

HAS WAL-MART BURIED MOM AND POP?: THE IMPACT OF WAL-MART ON SELF-EMPLOYMENT AND SMALL ESTABLISHMENTS IN THE UNITED STATES

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This paper explores the widely accepted view that Wal-Mart causes significant harm to the traditional, small “mom and pop” business sector of the U.S. economy. We present the first rigorous econometric investigation of this issue by examining the rate of self-employment and the number of small employer establishments using both time series and cross-sectional data. We also examine alternative measures and empirical techniques for robustness. Contrary to popular belief, our results suggest that the process of creative destruction unleashed by Wal-Mart has had no statistically significant long-run impact on the overall size and profitability of the small business sector in the United States. (JEL L81, D59, C21)

Wal-Mart has indeed set prices low enough to drive mom & pop stores out of business all over the country and kept the prices that low forever.¹ During the last 20 years, Wal-Mart has moved into communities and destroyed them, wiping out stores, slashing the tax base, and turning downtown areas into ghost-towns.²

I. INTRODUCTION

The argument that Wal-Mart inflicts significant harm on the small “mom and pop” business sector of the U.S. economy is so widely accepted that one of the paper’s opening quotes is actually from a *pro*-Wal-Mart article, which goes on to discuss the merits and efficiency enhancements that result, claiming that “[i]n a free market, large suppliers of nearly every-

thing will drive most small suppliers out of business.” Even President Clinton’s former Secretary of Labor, Robert B. Reich, writes in the *New York Times* that Wal-Mart will turn “main streets into ghost towns by sucking business away from small retailers.”³ Wal-Mart Watch, one of the largest anti-Wal-Mart organizations, features an article claiming that in Iowa, Wal-Mart’s expansion has been responsible for widespread closings of mom and pop stores, including 555 grocery stores, 298 hardware stores, 293 building suppliers, 161 variety shops, 158 women’s stores, and 116 pharmacies.⁴

Previous estimates of the negative impact of Wal-Mart on other businesses, such as the numbers cited above, however, are misleading for several reasons. First, these estimates come from a series of applied policy studies that simply compare averages for counties with Wal-Mart stores to those without Wal-Mart stores.⁵ While the findings from these studies

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1. See DeCoster (2003).
2. See Freeman (2003).

3. See New York Times (2005).

4. See *Wal-Mart Watch* (2005).

5. See Stone (1995), (1997), and Stone, Artz, and Myles (2002). In one of these articles, Stone (1997) concluded that existing retailers in small towns lose up to 47% of their sales after 10 yr of having a Wal-Mart store nearby.

ABBREVIATIONS

LM: Lagrange Multiplier
OLS: Ordinary Least Squares

have garnered significant media publicity and widespread public acceptance, they are problematic because no econometric methods are employed, making it hard to know if the differences are statistically significant and whether or not the difference is really due to the many other economic and demographic factors that differ between counties with Wal-Mart stores and those without.

The second, and biggest, problem with these previous studies is that they employed data only for directly competing retail business sectors within that specific county.⁶ Because of its sheer size, Wal-Mart's true impact on the overall U.S. small business sector stretches far beyond the impact any one store has in any one county. The idea of creative destruction, first eloquently stated by Schumpeter (1934), explains how entrepreneurs, like Sam Walton, are a disruptive force in an economy.⁷ Schumpeter emphasized the beneficial aspects of this process of creative destruction, one in which the introduction of new products results in the obsolescence or failure of others. Schumpeter pointed out that while these inventions do indeed result in business failures in certain areas, they result in overall net gains because of the positive impacts on economic activity in other areas.⁸ These impacts are, however, widespread and often hard to identify.⁹ Similarly, Wal-Mart's openings, while resulting in the failure of some small businesses, create opportunities for new businesses, both large and small, not only in that local area but also in other more distant places.

Because of its reliance on county-level data that consider only local impacts on directly competing retail firms, this process of creative

destruction is not accounted for in previous research. If a new Wal-Mart store opens, for example, and it causes a local hardware store to fail, and subsequently a new art gallery opens in its place, only the failure of the hardware store is counted by previous studies. The opening of the art gallery is not reflected in the data because it is not a retail store. In reality, one business was substituted for another, but this effect would not be reflected in the data because expansions in sectors that do not directly compete with Wal-Mart are, by definition, excluded from their analysis. In addition, because previous studies used county-level data, virtually all the general-equilibrium impacts that occur—a new small business opening in another county, for example—are ignored.

Finally, previous research is problematic because it generally uses data for *all* competing retail businesses, including other large retailers like Kmart, Target, and Home Depot, who are all clearly negatively impacted by Wal-Mart. Thus, it is unclear to what extent these previous negative estimates can be used to infer about the impact Wal-Mart has on the mom and pop sector of the economy alone, as Kmart's store closings should not be counted in a true measure of the impact of Wal-Mart on small businesses.

From an economic standpoint, the real question of interest is how Wal-Mart impacts the overall size of the small business sector for the *entire* U.S. economy. To overcome the problems in previous studies, we use both state- and national-level data, restrict our analysis only to small firms, and include all small firms regardless of whether they are in a directly competing business sector or not.

To be clear, there is no question that certain specific small businesses fail because of the entry of a Wal-Mart store and that Wal-Mart has negative impacts on other major retailers like Kmart. These are the effects other studies have repeatedly documented and estimated. The question that remains unanswered, however, is how Wal-Mart has affected the *overall* level of small business activity in the United States after all long-run readjustments (i.e., creative destruction) have occurred, and this is what we estimate.

We proceed by first discussing what economic theory would predict with regard to Wal-Mart's impact on small business activity, focusing on Schumpeter's theory of creative

6. This is even true in the one study that uses econometric techniques to examine the data, Basker (2005a).

7. See Darby and Zucker (2003) for a discussion of the process of creative destruction and how incorporating this scientific entrepreneurial process is critical to reformulating endogenous growth models.

8. See Cox and Alm (1992) for a good discussion of the process of creative destruction along with specific examples and data from U.S. history.

9. Failing to account for these "unseen" general-equilibrium effects has long been a common source of error in economic arguments, as was noted by Frederic Bastiat and, more recently, by Henry Hazlitt. The distinction between what is seen and what is unseen was the main argument employed by Bastiat in the popular "broken window fallacy," (see Bastiat 1995, ca. 1844). This is also a central idea expressed by Henry Hazlitt in *Economics in One Lesson* (1979). For evidence that free-market institutions do promote investment and growth through these general-equilibrium impacts, see Dawson (1998).

destruction. We then perform statistical analysis of both aggregate time series data and state-level cross-sectional data using spatial econometric methods to arrive at an estimate of the impact Wal-Mart has on the small businesses sector in the United States.

II. THE PROCESS OF CREATIVE DESTRUCTION UNLEASHED BY WAL-MART

Virtually every U.S. citizen has witnessed, first hand, the closing of small downtown merchants after the arrival of a new Wal-Mart store. Downtowns with empty storefronts, however, soon see new small businesses opening in these vacant locations. In Morgantown, West Virginia, for example, a shop that was once a women's clothing store has now turned into a high-end restaurant. A former record and compact disc store has been converted into an ice cream parlor. Other vacated stores have been filled by a coffee shop, an indoor rock climbing facility, an art gallery, a candle shop, a collectible comic book store, a dinner theatre, an antique mall, and a new law firm.

This "recycling" of productive resources is precisely the mechanism by which the process of creative destruction increases economic efficiency. Prior to the opening of Wal-Mart stores, downtown retail space was very competitive and was generally allocated to those stores providing the type of general merchandise now sold at Wal-Mart. Only when these valuable store locations were freed up by the entry of Wal-Mart did they become economically viable locations for many other types of small businesses. This provided opportunities for new entrepreneurs—opportunities formerly unprofitable before these resources were freed from the production of general merchandise.

In addition, the money consumers save on their general merchandise purchases because of Wal-Mart's lower prices can be spent on other goods and services, such as those sold by these new specialty shops. Basker (2005b) found that the opening of a new Wal-Mart store results in city-wide price reductions of approximately 2% or 3% in the short run and about 10% in the long run, giving consumers a significant amount of additional disposable income to spend elsewhere. Some will be spent on goods and services produced by local small businesses, while some will be spent on goods and services produced by small businesses outside the local area.

Thus, while in terms of local business failures, the costs of a Wal-Mart store opening are easy to identify, the benefits are widespread and difficult to identify without examining more aggregate data. In theory, there could be one additional recreation company (like a whitewater rafting company, e.g.) in existence solely because of the time and money Wal-Mart has saved consumers. These new businesses, however, are not necessarily in the specific county in which Wal-Mart opens or in directly competing business sectors and have thus been completely excluded from previous studies. This has resulted in a very incomplete picture of how Wal-Mart actually impacts the overall size of the U.S. small business sector.¹⁰ At issue here is whether, in total, these positive impacts outweigh the small business failures Wal-Mart causes for its direct competitors.

