new shopping center, may have a negative impact on downtown businesses, causing increased exit rates and an overall reduction in the tax revenue. Second, zoning regulations may not protect existing property values. Large scale economic development located too close to a residential area, for example, may result in increased traffic and lower property values. Lastly, public officials may place too much emphasis on new development. These new developments often do not contribute more than one or two percent to the tax base, while the existing tax base declines due to their presence.

For instance, the city of Concord, NH added over 2.8 million square feet of new commercial and industrial development during the late-1980s to mid-1990s. The tax base assessed value, however, fell 19% during this time period. Gscottschneider (1998) attributed this decline to improper economic development strategy. Most interestingly, the analysis

concluded that new retail development resulted in lower value of older retail areas due to the increased competition. In addition, Gsottschneider claims that commercial and industrial development in close proximity to residential neighborhoods also caused a reduction in residential property values. This particular conclusion is significant because residential property represented 57 percent of the municipal tax base. Reviewing the case of Concord, NH, it is easy to see why it is important for public officials to recognize the link between the tax base and economic development.

The purpose of this paper is to look at the effect of Wal-Mart store openings in New Jersey and their effect on the tax base of the municipality they enter and adjoining municipalities. Economic developers and public officials may seek the introduction of a Wal-Mart because of the jobs it creates as well as the consumer benefits that the corporation brings. Due to the size and scope of the company's business, however, it is important to look at its long term tax base implications. Indeed, Wal-Mart openings are often a subject of controversy. Moreover, municipal governments often object when Wal-Mart attempts to open a store in an adjoining municipality. They fear the impact Wal-Mart may have on businesses within their municipality and, by implication, a negative impact on the tax base.

While Wal-Mart is similar in many respects to other large retailers, it is unique in some respects. Wal-Mart is one of the largest private employers in the United States with over 1.4 million employees and over 4,200 stores. In New Jersey, there are 62 Wal-Mart stores including 46 discount stores, 10 Sam's Clubs and 6 Supercenters. They employ 17,057 associates and the stores collected more than \$131.8 million in sales tax and paid more than \$31.2 million in state

and local taxes in 2009.¹ Over the period 1998-2007, 21 new Wal-Marts opened in the state of New Jersey.

This paper begins with a review of the current available literature on the effect of Wal-Mart store openings. Most research on the topic has looked the store's effect on the consumer, the labor market and the retail sector. There is little research on the topic of Wal-Mart's impact on municipal tax base. A panel data analysis of Wal-Mart openings over the period 1998-2007 will provide insight into the store's impact on New Jersey tax base. We find that Wal-Mart locates in municipalities where the tax base is falling. For the year before Wal-Mart enters, the tax base fell about 1.4 percentage points. We also find that Wal-Mart store openings raise growth in the tax base in the municipalities they enter about 1.5 percentage points in the first year and 1.2 percentage points in the subsequent year. For adjacent municipalities, there is no immediate effect on the tax base, but after a year the tax base grows 1.8 percentage points faster.

II. Literature Review

Opponents of big-box retailers believe that when these corporations come to a town they force out smaller local retailers over time by undercutting their prices. When smaller retailers must compete with the large chain, they experience lower profit margins, forcing them to cut costs by letting employees go, cutting hours or by other means. This causes strain in the local labor market. Opponents of big-box establishments also believe that most of the profits generated by these stores are used to pay the board of directors and the shareholders. This

¹ Retrieved from <http://walmartstores.com/FactsNews/>

results in less money being circulated through the local economy where the store is located, which slows economic growth. These opponents also suggest that the presence of a store like Wal-Mart strains public programs (such as TANF and Medicaid) due to the store's effect on local unemployment and poverty rates. Over the past decade, many researchers have looked at these claims and tested their validity. Economists and policymakers have focused their studies on the effect of Wal-Mart entry on consumer and public welfare, local labor markets and the local retail trade sector in various geographic regions.

Wal-Mart stores are able to sell products at very low prices by occupying large spaces and selling a huge volume of goods. Selling products at lower prices increases Wal-Mart's competitive advantage. To determine the nature of this competitive advantage, price effect studies have analyzed how Wal-Mart stores compete with established local drug stores and supermarkets (Basker 2005a, Hausman and Liebtag 2007). Basker (2005a) studied the market retail prices of ten commonly purchased goods, and found the most significant price effects on products sold mostly at drug stores, including shampoo, toothpaste and detergent. Reviewing the expansion of Wal-Mart stores into Supercenters (Wal-Marts with grocery departments), Hausman and Leibtag (2007) found lower income households benefited most from Wal-Mart's grocery prices. This suggests that market price effects of products sold at newly opened Wal-Mart stores provide significant benefits to consumers.

