

Does Wal-Mart reduce social capital?

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Abstract Social capital has attracted increasing attention in recent years. We use county-level and individual survey data to study how Wal-Mart affects social capital. Estimates using several proxies for social capital—such as club membership, religious activity, time with friends, and other measures—do not support the thesis that “Wal-Mart destroys communities” by reducing social capital. We measure exposure to Wal-Mart two ways: Wal-Marts per 10,000 residents and Wal-Marts per 10,000 residents aggregated over the years since 1979 to capture a more cumulative “Wal-Mart Effect.” We find that the coefficients on Wal-Mart’s presence are statistically insignificant in most specifications.

Keywords Wal-Mart · Social capital · Community · Retail

JEL Classification A10 · A13 · D00 · Z1

1 Introduction

Does Wal-Mart destroy communities? County-level measures and data from individual surveys suggest not. While Wal-Mart’s “always low prices” have reduced the cost of living, some of the company’s critics argue that Wal-Mart kills small businesses, reduces wages, and reduces social connectedness. Goetz and Rupasingha (2006) argue that Wal-Mart reduces social capital, but by applying their data, data on social capital collected by Putnam

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(2000), and a variety of empirical approaches, we are unable to conclude that Wal-Mart leads to a robust decline in social capital.

Theoretically, Wal-Mart's effect on social capital is ambiguous, as Wal-Mart could increase or decrease social capital in several ways. First, Wal-Mart's low prices may cause people to substitute away from social capital-producing activities and toward material consumption. Second, Wal-Mart may displace local merchants with a stake in the communities they serve. Conversely, Wal-Mart's entry may make social capital-producing goods more affordable. We consider seventeen measures of social capital from multiple data sources and, for most measures, are unable to conclude that Wal-Mart affects social capital in either direction.

We estimate several models. First, we re-estimate Goetz and Rupasingha's model with slightly different specifications and data. Second, we report county-level estimations with distance from Bentonville, Arkansas as an instrument for Wal-Mart location.¹ Third, we report county-level estimates using state fixed effects. Finally, we report both fixed effects and instrumental variable estimates of Wal-Mart's effect on individual-level social capital indicators using data collected by Putnam (2000). We are unable to find a systematic negative relationship between Wal-Mart and social capital.

2 Social capital and “Every Day Low Prices”

The analysis of social capital and the analysis of Wal-Mart have produced large and growing bodies of literature. We survey here some of the contributions to the social capital literature as well as studies of Wal-Mart's economic, political, and social impact.

2.1 Social capital

We consider several perspectives on social capital. Coleman (1988, p. 598) defines social capital in terms of networks of relationships, taking an approach whereby “(s)ocial capital is defined by its function”:

It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors—whether persons or corporate actors—within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible.

Putnam (2000, pp. 18–19) treats social capital as an input:²

By analogy with notions of physical capital and human capital—tools and training that enhance individual productivity—the core idea of social capital theory is that social networks have value. Just as a screwdriver (physical capital) or a college education (human capital) can increase productivity (both individual and collective), so too social contacts affect the productivity of individuals and groups.

Whereas physical capital refers to physical objects and human capital refers to properties of individuals, social capital refers to connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them.

¹The use of distance from Bentonville as an instrument for Wal-Mart location has been debated by Neumark et al. (2005) and Basker (2007b).

²Quote drawn from Carden (2006).

Finally, Fukuyama (1999, p. 6, quoted in Durlauf 2002b, p. F460) defines social capital as “an instantiated set of informal values or norms shared among members of a group that permits them to cooperate with one another.” Trust follows: “(i)f members of the group come to expect that others will behave reliably and honestly, then they will come to *trust* one another” (Fukuyama 1999, p. 6).

Coleman, Putnam, and Fukuyama suggest that relationships themselves are factors of production, just like machines and education. People invest in social capital. Searches to find the “right school,” the “right neighborhood,” and the “right church” are driven in part by the access that they provide to social capital networks.³

Social capital consists of the relationships that reduce transaction costs because strong communities make it easier to specify and enforce contracts (North 1981; Bowles and Gintis 2002). Quoting Fukuyama again (1999, p. 6, quoted in Durlauf 2002b, p. F460), “(t)rust acts like a lubricant that makes any group or organization run more efficiently.” Social capital consists in part of the networks across which information moves. This translates into lower contracting costs and lower risk. For the entrepreneur, social capital eases trade and allows investment with greater certainty. For the household (and the consumer), social capital also is a type of insurance: people with strong social networks will be more likely to have friends to whom they can turn in times of emergency or crisis.