As this section has illustrated, based purely on theory alone, it is difficult to predict whether Wal-Mart exerts a positive or negative impact on the overall size of the small business sector. There are many effects working in opposite directions. In the end, it is an empirical question. We now turn to performing this analysis in the next several sections of this paper. We begin by exploring the impacts detectable in aggregate U.S. time series data and then proceed to a cross-sectional analysis at the state level.

III. THE AGGREGATE U.S. EFFECTS OF WAL-MART IN TIME SERIES SMALL BUSINESS DATA

Wal-Mart is large enough that its economic impacts are easily discernable in U.S. aggregate data. Hausman and Leibtag (2004), for example, found that the consumer price index is biased because of the failure to specifically account for Wal-Mart. The authors found that the Consumer Price Index for All Urban Consumers "food at home" inflation rate is overstated by about 0.32–0.42 percentage points, which they concluded leads to a substantial 15% upward bias in the U.S. inflation rate each year.¹¹

Recall that previous estimates (discussed earlier), so heavily popularized by anti-Wal-Mart

10. Additionally, because store managers are given flexibility in decisions to carry local merchandise, new markets have opened for other local businesses who now sell products in local Wal-Mart stores.

11. This effect is due to an outlet substitution bias, which in effect "links out" Wal-Mart's lower prices.

groups and the media, cited Wal-Mart's expansion in Iowa as responsible for the failure of 555 grocery stores, 298 hardware stores, 293 building suppliers, 161 variety shops, 158 women's stores, and 116 pharmacies, for a total of 1,581 business failures. Taken at face value, this would amount to a failure of 11.3% of all business firms in the state of Iowa. This number would be much larger (approaching one-third) if one were to compute it as a percentage of only small businesses. This is likely an unfair comparison, however, because the failures were not all small businesses, but it shows the true magnitude suggested by the negative results present in the current literature on Wal-Mart. Has this massive reduction in U.S. small business activity really happened? If so, it should be clearly visible in the raw data on U.S. small business activity, and this is the first evidence we will examine.

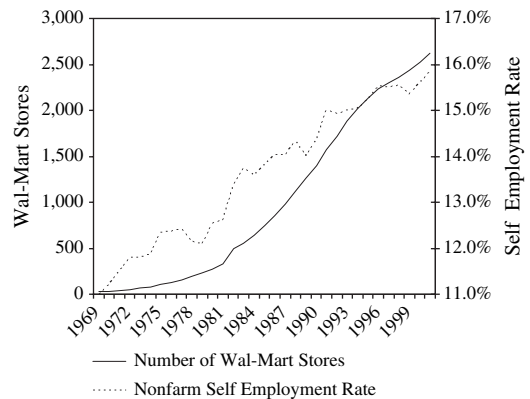
For our analysis, we collect data (for the 48 continental U.S. states) on the rate of self-employment, the number of small establishments, and the number of Wal-Mart stores (including both Wal-Mart Discount Stores and Wal-Mart Supercenters).¹² The rate of self-employment for each state is calculated by taking nonfarm proprietor employment (i.e., the number of self-employed persons) as a percentage of total nonfarm employment using data from the U.S. Department of Commerce's Bureau of Economic Analysis.¹³ As another measure of the number of small, mom and pop businesses, we collect data on the number of retail establishments with one to four employees per 100,000 of state population from the U.S. Census Bureau. For a check of robustness, we also examine the number of retail establishments with five to nine employees, also normalized per 100,000 of state population. We arrive at our aggregate measures for the entire United States by summing up these state-level data points. Data descriptions, with sources and descriptive statistics for each variable we use, are presented in Appendix 1.

Figure 1 presents data on the expansion of Wal-Mart stores in the United States alongside data on the rate of self-employment.

12. Alaska and Hawaii are excluded from our analysis as they have no contiguous neighboring states.

13. For an analysis of the determinants of what makes young individuals more likely to become entrepreneurs (and why success rates may differ), see Schiller and Crewson (1997).

FIGURE 1
Wal-Mart Stores and Self-Employment, U.S. Totals, 1969–2001



During the period in which the number of Wal-Mart stores grew from a handful to over 2,500, we see a continuing and uninterrupted increase in the rate of self-employment in the United States. The overall upward trend in self-employment appears just as strong during the 1980s, when Wal-Mart was expanding the most rapidly, as it did in the 1970s. If Wal-Mart were having the large negative impact on self-employment in the United States predicted by previous local-retail studies, we should have seen this measure fall significantly rather than grow from 11% to 16% (almost a 50% increase) during the same period when Wal-Mart grew from a single store in Arkansas into the nation's largest retailer.

Even a simple time series regression of the data in Figure 1, controlling for factors usually included in time series self-employment regressions (per capita personal income, percent of population with a college degree, and unemployment rate) results in a positive coefficient on Wal-Mart rather than a negative and significant coefficient as the previous literature would have suggested.¹⁴ However, many

14. Dependent variable: self-employment rate; independent variable, coefficient (standard errors): constant = 0.0745 (0.0089); real per capita personal income = 0.0000012 (0.000000596); college degree percentage = 0.00018 (0.000556); unemployment rate = 0.00213 (0.000368); Wal-Mart stores per capita = 0.03116 (0.003656); $R^2 = .98$; No. observations = 33 (annual 1969–2000).

factors have changed over this 30-yr period that could complicate this relationship, including the rise of small Internet-based businesses that have made it easier for small mom and pop businesses to survive in the online marketplace. This is why a cross-sectional analysis at a single point in time (which we perform in the coming sections) is necessary to draw firm conclusions. Some states have a large number of Wal-Mart stores, while others have very few. A clearer test is whether the states with significantly more Wal-Mart stores really do have fewer small businesses after controlling for all other factors. However, it is worth stressing again that the sizeable failures predicted by previous studies simply do not show up in the time series aggregate measures of self-employment.

Figure 2 shows similar comparisons for the number of establishments with one to four employees (Figure 2A) and five to nine employees (Figure 2B). These data are a bit more problematic simply because they are not available for as many years and also because the U.S. Census Bureau redefined the way they measure this variable in 1998, causing a discontinuity in the data. The drop in this series for that year is due to this redefinition, so we present these data as two separate lines in the figures. In both, we see the same pattern, although different from the pattern seen in Figure 1. While self-employment has been steadily growing in the United States, the number of small establishments has remained virtually unchanged since the beginning of our data series in 1985. The overall trend is completely flat for both sized businesses.

We find no evidence in the raw aggregate data on small business activity that Wal-Mart has drastically reduced the rates of self-employment or the number of small employer establishments. These aggregate data, however, might mask hard-to-identify impacts of Wal-Mart, so it should be viewed with caution. To overcome this, in our next section, we turn to a rigorous cross-sectional analysis to control for these many other factors and to estimate Wal-Mart's true impact on the U.S. small business sector.

IV. CROSS-SECTIONAL ESTIMATES OF THE EFFECT OF WAL-MART ON SMALL BUSINESSES

For our cross-sectional analysis, we use data for the year 2000, maximizing the number

of control variables we can obtain from the 2000 U.S. Census. In addition to examining the level of small business activity, we also examine the rate of annual growth centered around the year 2000.¹⁵

Prior to beginning our formal empirical analysis, it is again worthwhile to examine the raw cross-sectional data to see whether any relationship can be seen before it is adjusted for other factors. Table 1 presents data on our small business measures for the five states with the most Wal-Mart stores per capita (per 100,000 population) and the five states with the fewest Wal-Mart stores per capita. Do the states with most Wal-Mart stores have reduced small business sectors?