Of course, market price effects might be offset by changes in employment or property values, if Wal-Mart causes smaller retailers to cease operations. Consequently, studies of the Wal-Mart effect have looked at county-level family-poverty rates (Goetz and Swaminathan

2006), as well as black-white income and unemployment differentials (Keil and Spector 2005). Examining family-poverty rates from 1987 to 1998, Goetz and Swaminathan (2006) found greater increases, or smaller decreases, in poverty rates for counties where a Wal-Mart store was present before 1987, or entered during an 11-year time period. Since this time period was associated with an economic boom period, the results are significant. They do not, however, take into account the consumer benefits discussed earlier.

Wal-Mart stores generally employ workers on the lower end of the human capital distribution, meaning that the large retail establishment does not, for the most part, require highly skilled or highly educated workers. In Alabama, where blacks tend to be over-represented on the lower end of the human capital spectrum, the opening of a Wal-Mart could have significant impact on black-white income and unemployment differentials. Keil and Spector (2005) tested this hypothesis and found the impact of a Wal-Mart entrance into an Alabama county substantially lowered the relative unemployment rate of blacks within that county. However, the effect on relative income was not as significant when other variables are taken into account.

When a Wal-Mart opens, in the short run, it creates jobs. Due to the long run effect it has on retail stores it directly competes with in the same region, however, its presence may eliminate more jobs than it provides. Lower wages paid by Wal-Mart may also reduce the overall retail sector earnings. Basker (2005b) reports that in the year of a Wal-Mart store opening, retail employment in a county increases by 100 jobs. In the five years after the store opens, however, he reports that half of these jobs disappear due to the exit and contraction of

other retail establishments. He also finds that wholesale employment decreases by approximately 20 jobs. Research from Neumark, Zhang and Ciccarella (2008) contradicts these findings. They find that entrance of a Wal-Mart reduces county-level retail employment by 150 workers. Each Wal-Mart worker replaces approximately 1.4 retail workers, which represents a 2.7 percent reduction in average retail employment. The introduction of a Wal-Mart also results in a reduction of \$1.4 million in retail earnings, or 1.3 percent.

The differences in these results are due to different methods used by the researchers in identifying the relationship between store openings and county employment. Neumark, Zhang and Ciccarella cite problematic measurement error in Basker's store opening data collection. The researchers also take issue with Basker's instrumental variable. They countered that Basker left out the effect of *planned* store openings on local businesses. As a result, the estimates in Basker's results may be upwardly biased.

The effect of Wal-Mart entrances on the local retail sector is a frequently discussed topic and has been well researched over the past decade. Studies present different effects, depending on which regions have a Wal-Mart, and what type of models the researchers constructed to test their individual hypothesis. Cotton and Cachon's (2007) study of Greater Sudbury, Ontario, Canada examined the impact of big-box stores on the average sales of smaller independently owned retail stores. The introduction of a big-box retailer from 1999 to 2003 resulted in lower sales for two-thirds of the smaller retailers in that area. Interestingly, the other one-third of stores had an average sales growth of 21 percent. The researchers attribute this to successful competitive strategies of these smaller stores, such as refusing to

sell or service products sold at the bigger chains. This is a significant result, and it suggests that local retailers who feel threatened or helpless when a Wal-Mart comes to their town may be able to adjust their business model and thwart the negative impact associated with the entry of a big-box chain.

If Wal-Mart reduces sales at competing retailers, we would expect to also find an impact on overall employment, and the entry and exit rates of independent retailers. For example, Hicks and Wilburn (2001) studied the effect of Wal-Mart's entrance on the county-level retail sectors in West Virginia, looking specifically at the number of jobs and number of firms. They determined that the presence of a Wal-Mart increases retail employment, and results in smaller, but still significant, increases in the number retail stores openings. Their results varied based on the county where a Wal-Mart was located. Paruchuri, Baum and Potere (2009) discovered that the Wal-Mart effect within some zip codes in Florida can be attributed to the suppression of entry rates of other retailers, not by an increase in exit rates. In adjacent zip codes, however, the effect is driven by exit rates, which increase more than entry rates.