Social capital takes several forms. The first is the personal relationship: time with friends, time with family, and time devoted to building and strengthening these bonds. The second kind of social capital is political/civic engagement. This consists of involvement in the institutions of civil or political society, including attitudes about voting, whether it is acceptable to cheat on one’s taxes, and similar considerations.

Another kind of social capital manifests itself in activities expressing social responsibility.⁴ This often involves participation in an organization that acts as an intermediary between the social entrepreneur and the object of her benevolence. Social capital also consists of activity in the community more broadly. In the same way communities enforce rules and norms, “norms of reciprocity” strengthen communities.⁵

Wal-Mart and other Big Box retailers have been criticized because of their potential impact on the surrounding community. Their entry leads to lower prices, but these lower prices may leave in their wake a shattered, shuttered Main Street. We now survey the literature on Wal-Mart.

2.2 Wal-Mart

Wal-Mart’s economic successes have turned it into a social force and a political football. Studies of Wal-Mart’s impact on communities have focused primarily on how the company affects wages, employment, and prices.⁶ The company claims to create hundreds of thousands of jobs. Evidence suggests a modest effect: Basker (2005a, p. 174) finds that Wal-Mart

³Levitt and Dubner (2005) summarize recent findings suggesting that a child’s peers are an important determinant of that child’s future success.

⁴See Putnam (2000) for further discussion.

⁵See North (1981, 1990, 2005) for a comprehensive discussion of transaction costs and formal enforcement mechanisms in the context of his broader theory of institutions. Bowles and Gintis (1999, p. F425) refer to “willingness to engage in the costly punishment of shirkers even when there is no reasonable expectation of being personally repaid” as “strong reciprocity.”

⁶See Neumark et al. (2005, pp. 3–9) for a relatively comprehensive review of the literature on Wal-Mart and employment. Basker (2007a, 2007b) offers extensive treatments of the findings of Basker (2005a) and Neumark et al. (2005).

leads to “a long-run statistically significant net gain of 50 jobs” when it enters a county, but while retail employment may increase, “wholesale employment declines by approximately 20 jobs due to Wal-Mart’s vertical integration.”⁷ In summary, Basker (2005a, p. 181) finds that “Wal-Mart entry has a small positive effect on retail employment at the county level while reducing the number of small retail establishments in the county.” In response to the claim that Wal-Mart destroys small business, Dean and Sobel (2008) and Sobel and Dean (2008) fail to find a statistically significant effect of Wal-Mart’s presence on small business employment.

Neumark et al. (2005) exploit variation in distance from Benton County, Arkansas to predict the timing and location of Wal-Mart entry; they estimate that Wal-Mart entry may actually “reduce retail employment by about 2.7 percent, implying that each Wal-mart employee replaces about 1.4 employees in the rest of the retail sector” (p. 34). Their findings are criticized by Basker (2007b), who argues that while the use of “distance from Benton County” as an instrument is “intuitively appealing,” it is an invalid instrument in this context “because it is correlated with other spatial patterns” explaining trends in employment and earnings. Therefore, Basker (2007b, p. 2) argues that the estimates in Basker (2005a) are more reliable and informative.

Prices are another important aspect of what Fishman (2006) calls *The Wal-Mart Effect*. Basker (2005b) finds that price reductions attributable to Wal-Mart entry “generally range from 1.5–3% in the short run to four times as much in the long run.” Hausman and Leibtag (2004, 2005) argue that the opportunity to shop at Wal-Mart should itself be classified as a “new good” by the Bureau of Labor Statistics in their calculation of the Consumer Price Index. They report that Wal-Mart’s impact has been “substantial, both in terms of food expenditure and in terms of overall consumer expenditure.” Perhaps most importantly, “low income households benefit the most” (Hausman and Leibtag 2005).