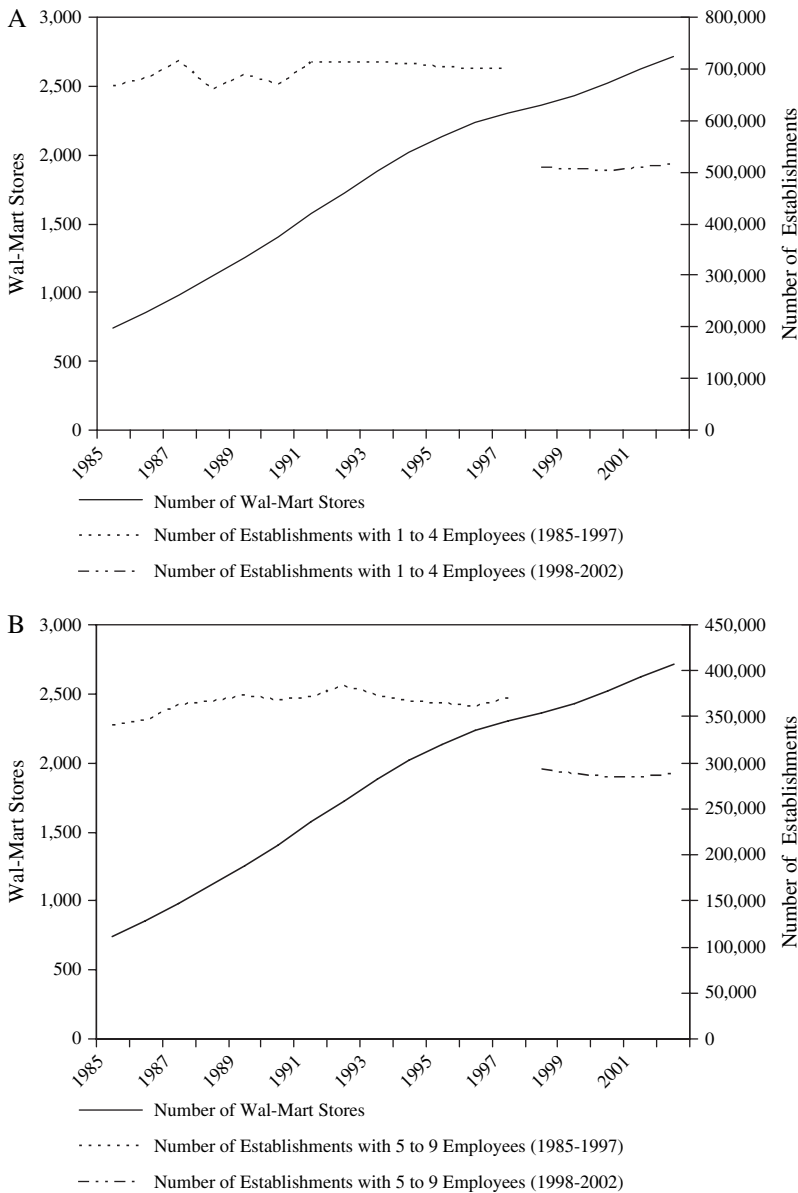
Arkansas, the home state of Wal-Mart, is not surprisingly the state with the largest number of Wal-Mart stores by this measure. In Arkansas, there are just slightly more than three stores for every 100,000 people. Nevada, Mississippi, Missouri, and Alabama round out the list of the top five Wal-Mart states. The states with the fewest Wal-Mart stores per capita are New York, New Jersey, California, Washington, and Connecticut. The five states with the most Wal-Mart stores per capita have an average of 2.3 Wal-Mart stores per 100,000 population, while the five states with the least number of Wal-Mart stores per capita have an average of 0.3 stores per 100,000 population. Thus, on average, the five states at the top have more than seven times as many Wal-Mart stores per capita as the five states at the bottom.

With this large of a difference, if the presence of Wal-Mart has a negative impact on small business activity, then we should see that the states with the most Wal-Mart stores per capita also have a lower level of small business activity. The final three columns of data in Table 1 show the values of our small business measures for these states. While the states with the larger number of Wal-Marts do have slightly lower rates of self-employment (15.9 vs. 15.0), they have more small firm establishments per capita (194 vs. 189 for one to four

15. Because of changes in the method of data collection and reporting by these agencies, these periods differ slightly for our variables, being the annualized growth rate for 1997–2003 for self-employment growth, 1998–2002 for small establishment growth, and 1995–2005 for the growth of Wal-Mart stores.

FIGURE 2

Wal-Mart Stores and Retail Establishments with (A) One to Four Employees and (B) Five to Nine Employees, U.S. Totals, 1985–2002



Notes: In 1998, the U.S. Census Bureau redefined the way they measure the establishment data series, causing a discontinuity in the data from 1997 to 1998. The drop in the level of this series in that year is due to this redefinition, so we present these data as two separate lines in the figure.

employees and 115 vs. 90 for five to nine employees).

Table 1 relies on comparisons of only the top and bottom five states. Do these data pat-

terns hold up across all states? Figures 3 and 4 present data for all states on the number of Wal-Mart stores per capita and measures of small business activity. In Figure 3, the

TABLE 1
 Small Business Indicators for States with the Highest and Lowest Number of Wal-Mart Stores
 Per Capita, 2000

	State	Wal-Mart Stores per 100,000 Population	Self-Employment Rate (Percent of Total Employment)	Number of Establishments with 1 to 4 Employees per 100,000 Population	Number of Establishments with 5 to 9 Employees per 100,000 Population
Top five states	Arkansas	3.067	16.175	220.805	123.999
	Nevada	2.602	15.292	140.222	89.828
	Mississippi	2.109	14.217	210.922	125.041
	Missouri	2.020	14.900	190.556	114.687
	Alabama	1.844	14.500	207.843	122.934
Average		2.328	15.017	194.070	115.298
Bottom five states	Connecticut	0.470	15.936	192.626	102.626
	Washington	0.424	16.513	171.154	97.640
	California	0.340	19.464	145.629	78.372
	New Jersey	0.261	13.635	215.988	86.899
	New York	0.084	14.107	220.299	83.319
Average		0.316	15.931	189.139	89.771

Notes: Variable descriptions, descriptive statistics, and sources can be found in Appendix 1.

best-fit regression line has a slope that is positive but not significantly different from zero, suggesting no negative (or positive) impact of Wal-Marts on the rate of self-employment. Figure 4 again is inconsistent with the hypothesis that Wal-Mart stores reduce the number of small employer retail establishments (Figure 4A for one to four employee establishments and Figure 4B for five to nine employee establishments). The slope of the best-fit regression line is positive in both cases, and in the case of five to nine employee establishments, it is actually significantly different from zero, suggesting that states with more Wal-Mart stores actually have significantly *higher* levels of five to nine employee establishments.

We now turn to regression analysis to control for other factors that might impact this relationship. In addition to the number of Wal-Mart stores per 100,000 people, we include control variables to help explain the per capita levels and growth rates of these small business measures. These control variables include median age, percent metropolitan population, percent of population in poverty, median family income (in thousands), percent of population nonwhite, percent of population with a college degree,

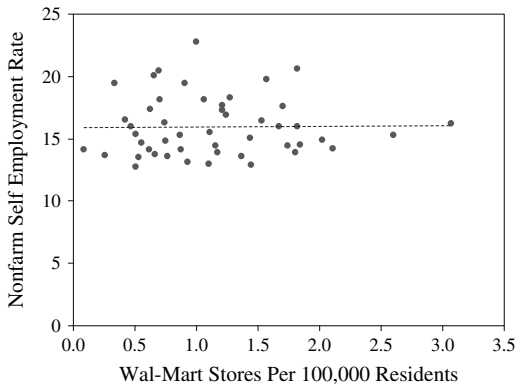
percent of population male, and state land area (in thousands of square miles). These are the variables traditionally used in studies of self-employment.¹⁶ We include descriptions, sources, and descriptive statistics for all of our variables in Appendix 1.

We first estimate our models using ordinary least squares (OLS). However, the OLS estimator can be shown to be either biased and inconsistent or inefficient when spatial dependence exists in the data, which is potentially present for both small business activity and Wal-Mart location prevalence.¹⁷ Spatial dependence exists when there are unobservable geographic correlations within either the dependent variable or the regression error term (e.g., if the level of small business activity in one state is impacted by the level of small business activity in neighboring states). If so, spatial econometric methods must be used to control for these geographic patterns in the data.

16. For example and discussion, see Krefl and Sobel (2005).

17. See Anselin (1988), Dubin (1988), Case (1991), Baltagi (2001), and Lacombe (2004).

FIGURE 3
Wal-Mart Stores versus Self-Employment Rates, 2000



Notes: See Appendix 1 for variable definitions and sources. Data represent the 48 continental states. Slope of the regression line shown is 0.035, and the t statistic is 0.062 (which is not statistically significant).

For readers unfamiliar with spatial econometrics, LeSage and Pace (2004) provided an overview. However, one may simply think of spatial models as analogous to autoregressive moving average time series models but with the lags occurring over geographic distances rather than through time. We run both a spatial autoregressive model (SAR) of the form in Equation (1) and a generalized spatial model (SAC) that incorporates both a spatial autoregressive term and a spatially correlated error structure (analogous to the MA, moving average component, in time series) of the form in Equation (2).

$$(1) \quad Y = \rho \cdot W \cdot Y + X \cdot \beta + v$$

$$(2) \quad Y = \rho \cdot W \cdot Y + X \cdot \beta + \varphi, \\ \text{where } \varphi = (I - \lambda \cdot W)^{-1} \cdot v,$$

where Y is the $N \times 1$ dependent variable, X is the $N \times K$ matrix of exogenous variables, W is the $N \times N$ spatial weighting matrix based on first-degree contiguity (geographic neighbors), ρ is the spatial autoregressive coefficient, λ is the spatial error coefficient, and v is the $N \times 1$ vector of IID random errors. We run these

specifications in MATLAB.¹⁸ For each model, we compute the Lagrange Multiplier (LM) test statistic, generally used to discern whether the SAR model is sufficient to remove this spatial dependence or whether there remains additional spatial dependence in the residuals of the SAR model that would necessitate the use of the SAC model. A significant LM test statistic for an individual SAR model would imply the need to use the SAC model instead. In the results that follow, we present both the standard OLS results and the results from our spatial estimations that control for geographic dependence in the data.