Of course, whether Wal-Mart helps or harms specific retailing firms depends on the degree to which Wal-Mart substitutes or complements smaller retail establishments within a market. Entrepreneurs could still perceive a niche within a market where a Wal-Mart is present, proceed to enter and show that Wal-Mart is not always a perfect substitute to certain independently-owned businesses. Proximity to a big-box store may also effect entry and exit rates of smaller stores. Analyzing the metropolitan Washington, D.C. region, Haltiwanger, Jarmin and Krizan (2009) contend that there is a strong negative effect on retail establishments

located in the immediate area (1 to 5 miles) near the big-box store. Smaller stores located further away (5 to 10 miles) from big-box stores are not as negatively impacted. The severity of the negative effect depends on whether or not a smaller store competes in the same industry as the larger chains. For example, the restaurant industry thrives when located in close proximity to a Wal-Mart or another big-box store. This is most likely due to the increase in traffic associated with a larger chain store.

In summary, no clear consensus has emerged on whether a big-box chain, like Wal-Mart, positively or negatively affects the geographic area it is located in. Different studies report varied results for a chain's effect on consumer/public welfare, local labor markets and the retail trade sector as a whole. The most important technical difficulty in assessing the effect of a Wal-Mart is the endogeneity of the key variables. It is also notable that there is little-to-no research on the effect of a Wal-Mart store opening on the tax base of municipalities. This paper hopes to contribute that research in a meaningful way to the current literature.

III. Data & Methods

This proposed analysis uses two unique data sets to conduct a panel data analysis at the municipal level. The first set includes 21 Wal-Mart store openings in New Jersey from 2000 to 2005. A master sheet for all Wal-Mart openings in the United States from 1962 to January 2006 was obtained from Thomas J. Holmes' Internet data homepage for his paper titled "Diffusion of Wal-Mart and Economies of Density."² From there, all New Jersey Wal-Mart store openings from 2000 to 2005 were extracted. To ensure that the store opening data matched the

² Retrieved from <http://www.econ.umn.edu/~holmes/data/WalMart/index.html>

municipal tax base data, we contacted the relevant municipal governments (because some of the stores are located in unincorporated areas which fall under larger municipalities). For example, Ledgewood, NJ falls under the Roxbury, NJ municipality and Whitehouse Station, NJ falls under the Readington, NJ municipality.

The second data set includes New Jersey property tax tables obtained from the New Jersey Department of Community Affairs' Division of Local Government Services. Property tax data dating back to 1998 is available on the Department's website. In order to adjust for lags in the analysis, a longer time period (1998-2007) will be reviewed in comparison to the store opening data (2000-2005).

After collecting the property tax and Wal-Mart store opening data, the next step was equalizing the tax base and the tax rate. We did this so the tax base is corrected for market property values. A new variable for the equalized tax base, *EQTax_Base*, was generated by taking the assessed value and multiplying it by 100 over the State Equalization Table Average Ratio (SETAR). The equalized tax rate, *EQTax_Rate*, was determined the using the reciprocal of this ratio.

After generating the variables *EQTax_Base* and *EQTax_Rate*, we calculated the growth rate for the tax base over the entire time period for all New Jersey municipalities.³ We did this to adjust for the municipality size and to facilitate comparisons across municipalities. The variable *GR_tx_Base* was calculated using year over year equation for the entire time period as well as each individual year. Since this variable is not stationary, we transformed the growth

³ Table 1 includes the tax base growth over the entire period as well as for each year.

rate to a normalized growth rate. To do so we subtracted the individual tax base growth rate of a municipality from the state average and called this variable *Norm_GR_tx_B*.

Three dummy variables were then created to test the significance of Wal-Mart store entries. The first dummy variable, *walmart*, takes the value 1 over the entire ten-year period for a municipality that has a Wal-Mart entry over the study period and 0 for all other municipalities. The second dummy variable, *openyear*, takes the value 1 only in the year a Wal-Mart store opens in a municipality and 0 otherwise. Lastly, the dummy variable, *storeopen*, takes the value 1 for all the years a Wal-Mart store is open in a municipality for Wal-Mart openings that occur during the study period, and zero for all other years and municipalities. A series of t-tests were run using these dummy variables to compare the effect of Wal-Mart store openings on the variable *Norm_GR_tx_B*.

Our first set of comparisons examined the effect within the municipality a Wal-Mart enters. The first t-test compared the normalized growth rate in the year the Wal-Mart opens with all other years in the municipality. The next two t-tests were done the same way; however we examined one-year and two-year lags of the *openyear* variable to see if the effect becomes more significant over time. The next comparison used the *storeopen* dummy variable to test if the normalized growth rate of the tax base was higher or lower in years with a Wal-Mart to the years before the store's opening.

Next we compared the effect across municipalities. To do this we created a variable that averages the normalized growth rate in the tax base for the entire period for municipalities that do not get a Wal-Mart. For the municipalities that do get a Wal-Mart, we averaged the

normalized growth rate before the Wal-Mart and then calculated a separate average for after the Wal-Mart. Next, using two separate t-tests, we compared the mean normalized growth rate for municipalities with a Wal-Mart to municipalities without a Wal-Mart both before and after the store opening.

To better control for the effects on the tax rate and changes in the overall level of economic activity we ran the following fixed-effects regression:

$$(1) GR_tx_Base_{it} = \alpha_i + \beta * openyear_{it} + \gamma * year_t + \delta * GR_tx_rate_{it} + \epsilon_{it}$$

where i denotes the indexed municipality and t is the year. Our dependent variable, Gr_tx_Base , is the growth rate of the tax base; $openyear$ is the dummy variable for the year the store opens; $year$ measures the average growth of the tax base each year; and GR_tx_rate is the growth rate of the tax rate. Three fixed-effects regressions were then run using the three models, the second and third using a one-year lagged and a one-year before the Wal-Mart entry $openyear$ variable.

Because the tax rate may be endogenous we also ran dynamic panel regressions (not reported). Vandegrift and Lahr (2010) find that the tax base is a function of the tax rate. That is, in years when there is high growth in the tax base for a municipality, this may lead public officials to cut the tax rate.

Furthermore, the effects of a Wal-Mart may spill over into adjoining municipalities. The presence of Wal-Mart stores may bring negative effects. For instance, increased competition may cause local businesses in adjoining municipalities to close. Litter and debris from construction and increased traffic may reduce property values. These changes in property

values can in turn affect the tax base. Because of this possible spillover effect, the effect on the tax base may be more significant in adjacent municipalities than in the actual municipality the store locates. For this reason, we look at the effect of Wal-Mart store openings on the closest adjacent municipality to the store itself.

To locate the closest adjacent municipality to a particular Wal-Mart, we used GoogleMaps to first locate each of the 21 Wal-Mart stores identified for this study. Since municipality borders are not shown in GoogleMaps, we cross-referenced with a municipality map obtained from the Office of State Planning for New Jersey. Three dummy variables were then generated (*walmart_adj*, *openyear_adj*, and *storeopen_adj*) after the adjacent municipalities were identified. The same internal and external comparison tests were conducted as well as the four regressions, except this time using the adjacent municipalities instead of the actual municipalities.

IV. Results

i. Internal Comparison

To begin our analysis we first examine the effect of Wal-Mart store openings within the municipality they locate. We test to see if the presence of a Wal-Mart affects the normalized growth rate within their municipality. The first experiment compares the normalized growth rate of the tax base in the year the store opens with all other years in that municipality. As shown in Table 2, we find that the growth rate in the opening year appears to be slightly larger than all other years; however, there was no statistical difference between the two groups at any level of significance (p-value = 0.88). When the open year was lagged one and two years,

we find the effect appears to go away, but the results are also insignificant (p-values of 0.81 and 0.86, respectively). Similarly, when we look at the growth rate for all years with a Wal-Mart to the years without a Wal-Mart we once again fail to reject our null hypothesis (p-value 0.91).

For municipalities located adjacent to a Wal-Mart entrance, we first compare the growth rate of the tax base in the year the store opens with all other years within the adjacent municipality, as well as one and two year lags of the *openyear_adj* variable. As one can see from Table 3, the normalized growth rate in the year the store opens (and the two lagged variables) do not appear to be statistically different from all other years.