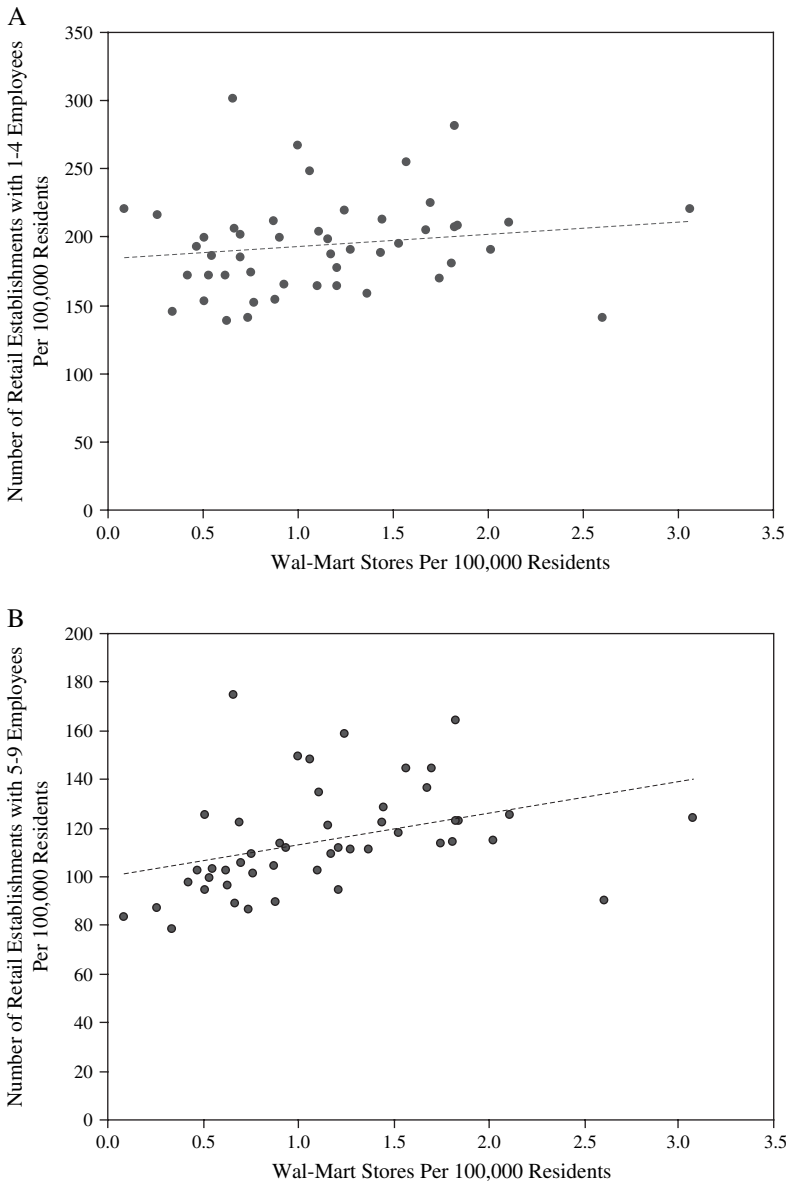
The results of our estimations are presented in Table 2. None of the coefficient estimates for Wal-Mart prevalence (values in bold face) are statistically significant. The number of Wal-Mart stores has no significant relation to small business activity in a state as measured by either self-employment or the number of one to four and five to nine employee firms. This holds true when looking at the OLS results, as well as the spatial autoregressive (SAR) and general spatial (SAC) model estimates.

Table 3 shows results similar to those in Table 2, except in these regressions, the annual growth rates are substituted for the levels for both our measures of small business activity and the number of Wal-Mart stores. Even when examining the growth rates, none of the coefficient estimates for Wal-Mart prevalence are statistically significant, with one exception. This lone significant result is in the opposite direction of what might be expected, as it illustrates a positive and significant relationship between Wal-Mart store growth and the growth rate of the number of one to four employee establishments. This significant result, however, only appears in the SAR specification, so it is not robust enough to be persuasive. Thus, taken as a whole, the evidence in Tables 2 and 3 strongly rejects the hypothesis that Wal-Mart has had an impact (either negative or positive) on the overall size and growth of the mom and pop sector of the U.S. economy.

18. The public domain spatial econometric toolbox for MATLAB is at www.spatial-econometrics.com.

FIGURE 4

Wal-Mart Stores versus Number of Establishments with (A) One to Four Employees and (B) Five to Nine Employees, 2000



Notes: See Appendix 1 for variable definitions and sources. Data represent the 48 continental states. For (A), the slope of the regression line shown is 8.805, and the *t* statistic is 1.052 (which is not statistically significant). For (B) the slope of the regression line shown is 13.027, and the *t* statistic is 2.710 (which is statistically significant at the 1% level).

V. ROBUSTNESS CHECKS

In this section, we reestimate our models to check for potential problems with endogeneity

in Wal-Mart store location. Presumably, Wal-Mart could be expanding the most in areas where unobservable variables are also leading

TABLE 2
Wal-Mart Stores Per Capita (2000) as Explanatory Variable

Independent Variable	Self-Employment Rate						Dependent Variable					
	Self-Employment Rate			Establishments with 1-4 Employees (per 100,000 Population)			Establishments with 5-9 Employees (per 100,000 Population)			Establishments with 10-14 Employees (per 100,000 Population)		
	OLS	SAR	SAC	OLS	SAR	SAC	OLS	SAR	SAC	OLS	SAR	SAC
Constant	-66.933** (2.233)	-51.274* (1.751)	-49.688* (1.756)	90.075 (0.191)	-182.669 (0.440)	-236.980 (0.547)	180.046 (0.901)	76.651 (0.373)	104.764 (0.528)			
Wal-Mart stores (per 100,000 population)	-0.109 (0.229)	-0.001 (0.002)	-0.152 (0.385)	2.203 (0.297)	0.954 (0.167)	-1.955 (0.291)	3.933 (1.247)	1.712 (0.583)	3.539 (1.113)			
Percent metropolitan population (%)	-0.036* (1.750)	-0.032* (1.959)	-0.031* (1.898)	-1.273*** (3.974)	-0.899*** (4.507)	-0.983*** (4.507)	-0.849*** (6.243)	-0.683*** (5.575)	-0.658*** (5.358)			
Median age (yr)	0.222 (1.650)	0.221* (1.868)	0.225* (1.942)	6.925*** (3.284)	6.926*** (3.962)	6.730*** (4.143)	1.768* (1.974)	1.952*** (2.231)	1.819** (2.127)			
Percent in poverty (%)	0.207 (1.094)	0.139 (0.825)	0.142 (0.887)	0.541 (0.182)	-0.510 (0.207)	-0.500 (0.208)	-2.564** (2.031)	-3.047** (2.459)	-3.008** (2.470)			
Median family income (1,000 dollars)	-0.115 (1.054)	-0.122 (1.333)	-0.111 (1.287)	-0.862 (0.304)	-1.502 (1.112)	-1.113 (0.823)	-1.419* (1.954)	-1.883*** (2.782)	-1.931*** (2.914)			
Percent nonwhite (%)	-0.037 (1.189)	-0.027 (0.964)	-0.021 (0.744)	0.193 (0.397)	0.419 (1.018)	0.060 (0.141)	0.171 (0.829)	0.255 (1.227)	0.216 (1.015)			
Land area (1,000 square miles)	0.013 (1.644)	0.012* (1.784)	0.010 (1.598)	-0.036 (0.303)	-0.086 (0.893)	-0.003 (0.032)	-0.045 (0.973)	-0.091* (1.815)	-0.084* (1.659)			
Percent with college education (%)	0.408*** (4.018)	0.378*** (4.372)	0.345*** (3.600)	4.401*** (2.762)	3.126*** (2.579)	2.347 (1.496)	1.832*** (2.708)	1.591*** (2.626)	1.811*** (2.635)			
Percent male (%)	1.448** (2.692)	1.095** (2.050)	1.029* (1.898)	-2.619 (0.310)	2.181 (0.302)	5.137 (0.621)	-0.378 (0.106)	1.707 (0.478)	1.095 (0.313)			
p	—	0.188 (1.260)	0.301 (1.364)	—	0.442*** (3.435)	0.076 (0.318)	—	0.182 (1.450)	0.181 (1.106)			
λ	—	—	-0.220 (0.660)	—	—	0.660*** (3.829)	—	—	0.043 (0.163)			
LM test	—	0.530	—	—	30.121†	—	—	1.144	—			
Observations	48	48	48	48	48	48	48	48	48			
R ²	.652	.730	.744	.615	.678	.773	.814	.820	.827			
Log likelihood	-109.448	-61.444	-33.607	-239.156	-191.891	-162.983	-215.524	-157.502	-129.555			

Notes: t Statistics are in parentheses. Variable descriptions, descriptive statistics, and sources can be found in Appendix I. † indicates no spatial dependence in the errors. Asterisks indicate significance as follows: *** = 1%; ** = 5%; * = 10%.