Interestingly, we find statistical significance when comparing the years with the presence of a Wal-Mart to the years without the presence of a Wal-Mart. Even more interesting, adjacent municipalities appear to experience higher tax base growth in Wal-Mart present years, with significance at a .05 level. The results suggest that municipalities that had a Wal-Mart open next door had a normalized tax base that grew about 1 percentage point faster after the Wal-Mart opened. This result runs contrary to our expectation that municipalities adjacent to Wal-Mart entrances may experience the negative externalities associated with the big-box chain.

ii. External Comparison

In addition to testing for the effects of a Wal-Mart within municipalities over time, we also test the before and after effect of Wal-Mart store openings across all municipalities in New Jersey. Table 4 reports the results of these tests. Looking at the mean normalized growth rate prior to a Wal-Mart store opening, we find that municipalities that get a Wal-Mart appear to have a higher growth rate than municipalities that do not get a Wal-Mart. After the Wal-Mart

entrance; however, municipalities that do not get a Wal-Mart seem to experience higher growth than municipalities that do get a Wal-Mart. This suggests that Wal-Mart may have a negative effect on the tax base growth of the municipalities they enter, but our t-statistics for the two tests fail to fall within critical regions where we can reject our null hypothesis that the normalized tax rates are the same.

Table 5 shows our comparisons across all municipalities with the municipalities located adjacent to a Wal-Mart. Prior to the store opening, the mean normalized growth rates for adjacent municipalities are higher than growth rates of all other municipalities; however, the difference once again is insignificant (p-value = 0.50). Finally, we compare the mean normalized growth rate of the tax base after the store opening with all other municipalities and also find the difference to be insignificant (p-value = 0.21).

iii. Regressions

An additional concern is that the above analysis fails to control for the tax rate. Higher tax rates will reduce the tax base (Vandegrift and Lahr 2010). Based on equation (1) above, we ran a series of regressions to estimate the effect of Wal-Mart openings on the growth of the tax base controlling for the tax rate. Tables 6 and 7 show these results with column (1) testing the effect using the *openyear* variable, column (2) using a one-year lag of this variable and (3) testing for tax base levels one year before the Wal-Mart enters. The parameter estimates suggest that the tax base grows on average .3 percentage points every year. The estimates show that a one percentage point increase in the tax rate reduces the growth rate of the tax base by about 0.9 percentage points. We find significant results for both the municipality the

store enters as well as the municipalities located adjacent to a store opening. The year before the Wal-Mart opens, the tax base shrinks 1.4 percentage points. In the municipality that gets a Wal-Mart we find that the store's opening results in an estimated 1.5 percentage point growth in the tax base in that year and a 1.2 percentage point increase when the variable is lagged one year. In adjacent municipalities (Table 7), the effect is only significant when the variable is lagged, where it appears to raise tax base growth 1.8 percentage points. However, these results may be biased because of the simultaneity problem described earlier. Consequently, we use a dynamic panel estimator to correct for endogeneity of the tax base and tax rate. While our dynamic panel estimates generally confirm these findings, tests indicate that the estimates have a second-order autocorrelation problem.

V. Conclusion

We examine the impact of Wal-Mart on the tax base for municipalities in New Jersey for the period 1998-2007 and find that Wal-Mart has a positive effect on the tax base. In the year before the store's entrance, the tax base fell about 1.4 percentage points on average. This suggests that Wal-Mart stores enter slow growing municipalities. Therefore, fast growth in the tax base of a community does not cause Wal-Mart to enter. This suggests that slow growing municipalities choose to pursue Wal-Mart to spark tax base growth. This also implies that Wal-Mart causes an increase in tax base, not the reverse. Indeed, we find that in the year of entry, Wal-Mart store openings contributed about 1.5 percentage points of growth to the tax base of the municipality they enter. In the subsequent year, they contribute 1.2 percentage points to tax base growth. We find no effect (either positive or negative) in the second year.

However, Wal-Mart critics also contend that adjacent municipalities experience negative impacts when Wal-Mart opens a new store. For instance, municipal officials often oppose Wal-Mart locations opened near the borders of their municipality because of fear that the Wal-Mart will decimate businesses and lower property values. Property values may fall because of noise and traffic from the Wal-Mart as well as bankruptcies of local business. Despite these claims, our analysis shows that there is no immediate negative impact on the tax base of adjacent municipalities, and furthermore, after one year the tax bases of these communities grow 1.8 percentage points faster. This suggests that there is no negative spillover effect on the tax base growth associated with Wal-Mart store openings.