TABLE 3
Wal-Mart Store Growth as Explanatory Variable

Independent Variable	Dependent Variable											
	Self-Employment Annual Growth Rate			Establishments with 1-4 Employees (Annual Growth Rate)			Establishments with 5-9 Employees (Annual Growth Rate)			Establishments with 10-99 Employees (Annual Growth Rate)		
	OLS	SAR	SAC	OLS	SAR	SAC	OLS	SAR	SAC	OLS	SAR	SAC
Constant	22.063 (2.031)	10.808 (1.199)	11.045 (1.155)	-31.983* (1.814)	-26.825* (1.705)	-34.979** (2.029)	-27.824 (1.543)	-42.076** (2.550)	-35.501* (1.806)			
Wal-Mart stores annual growth rate (%)	-0.020 (0.846)	-0.013 (1.494)	-0.023 (1.286)	0.279 (0.741)	0.051*** (3.293)	0.030 (0.879)	-0.019 (0.486)	-0.001 (0.069)	0.007 (0.235)			
Percent metropolitan population (%)	0.005 (0.785)	0.005 (0.880)	0.004 (0.707)	0.015 (1.399)	0.018** (1.987)	0.019* (1.816)	0.013 (1.186)	0.015 (1.580)	0.013 (1.224)			
Median age (yr)	-0.092* (1.972)	-0.097*** (2.615)	-0.103*** (2.829)	-0.248*** (3.274)	-0.270*** (4.340)	-0.257*** (3.889)	-0.091 (1.171)	-0.099 (1.481)	-0.097 (1.420)			
Percent in poverty (%)	0.013 (0.200)	0.064 (1.170)	0.045 (0.871)	-0.085 (0.779)	-0.183** (1.997)	-0.088 (0.902)	0.094 (0.838)	0.119 (1.220)	0.111 (1.226)			
Median family income (1,000 dollars)	0.042 (1.059)	0.060* (1.889)	0.048 (1.578)	-0.003 (0.050)	-0.071 (1.294)	-0.018 (0.304)	-0.030 (0.456)	-0.032 (0.565)	-0.024 (0.423)			
Percent nonwhite (%)	-0.001 (0.019)	-0.011 (1.297)	-0.006 (0.760)	0.028 (1.645)	0.050*** (3.342)	0.028* (1.814)	-0.012 (0.683)	-0.009 (0.556)	-0.009 (0.613)			
Land area (1,000 square miles)	-0.003 (1.232)	-0.002 (0.739)	-0.002 (1.077)	-0.005 (1.042)	-0.006 (1.630)	-0.005 (1.185)	-0.001 (0.123)	-0.001 (0.256)	-0.002 (0.500)			
Percent with college education (%)	-0.045 (1.408)	-0.030 (1.209)	-0.029 (1.189)	-0.026 (0.509)	-0.024 (0.590)	-0.022 (0.461)	0.019 (0.368)	0.027 (0.608)	0.019 (0.472)			
Percent male (%)	-0.381* (1.978)	-0.193 (1.210)	-0.181 (1.064)	0.835** (2.671)	0.813*** (2.865)	0.911*** (2.808)	0.603* (1.886)	0.888*** (3.014)	0.757** (2.014)			
ρ	—	0.449*** (3.251)	0.571** (2.478)	—	-0.189 (1.259)	-0.134 (0.547)	—	-0.377** (1.981)	-0.046 (0.098)			
λ	—	—	-0.269 (0.674)	—	—	0.149 (0.507)	—	—	-0.467 (0.916)			
LM test	—	128.011†	—	—	0.163	—	—	27.782†	—			
Observations	48	48	48	48	48	48	48	48	48			
R^2	.393	.533	.637	.574	.706	.662	.208	.341	.456			
Log likelihood	-45.304	-6.676	20.097	-77.065	-30.422	-7.197	-63.290	-34.333	-5.999			

Notes: t Statistics are in parentheses. Variable descriptions, descriptive statistics, and sources can be found in Appendix 1.

† indicates no spatial dependence in the errors.

Asterisks indicate significance as follows: *** = 1%; ** = 5%; * = 10%.

to more rapid growth in small business activity. Controlling for endogeneity with regard to Wal-Mart store location is likely to make little difference in the results, however. Many previous studies have rejected the presence of this endogeneity through both empirical testing and anecdotal evidence directly from Wal-Mart personnel on their location decisions (Franklin 2001; Graff 1998; Hicks 2006; Hicks and Wilburn 2001).¹⁹

We do this in two ways. First, we reestimate all our models using the 5-yr lagged value of the Wal-Mart variable. Not only does this help to uncover the existence of problems with endogeneity and simultaneity but it also addresses any concerns that the true negative impact of Wal-Mart on small business activity takes time to become visible. Second, we employ instrumental variable methodology to first predict the number of Wal-Mart stores in each state and in a second stage, use this predicted value in our regressions. To obtain this prediction, we use the fitted values from a general spatial model (SAC) with Wal-Mart stores (per capita) as the dependent variable and the explanatory variables used by previous studies to instrument the number of Wal-Mart stores.²⁰ The results of these two new estimations are presented in Tables 4 and 5.

Consistent with the findings of previous literature, both of our attempts to control for endogeneity make little difference. In all 18 specifications, the results are virtually identical to those presented earlier. In no specification is the number of Wal-Mart stores per capita significantly related to the level of small business activity.

VI. ADDITIONAL SMALL BUSINESS MEASURES

In this section, we explore two additional data sets; the first of which is our small busi-

ness variables (self-employment rate and per capita small establishments) broken down by individual business sector, and the second is state-level bankruptcy rates.

In examining the data broken down by business sector, we can highlight the central part of our creative destruction argument—that there are *both* positive and negative impacts on the small business sector that, when combined, account for our overall finding of no net impact. The central question addressed with these data is whether the productive resources that become unemployed in some sectors because of Wal-Mart's entry do indeed find productive uses in other business sectors. Schumpeter's creative destruction predicts that if we perform regression analysis using individual sectors, some should be positive while others should be negative. We perform both SAR and SAC models on self-employment and both sizes of small establishments broken down by all sectors for which each was available. Note that the sector breakdowns available for self-employment and small establishments differ slightly. Table 6 shows the summarized results of these 54 individual regressions. The numbers in the table are the coefficient estimates for the Wal-Mart variable from each of these regressions.

In terms of overall results, the modal conclusion is that there are generally five small business sectors with positive impacts and five with negative impacts (Columns 1, 2, 4, and 5). In Columns 3 and 6, there are three negative and five positive and two negative and five positive results, respectively. Examining across the rows, and limiting the discussion to only statistically significant results, we find that the Wal-Mart variable is negative and significant in two of the six regressions for building suppliers, negative and significant in two of the six regressions for eating and drinking places, positive and significant in five of the six regressions for auto dealers, and positive and significant in four of the four regressions for electronics and appliance stores. Home furnishings and general merchandisers are uniformly positive but never significant. The results from Table 6 do indeed suggest that while Wal-Mart has no overall impact, that it does have a reallocation effect on the small business sector—some expand while others contract.

19. The only exception is Basker (2005a) who did find some small differences after controlling for endogeneity of location, necessitating our exploring the issue here.

20. Following the previous literature, the independent variables we include are distance from Bentonville, Arkansas (and distance squared), percent metro population, percent of population with a college degree, percent of population in poverty, median family income, state land area, and the top corporate tax rate.