References

- Basker, E., 2005a, "Selling a Cheaper Mousetrap: Wal-Mart's Effect on Retail Prices," *Journal of Urban Economics*, 58, 203-229.
- Basker, E., 2005b, "Job Creation or Destruction? Labor Market Effects of Wal-Mart Expansion," *Review of Economics and Statistics*, 87, 174-183.
- Cotton, B. and J. Cachon, 2007, "Resisting the Giants: Small Retail Entrepreneurs against Mega Retailers - - An Empirical Study," *Journal of Small Business and Entrepreneurship*, 20, 135-150.
- Goetz, S., and H. Swaminathan, 2006, "Wal-Mart and County-Wide Poverty," *Social Science Quarterly*, 87, 211-226.
- Gscottschnieder, R., 1998, "Understanding the Tax Base Consequences of Local Economic Development Programs," *RKG Associates, Inc.*
- Haltiwanger, J., R. Jarmin and C. J. Krizan, 2009, "Mom-and-Pop Meet Big-Box: Complements or Substitutes?" National Bureau of Economic Research Working Paper 15348.
- Hausman, J., and E. Leibtag, 2007, "Consumer Benefits from Increased Competition in Shopping Outlets: Measuring the Effect of Wal-Mart," *Journal of Applied Econometrics*, 22, 1157-1177.
- Hicks, M. and K. Wilburn, 2001, "The Regional Impact of Wal-Mart Entrance: A Panel Study of the Retail Trade Sector in West Virginia," *Review of Regional Studies*, 31, 305-313.
- Keil, S., and L. Spector, 2005, "The Impact of Wal-Mart on Income and Unemployment Differentials in Alabama," *Review of Regional Studies*, 35, 336-355.
- Neumark, D., J. Zhang and S. Ciccarella, 2008, "The Effects of Wal-Mart on Local Labor Markets," *Journal of Urban Economics*, 63, 405-430.
- Paruchuri, S., J. Baum and D. Potere, 2009, "The Wal-Mart Effect: Wave of Destruction or Creative Destruction?" *Economic Geography*, 85, 209-236.
- Vandegrift, D., and M. Lahr, Forthcoming 2010, "Open space, house prices, and the tax base," *Annals of Regional Science*, 18.

Table 1. New Jersey Equalized Tax Base Growth* (untransformed)

| Year | Mean | Standard Deviation |
|---------------|----------|-----------------------|
| 1999- 2007 | 0.108197 | 0.096411 |
| 1999 | 0.040533 | 0.039014 |
| 2000 | 0.06685 | 0.053144 |
| 2001 | 0.096033 | 0.059712 |
| 2002 | 0.113972 | 0.134668 |
| 2003 | 0.141467 | 0.149197 |
| 2004 | 0.139177 | 0.063507 |
| 2005 | 0.155994 | 0.106137 |
| 2006 | 0.144396 | 0.065941 |
| 2007 | 0.075292 | 0.050968 |

*calculated as $(EQTax_Base_t - EQTax_Base_{t-1}) / EQTax_Base_{t-1}$

Table 2. Comparisons within municipalities that a Wal-Mart store enters

| | Open Year | All Other Years | t- Statistic |
|--|----------------------|-------------------------|-----------------|
| Compare normalized tax base growth [†] in open year to all other years for municipality with a Wal-Mart | -0.004 | -0.005 | -0.1467 |
| One-Year Lag | -0.008 | -0.005 | 0.2408 |
| Two-Year Lag | -0.008 | -0.005 | 0.1847 |
| | With Wal- Mart | Without Wal- Mart | t- Statistic |
| Compare normalized tax base growth for all years with a Wal-Mart to years without a Wal-Mart | -0.005 | -0.006 | -0.107 |

Table 3. Comparisons within adjacent municipalities to a Wal-Mart store entrance

| | Open Year | All Other Years | t-Statistic |
|---|-------------------|-------------------------|-------------|
| Compare normalized tax base growth in open year to all other years for municipality adjacent to Wal-Mart entrance | -0.01848 | -0.01119 | 0.6126 |
| One-Year Lag | -0.00888 | -0.01239 | -0.2663 |
| Two-Year Lag | -0.01727 | -0.01134 | 0.5616 |
| | With Wal- Mart | Without Wal- Mart | t-Statistic |
| Compare normalized tax base growth for all years with a Wal-Mart to years without a Wal-Mart | -0.00708 | -0.01856 | -1.693* |