TABLE 4
Wal-Mart Stores Per Capita (Lagged) as Explanatory Variable

Independent Variable	Dependent Variable											
	Self-Employment Rate				Establishments with 1-4 Employees (per 100,000 Population)				Establishments with 5-9 Employees (per 100,000 Population)			
	OLS	SAR	SAC	OLS	SAR	SAC	OLS	SAR	SAC	OLS	SAR	SAC
Constant	-68.967** (2.177)	-51.274* (1.751)	-50.110 (1.564)	-8.591 (0.017)	-182.669 (0.440)	-274.594 (0.643)	130.183 (0.609)	76.651 (0.373)	68.145 (0.331)			
Wal-Mart stores (5 yr lag per 100,000 population)	0.082 (0.186)	-0.001 (0.003)	-0.045 (0.122)	4.347 (0.633)	0.954 (0.167)	3.624 (0.537)	2.341 (0.791)	1.712 (0.583)	1.937 (0.633)			
Percent metropolitan Population (%)	-0.033 (1.651)	-0.032* (1.959)	-0.030* (1.813)	-1.249*** (3.942)	-0.899*** (3.676)	-0.932*** (4.389)	-0.869*** (6.358)	-0.683*** (5.575)	-0.681*** (5.555)			
Median age (yr)	0.224 (1.648)	0.221* (1.868)	0.223* (1.876)	7.177*** (3.377)	6.926*** (3.962)	6.425*** (4.187)	1.945** (2.121)	1.952** (2.231)	1.972** (2.268)			
Percent in poverty (%)	0.219 (1.142)	0.139 (0.825)	0.152 (0.917)	0.821 (0.274)	-0.510 (0.207)	-0.335 (0.141)	-2.538* (1.959)	-3.047** (2.459)	-3.038** (2.437)			
Median family income (1,000 dollars)	-0.112 (1.009)	-0.122 (1.333)	-0.110 (1.236)	-0.668 (0.386)	-1.502 (1.112)	-1.274 (0.974)	-1.307* (1.752)	-1.884*** (2.782)	-1.849*** (2.726)			
Percent nonwhite (%)	-0.039 (1.278)	-0.027 (0.964)	-0.023 (0.805)	0.171 (0.356)	0.419 (1.018)	0.048 (0.043)	0.196 (0.949)	0.255 (1.227)	0.234 (1.093)			
Land area (1,000 square miles)	0.012 (1.633)	0.012* (1.784)	0.011 (1.603)	-0.044 (0.368)	-0.088 (0.893)	0.007 (0.078)	-0.055 (1.075)	-0.091* (1.815)	-0.087* (1.714)			
Percent with college education (%)	0.423*** (4.534)	0.379*** (4.372)	0.355*** (3.923)	4.410*** (3.027)	3.126*** (2.579)	2.879** (2.078)	1.569** (2.497)	1.591*** (2.626)	1.575** (2.497)			
Percent male (%)	1.467*** (0.555)	1.095** (2.049)	1.025* (1.748)	-1.113 (0.128)	2.181 (0.167)	6.010 (0.732)	0.582 (0.155)	1.707 (0.478)	1.888 (0.525)			
ρ	—	0.188 (1.260)	0.307 (1.392)	—	0.442*** (3.435)	0.021 (0.090)	—	0.182 (1.450)	0.160 (0.946)			
λ	—	—	-0.258 (0.771)	—	—	0.706*** (4.670)	—	—	0.061 (0.230)			
LM test	—	0.534	—	—	30.227†	—	—	1.150	—			
Observations	48	48	48	48	48	48	48	48	48			
R^2	.653	.730	.745	.618	.687	.779	.810	.820	.823			
Log likelihood	-78.969	-61.444	-33.668	-210.950	-191.891	-162.907	-170.594	-157.502	-130.018			

Notes: *t* Statistics are in parentheses. Variable descriptions, descriptive statistics, and sources can be found in Appendix 1.

† indicates no spatial dependence in the errors.

Asterisks indicate significance as follows: *** = 1%, ** = 5%, * = 10%.

TABLE 5
Wal-Mart Stores Per Capita (IV) as Explanatory Variable

Independent Variable	Dependent Variable											
	Self-Employment Rate				Establishments with 1-4 Employees (per 100,000 Population)				Establishments with 5-9 Employees (per 100,000 Population)			
	OLS	SAR	SAC	SAC	OLS	SAR	SAC	SAC	OLS	SAR	SAC	SAC
Constant	-68.372** (2.221)	-51.119* (1.818)	-51.373* (1.706)	-203.947 (0.521)	-22.216 (0.047)	-203.947 (0.521)	-77.504 (0.192)	112.330 (0.611)	160.269 (0.768)	112.330 (0.611)	120.685 (0.652)	
Estimated Wal-Mart stores per 100,000 population	0.177 (0.187)	0.040 (0.048)	-0.030 (0.039)	6.700 (0.559)	15.574 (1.058)	6.700 (0.559)	6.015 (0.387)	1.790 (0.314)	3.318 (0.515)	1.790 (0.314)	1.511 (0.280)	
Percent metropolitan population (%)	-0.032 (1.435)	-0.034* (1.740)	-0.032 (1.643)	-1.021*** (3.637)	-1.118*** (3.202)	-1.021*** (3.637)	-1.096*** (4.034)	-0.827*** (6.153)	-0.857*** (5.616)	-0.827*** (6.153)	-0.838*** (6.165)	
Median age (yr)	0.224 (1.648)	0.224* (1.900)	0.227* (1.908)	7.054*** (4.199)	7.321*** (3.477)	7.054*** (4.199)	6.813*** (4.500)	1.912** (2.383)	1.905** (2.068)	1.912** (2.383)	1.877** (2.318)	
Percent in poverty (%)	0.223 (1.132)	0.165 (0.958)	0.177 (1.028)	0.701 (0.288)	1.400 (0.459)	0.701 (0.288)	-0.024 (0.010)	-2.463** (2.114)	-2.539* (1.901)	-2.463** (2.114)	-2.373** (2.069)	
Median family income (1,000 dollars)	-0.117 (1.070)	-0.101 (1.048)	-0.092 (0.971)	-0.719 (0.531)	-1.045 (0.615)	-0.719 (0.531)	-0.793 (0.566)	-1.318** (2.028)	-1.448* (1.950)	-1.318** (2.028)	-1.309** (2.031)	
Percent nonwhite (%)	-0.040 (1.260)	-0.029 (1.033)	-0.274 (0.955)	0.341 (0.850)	0.062 (0.126)	0.341 (0.850)	0.089 (0.208)	0.239 (1.241)	0.190 (0.882)	0.239 (1.241)	0.270 (1.438)	
Land area (1,000 square miles)	0.0125 (1.647)	0.012* (1.877)	0.012* (1.755)	-0.059 (0.622)	-0.042 (0.354)	-0.059 (0.622)	0.009 (0.107)	-0.065 (1.405)	-0.053 (1.024)	-0.065 (1.405)	-0.068 (1.470)	
Percent with college education (%)	0.438*** (3.126)	0.371*** (2.856)	0.350*** (2.670)	3.513** (1.952)	5.942*** (2.736)	3.513** (1.952)	3.141 (1.315)	1.461* (1.714)	1.823* (1.918)	1.461* (1.714)	1.482* (1.849)	
Percent male (%)	1.450** (2.690)	1.060** (2.069)	1.034* (1.837)	1.368 (0.200)	-1.851 (0.222)	1.368 (0.200)	0.707 (0.091)	0.613 (0.192)	-0.027 (0.007)	0.613 (0.192)	0.359 (0.114)	
ρ	—	0.209 (1.421)	0.291 (1.296)	0.422*** (3.352)	—	0.422*** (3.352)	0.135 (0.606)	0.147 (1.289)	—	0.147 (1.289)	0.181 (1.305)	
λ	—	—	-0.184 (0.548)	—	—	—	0.573*** (2.888)	—	—	—	-0.142 (0.549)	
Observations	48	48	48	48	48	48	48	48	48	48	48	
R ²	.719	.727	.740	.702	.697	.702	.786	.851	.845	.851	.853	

Notes: *t* Statistics are in parentheses. Variable descriptions, descriptive statistics, and sources can be found in Appendix 1. Asterisks indicate significance as follows: *** = 1%; ** = 5%; * = 10%.

TABLE 6
Wal-Mart Impact by Detailed Business Sector

Business Sector (Dependent Variable)	SAR			SAC		
	Establishments with 1-4 Employees (per 100,000 Population)	Establishments with 5-9 Employees (per 100,000 Population)	Self-Employment Rate	Establishments with 1-4 Employees (per 100,000 Population)	Establishments with 5-9 Employees (per 100,000 Population)	Self-Employment Rate
Building suppliers	-0.014* (1.891)	-0.005* (1.658)	-0.001 (0.442)	-0.010 (1.278)	-0.002 (0.679)	-0.001 (0.775)
General merchandisers	0.003 (0.982)	0.002 (1.474)	0.002 (1.389)	0.003 (0.851)	0.002 (1.319)	0.002 (1.340)
Automotive dealers	0.015** (2.206)	0.007** (2.384)	0.015*** (2.752)	0.014** (2.054)	0.007** (2.513)	0.015 (2.711)
Apparel and accessory stores	-0.005 (0.561)	-0.001 (0.447)	0.001 (0.564)	-0.007 (0.770)	-0.002 (0.470)	0.001 (0.601)
Home furniture and furnishings stores	0.007 (1.205)	0.003 (1.275)	0.003 (1.354)	0.006 (1.244)	0.001 (1.305)	0.003 (1.375)
Eating and drinking places	-0.030* (1.753)	-0.011* (1.757)	-0.012 (1.376)	-0.024 (1.480)	-0.008 (1.310)	-0.004 (0.525)
Grocery stores	—	—	-0.001 (0.075)	—	—	0.001 (0.229)
Electronics and appliance stores	0.005** (1.786)	0.002** (1.888)	—	0.005* (1.724)	0.003*** (4.897)	—
Health and personal care stores	-0.001 (0.876)	-0.001 (0.062)	—	0.001 (0.138)	0.001 (0.246)	—
Gasoline stations	0.007 (0.612)	0.004 (0.889)	—	-0.001 (0.087)	-0.001 (0.149)	—
Sporting goods, hobby, book, and music stores	-0.007 (0.700)	-0.004 (1.115)	—	-0.006 (0.533)	-0.004 (1.030)	—

Notes: Numbers in table are the expected coefficient estimates on the Wal-Mart stores per 100,000 population independent variable in 54 regressions specified exactly as in Table 2 but using sector-specific measures for the dependent variables; *t* statistics are in parentheses. Variable descriptions, descriptive statistics, and sources can be found in Appendix 1.

Asterisks indicate significance as follows: *** = 1%; ** = 5%; * = 10%.

Table 7 explores the correlation between Wal-Mart stores per capita and state-level business bankruptcy rates using data from the U.S. Small Business Administration (using OLS, SAR, and SAC estimation techniques). These regressions control for demographic and socioeconomic factors, as well as spatial dependence in the data (SAR and SAC models). We perform the regressions using both bankruptcies measured as a rate of all businesses as well as bankruptcies per 1,000 state population.

The results in Table 7 mirror our earlier results of finding no statistically significant harmful impact of Wal-Mart. In fact, all the coefficient estimates are negative, implying that bankruptcy rates are actually lower in states with more Wal-Mart stores per capita. Only two of the six are, however, significant. These results suggest that the survival rates of small businesses in states with a larger number of Wal-Mart stores per capita are statistically no worse than the survival rates of new small businesses in states with fewer Wal-Mart stores per capita.²¹

VII. ARE THE NEW SMALL BUSINESSES "WORSE" THAN THE OLD ONES?

The evidence clearly suggests that the overall size of the small business sector is unaffected by Wal-Mart. Some firms fail when a Wal-Mart opens and new firms arise in their place, taking advantage of the newly available productive resources. One potential criticism, however, is that the new small businesses opening are in some respects "inferior" to the ones that are closing. For example, a profitable and long-standing local toy store might go out of business and be replaced by a marginal small business with very low net income. Conveniently, this has a direct empirical prediction that the average sales or net income of small businesses should be falling as Wal-Mart has expanded.

In Figures 5 and 6, we present evidence on this claim. Figure 5 shows a time series of the average real net income of sole proprietors in the United States alongside the number of

Wal-Mart stores. In Figure 5, it is clear that the average real income of sole proprietors has grown, almost uniformly throughout the period. Small businesses today are more profitable than ever before in real terms. Figure 6 shows similar data for the average real sales revenue of sole proprietors. As with net income, there is no evidence that average revenue has gone down. In fact, like with net income, real sales revenue among sole proprietors has grown substantially throughout the period as well.

VIII. SUMMARY AND CONCLUSION

This paper tests the widely held belief that Wal-Mart has a large negative impact on the size of the small business (mom and pop) sector of the U.S. economy.²² After examining a battery of different measures of small business activity and growth, employing different geographic levels of data, examining both time series and cross-section data, and using different econometric techniques, we can firmly conclude that there is no evidence that Wal-Mart has had a significant impact (either negative or positive) on the overall size, growth, or profitability of the U.S. small business sector. While the entry of a specific Wal-Mart store might cause some individual, small mom and pop businesses to fail, consistent with Schumpeter's theory of creative destruction, these failures are completely offset by the entry of other new small businesses somewhere else in the economy.

21. Alternatively, Wal-Mart might cause some firms to fail but in turn increases the survival rate of others.

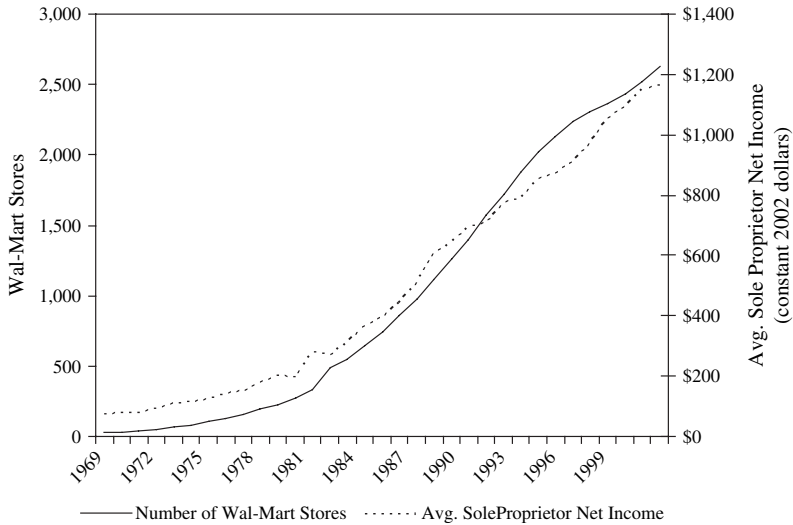
22. Within the political realm, Wal-Mart's potential harm to the small business sector has been used repeatedly as a justification for not allowing new stores. The entry of a new Wal-Mart creates difficulty to identify widespread benefits for consumers and other businesses while imposing concentrated costs on competing businesses and labor unions. According to public choice theory, this combination is a recipe that favors the organized groups at the expense of the widespread beneficiaries. This observation might also help to explain why local governments have been much more likely to impose restrictions on Wal-Mart's entry than have state governments (and the federal government) who internalize more of the widespread benefits. For a good introduction to the special interest effect created when one side is concentrated and the other widespread, see Chapter 6 in Gwartney et al. (2006). For additional insights and extensions applicable here, see Weingast, Shepsle, and Johnsen (1981) and Yandle (1983).

TABLE 7
Wal-Mart's Impact on State Business Bankruptcy Rates

Independent Variable	Dependent Variable					
	Bankruptcy Rate (per 1,000 State Population)			Bankruptcy Rate (Percent of Businesses)		
	OLS	SAR	SAC	OLS	SAR	SAC
Constant	2.297 (0.249)	2.365 (0.288)	2.340 (0.293)	0.103 (0.289)	0.106 (0.335)	0.107 (0.344)
Wal-Mart discount stores in 1995 (per 100,000 population)	-0.213 (1.462)	-0.215* (1.661)	-0.212 (1.529)	-0.008 (1.460)	-0.008* (1.653)	-0.008 (1.541)
Metropolitan area population (% of state)	-0.005 (0.780)	-0.005 (0.885)	-0.006 (1.021)	-0.001 (0.696)	-0.001 (0.784)	-0.001 (0.899)
Median age of population (yr)	-0.001 (0.029)	-0.003 (0.010)	0.002 (0.051)	-0.001 (0.115)	-0.001 (0.113)	-0.001 (0.052)
Percent of population for whom poverty status is determined (%)	-0.066 (1.123)	-0.067 (1.292)	-0.066 (1.248)	-0.003 (1.116)	-0.002 (1.280)	-0.002 (1.241)
Median family income (per 1,000 dollars)	-0.008 (0.229)	-0.008 (0.267)	-0.006 (0.182)	-0.001 (0.256)	-0.003 (0.297)	-0.001 (0.225)
Percent of population that is nonwhite (%)	-0.002 (1.488)	0.014* (1.705)	0.015* (1.818)	0.005 (1.533)	0.005* (1.755)	0.006* (1.807)
Land area (per 1,000 square miles)	-0.002 (0.783)	-0.002 (0.867)	-0.002 (0.779)	-0.001 (0.784)	-0.001 (0.869)	-0.001 (0.042)
Percent of population with bachelor's degree or higher (%)	-0.031 (0.976)	-0.030 (1.094)	-0.029 (1.046)	-0.001 (1.037)	-0.002 (1.165)	-0.001 (1.095)
Percent male (%)	0.004 (0.023)	0.003 (0.018)	-0.002 (0.014)	0.001 (0.001)	-0.001 (0.008)	-0.008 (1.541)
ρ	—	-0.086 (0.427)	0.011 (0.012)	—	-0.072 (0.359)	0.011 (0.013)
λ	—	—	-0.190 (0.214)	—	—	-0.171 (0.195)
Observations	48	48	48	48	48	48
R^2	.116	.120	.134	.116	.119	.131
Log likelihood	n/a	-5.791	21.894	n/a	150.351	177.985

Notes: *t* Statistics are in parentheses. Variable descriptions, descriptive statistics, and sources can be found in Appendix 1. n/a, not applicable. Asterisks indicate significance as follows: *** = 1%; ** = 5%; * = 10%.

FIGURE 5
Wal-Mart Stores versus Average Sole Proprietor Real Net Income



Notes: Average sole proprietor net income is converted to real dollars using the consumer price index. Sole proprietorship data are obtained from U.S. Internal Revenue Service, *Statistics of Income*, various years.

FIGURE 6
Wal-Mart Stores versus Average Sole Proprietor Real Revenue



Notes: Average sole proprietor sales receipts (revenue) are converted to real dollars using the consumer price index. Sole proprietorship data are obtained from U.S. Internal Revenue Service, *Statistics of Income*, various years.