*Significant at 0.1 level **Significant at 0.05 level ***Significant at 0.01 level

[†] Calculated as $GR_tx_Base_{it} - Av_GR_tx_B_t$

Table 4. Comparisons across municipalities

| | With Wal- Mart | Without Wal- Mart | t- Statistic |
|---|----------------------|-------------------------|-----------------|
| Compare mean normalized tax base growth rates for municipalities that get a Wal-Mart prior to Wal-Mart opening with municipalities that do not get a Wal-Mart | -0.0031 | -0.0002 | 0.3623 |
| Compare mean normalized tax base growth rates for municipalities that get a Wal-Mart after Wal-Mart opening with municipalities that do not get a Wal-Mart | -0.0059 | 0.0002 | 1.0462 |

Table 5. Comparisons across all municipalities with adjacent municipalities to a Wal-Mart entrance

| | With Wal- Mart | Without Wal- Mart | t- Statistic |
|---|----------------------|-------------------------|-----------------|
| Compare mean normalized tax base growth rates for municipalities adjacent to a Wal-Mart entrance to all other municipalities prior to store opening | 0.0046 | -0.0001 | -0.681 |
| Compare mean normalized tax base growth rates for municipalities adjacent to a Wal-Mart entrance to all other municipalities after store opening | -0.0096 | 0.0005 | 1.28 |

*Significant at 0.1 level **Significant at 0.05 level ***Significant at 0.01 level

†Calculated as $GR_tx_Base_{it} - Av_GR_tx_B_t$

Table 6. Panel Data Regressions

| | Growth Rate Tax Base (1) | Growth Rate Tax Base (2) | Growth Rate Tax Base (3) |
|--------------------|--------------------------------|--------------------------------|--------------------------------|
| Constant | -7.7202*** (0.8701) | -7.7044*** (0.8698) | -14.582*** (1.406) |
| Open Year | 0.015553*** (0.0042) | | |
| Open Year Lag One | | 0.012343** (0.006) | |
| Open Year Plus One | | | -0.01404* (0.00844) |
| Growth Tax Rate | -0.88944*** (0.0486) | -0.88944*** (0.0486) | -0.8601*** (0.0496) |
| Year | 0.00389*** (0.0004) | 0.003885*** (0.0004) | 0.00732*** (0.0007) |
| n | 5085 | 5085 | 4520 |
| R ² | 0.6261 | 0.626 | 0.647 |

*Significant at 0.1 level **Significant at 0.05 level ***Significant at 0.01 level

Standard Errors in parentheses

Open Year_{it} = Wal-Mart opens in municipality i and year t

Open Year Lag One_{it} = Lag one year of Open Year_{it}

Open Year Plus One_{it} = Plus one year of Open Year_{it}

Growth Tax Rate = $(EQTax_Rate_t - EQTax_Rate_{t-1}) / EQTax_Rate_{t-1}$

Table 7. Panel Data Regressions – Adjacent Municipalities

| | Growth Rate Tax Base (1) | Growth Rate Tax Base (2) | Growth Rate Tax Base (3) |
|--------------------|--------------------------------|--------------------------------|--------------------------------|
| Constant | -7.719*** (0.8699) | -7.699*** (0.8696) | -14.597*** (1.4049) |
| Open Year | 0.0086 (0.006) | | |
| Open Year Lag One | | 0.01812** (0.00751) | |
| Open Year Plus One | | | -0.0041 (0.0042) |
| Growth Tax Rate | -0.88948*** (0.0486) | -0.8894*** (0.04862) | -0.8599*** (0.0496) |
| Year | 0.00389*** (0.0004) | 0.00388*** (0.0004) | 0.00733*** (0.0007) |
| n | 5085 | 5085 | 4520 |
| R ² | 0.626 | 0.626 | 0.6469 |

*Significant at 0.1 level **Significant at 0.05 level ***Significant at 0.01 level

Standard Errors in parentheses

Open Year_{it} = Wal-Mart opens in municipality i and year t

Open Year Lag One_{it} = Lag one year of Open Year_{it}

Open Year Plus One_{it} = Plus one year of Open Year_{it}

Growth Tax Rate = $(EQTax_Rate_t - EQTax_Rate_{t-1}) / EQTax_Rate_{t-1}$