APPENDIX 1: DATA DESCRIPTION AND SOURCES

Variable Name (Source)	Description	Mean (Standard. Deviation)
Dependent variables		
Self-employment rate ^a	Annual nonfarm proprietor employment as a percentage of total nonfarm employment (%)	15.95 (2.39)
Self-employment growth rate ^a	Average annual growth rate of nonfarm proprietors from 1997 to 2003 (%)	1.27 (0.63)
Establishments with One to Four employees ^b	Retail establishments with one to four employees per 100,000 of state population	194.25 (35.66)
Establishments with Five to Nine employees ^b	Retail establishments with five to nine employees per 100,000 of state population	114.90 (21.79)
Establishments with One to Four employees (annual growth rate) ^b	Average annual growth rate of retail establishments with one to four employees from 1998 to 2002 (%)	-0.15 (4.90)
Establishments with Five to Nine employees (annual growth rate) ^b	Average annual growth rate of retail establishments with five to nine employees from 1998 to 2002 (%)	-1.82 (3.51)
Bankruptcy rate (per capita) ^g	Number of bankruptcies per 1,000 state population (2000)	0.01 (0.02)
Bankruptcy rate (percent of businesses) ^g	Number of bankruptcies divided by total employer firms in state (2000)	0.19 (0.42)
Independent variables		
Wal-Mart stores ^c	Number of discount stores and supercenters per 100,000 population	1.14 (0.62)
Wal-Mart store annual growth rate ^c	Average annual growth rate from 1995 to 2005 (%)	4.69 (4.01)
Median age ^d	Median age of population (in yr) (2000)	35.59 (1.89)
Percent metropolitan population ^d	Metro population as a percent of state (%) (2000)	68.36 (20.64)
Percent in poverty ^d	Percent of population for whom poverty status is determined (%) (2000)	12.02 (3.16)
Median family income ^d	Median income per 1,000 dollars (2000)	48.88 (7.02)
Percent nonwhite ^d	Percent of total population (%) (2000)	22.93 (13.00)
Percent with college education ^d	Percent of population with a bachelor's degree or higher (%) (2000)	23.71 (4.35)
Percent male ^d	Percent of population that is male (%) (2000)	49.11 (0.67)
Land area ^e	Land area per 1,000 square miles (2000)	61.65 (46.81)
Unemployment rate ^f	Number of unemployed workers divided by the total civilian labor force, seasonally adjusted (2000)	6.2 (1.48)
Real per capita personal income (1)	State real per capita personal income (2000)	26,642.70 (3,855.59)

^aU.S. Department of Commerce, Bureau of Economic Analysis, *State and Local Area Data*, Washington, DC.

^bU.S. Department of Commerce, Census Bureau, *2000 County Business Patterns*, Washington, DC.

^cWal-Mart, *Wal-Mart Annual Report*, various years.

^dU.S. Department of Commerce, Census Bureau, *Census 2000*, Washington, DC.

^eU.S. Department of Commerce, Census Bureau, *Statistical Abstract of the United States*, Washington, DC.

^fU.S. Department of Labor, Bureau of Labor Statistics, *Local Area Unemployment Statistics*, Washington, DC.

^gU.S. Small Business Administration, Office of Advocacy, *Small Business Economic Indicators 2000*, Washington, DC.

REFERENCES

- Anselin, L. *In Spatial Econometrics: Methods and Models*. Dordrecht, The Netherlands: Kluwer Academic Publishers, 1988.
- Baltagi, B. H. *Econometric Analysis of Panel Data*. 2nd ed. Chichester, UK: Wiley, 2001.
- Basker, E. "Job Creation or Destruction? Labor-Market Effects if Wal-Mart Expansion." *Review of Economics and Statistics*, 87, 2005a, 174–83.
- . "Selling a Cheaper Mousetrap: Wal-Mart's Effect on Retail Prices." *Journal of Urban Economics*, 58, 2005b, 203–29.
- Bastiat, F. "What Is Seen and What Is Not Seen," in *Selected Essays on Political Economy*, edited by G. B. de Huszar. Irvington-on-Hudson, New York: Foundation for Economic Education, 1995, 1–50.
- Case, A. C. "Spatial Patterns in Household Demand." *Econometrica*, 59, 1991, 953–65.
- Cox, W. M., and R. Alm. *The Churn: The Paradox of Progress*. Federal Reserve Bank of Dallas 1992 Annual Report, Dallas, TX: Federal Reserve Bank of Dallas, 1992, 5–8.
- Darby, M. R., and L. G. Zucker. "Growing by Leaps Inches: Creative Destruction, Real Cost Reduction, and Inching Up." *Economic Inquiry*, 41, 2003, 1–19.
- Dawson, J. W. "Institutions, Investment, and Growth: New Cross-Country and Panel Data Evidence." *Economic Inquiry*, 36, 1998, 603–19.
- DeCoster, K. "The Case for Wal-Mart." 2003. Accessed October 21, 2006. Mises Daily Article, Ludwig von Mises Institute, <http://www.mises.org/story/1151>.
- Dubin, R. A. "Estimation of Regression Coefficients in the Presence of Spatially Autocorrelated Error Terms." *Review of Economics and Statistics*, 70, 1988, 466–74.
- Franklin, A. W. "The Impact of Wal-Mart Supercenters on Supermarket Concentration in U.S. Metropolitan Areas." *Agribusiness*, 17, 2001, 105–14.
- Freeman, R. "Wal-Mart Collapses U.S. Cities and Towns." *Executive Intelligence Review*, 2003. Accessed September 1, 2006. http://www.larouche-pub.com/other/2003/3045Wal-Mart_iowa.html.
- Graff, T. O. "The Locations of Wal-Mart and Kmart Supercenters: Contrasting Corporate Strategy." *Professional Geographer*, 50, 1998, 46–57.
- Gwartney, J. D., R. L. Stroup, R. S. Sobel, and D. A. Macpherson. *Economics: Private and Public Choice*. 11th ed. Mason, OH: Thomson/South-Western, 2006.
- Hausman, J., and E. Leibtag. "CPI Bias from Supercenters: Does the BLS Know That Wal-Mart Exists?" National Bureau of Economic Research Working Paper No. 10712, 2004.
- Hazlitt, H. *Economics in One Lesson*. Norwalk, CT: Arlington House, 1979.
- Hicks, M. J. "Endogeneity Tests and Identification Strategy: The Impact of Wal-Mart on Medicaid, Foodstamps and Labor Markets in Maryland." Working Paper, Air Force Institute of Technology and Marshall University, 2006.
- Hicks, M. J., and K. Wilburn. "The Regional Impact of Wal-Mart Entrance: A Panel Study of the Retail Trade Sector in West Virginia." *Review of Regional Studies*, 31, 2001, 305–13.
- Kreft, S. F., and R. S. Sobel. "Public Policy, Entrepreneurship, and Economic Freedom." *Cato Journal*, 25, 2005, 595–616.
- Lacombe, D. J. "Does Econometric Methodology Matter? An Analysis of Public Policy Using Spatial Econometric Techniques." *Geographical Analysis*, 36, 2004, 105–18.
- LeSage, J. P., and R. K. Pace. eds. *Introduction to Advances in Econometrics: Vol. 18: Spatial and Spatiotemporal Econometrics*. Oxford, UK: Elsevier Ltd, 2004.
- New York Times*. "Don't Blame Wal-Mart." 28 February 2005, Sec. A, p. 19.
- Schiller, B. R., and P. E. Crewson. "Entrepreneurial Origins: A Longitudinal Inquiry." *Economic Inquiry*, 35, 1997, 523–31.
- Schumpeter, J. A. *The Theory of Economic Development*. Cambridge, MA: Harvard University Press, 1934.
- Stone, K. E. "Impact of Wal-Mart Stores and Other Mass Merchandisers in Iowa, 1983–1993." *Economic Development Review*, 13, 1995, 60–70.
- . "The Status of Retail Trade in Iowa's Small Towns After 10 Years of Wal-Mart Stores." Iowa State University Working Paper, 1997.
- Stone, K. E., G. Artz, and A. Myles. "The Economic Impact of Wal-Mart Supercenters on Existing Businesses in Mississippi." Mississippi State, MS: Mississippi State University Extension Service, 2002.
- Wal-Mart Watch*. "Grand Opening: With a New Store Opening Nearly Every Day, What Is Wal-Mart's Impact on America's Small Businesses?" Wal-Mart Watch: Low Prices at What Cost? Wal-Mart Watch Annual Report, Center for Community and Corporate Ethics, 2005.
- Weingast, B. R., K. A. Shepsle, and C. Johnsen. "The Political Economy of Benefits and Costs: A Neoclassical Approach to Distributive Politics." *Journal of Political Economy*, 89, 1981, 642–64.
- Yandle, B. "Bootleggers and Baptists: The Education of a Regulatory Economist." *AEI Journal on Government and Society*, May, 1983, 12–16.