Critics of the company argue that “always low prices” are supported by “always low wages.” Wal-Mart also has come under fire from critics claiming that the company is supported in part by public subsidies for health care and public services, and Goetz and Swaminathan (2006) find that counties with larger exposure to Wal-Mart had “greater increases (or smaller decreases) in family-poverty rates during the 1990s’ economic boom period.” More recently, Goetz and Rupasingha (2006) have argued that Wal-Mart reduces social capital.

2.3 Social capital and Wal-Mart

Social capital does not show up in GDP figures. Even if Wal-Mart increases real incomes, it may reduce social capital as people feel that their labor has been “commodified.” As Fishman (2006) argues, the novelty of Wal-Mart prices and selection wears off rapidly. The additional happiness that people get from shopping at Wal-Mart may be short-lived and the long-run costs in the form of weaker communities may persist (Fishman 2006).

Wal-Mart could reduce social capital in several ways. First, Wal-Mart might be a symptom of forces speeding the pace of life, leaving fewer resources for social capital building.

⁷http://www.WalMartfacts.com/FactSheets/8292006_Economic_Benefits.pdf is a “Fact Sheet” on economic benefits in which the company claims it “has created over 240,000 jobs over the last three years alone.” Undated Fact Sheet, accessed online December 27, 2006. Basker (2005a, p. 180) defines a “small” establishment as one “with fewer than 20 employees.” “Medium” establishments (“20–99 employees”) also exhibit a small decrease after Wal-Mart’s entry (Basker 2005a, p. 180). Basker’s estimate of Wal-Mart’s effect on wholesale employment is described as “marginally significant (p -value 0.0682)” (Basker 2005a, p. 180). Stone (1997) points out that Wal-Mart entry appears to draw business from surrounding towns and cities that do not have Wal-Marts.

Second, Wal-Mart leads to dislocation and relocation of production, as “that ugly box on the edge of town” siphons business away from Main Street.⁸ If downtown shopping creates interconnectedness, then we may expect to see reductions in social capital when Wal-Mart moves to town.

Wal-Mart may also increase social capital. First, the company builds social capital directly through community programs.⁹ Second, Wal-Mart may reduce the time cost of shopping, leaving more time for social-capital producing activities. Finally, the income effect for social capital might be large enough to cancel out the substitution effect even as material consumption gets cheaper. In other words, we substitute away from social capital and toward material consumption after Wal-Mart comes to town and makes material consumption cheaper; however, “Always Low Prices” leave us with more total resources to devote to consumption of both social capital and material goods.

Consider a consumer who spends his money on bowling, which builds social capital, and baubles, which do not. Wal-Mart’s entry reduces the price of baubles. If the income effect for bowling is relatively small, we may see a net reduction in social capital as a result of Wal-Mart’s entry. However, if there is a relatively strong income effect for bowling, Wal-Mart might not reduce social capital. The effect is theoretically ambiguous, so we turn to the data.

3 Data

We use two data sources to test the impact of Wal-Mart on social capital. First, we utilize cross-sectional county-level data obtained from the 1990 census matched with social capital measures from 1996, 1997, and 2000, obtained from the Northeast Regional Center for Rural Development. Next, we turn to individual-level analysis with the DDB Needham Life Style Data utilized by Putnam (2000).

We then match these datasets with information on the location of all Wal-Marts in the United States as well as their years of entry (and exit, if they have closed) from the website of Emek Basker at the University of Missouri.¹⁰ Since a smaller company might have less influence, we limit our analysis to Wal-Mart’s presence since 1979, when the company reached \$1 billion in sales.¹¹ We report the Wal-Mart summary statistics in the first three rows of Tables 1 and 2. Half of the counties in 1996, 1997, and 2000 had at least one Wal-Mart, with the average being 0.15 Wal-Marts per 10,000 residents. Table 2 indicates that 48% of the DDB survey respondents lived in Wal-Mart counties. The average county for these individuals contained 0.06 Wal-Marts per 10,000 residents.

⁸This phrase is from Russell Roberts, “In Praise of That Ugly Box on the Edge of Town.” *Saint Louis Post-Dispatch*, April 14, 2002. Available online: <http://www.invisibleheart.com/Iheart/PolicyUglybox.html>. Last accessed February 15, 2007.

⁹For example, www.WalMartFoundation.org claims that “(i)n 2004, the Wal-Mart and Sam’s Club foundation matched \$61 million in grants” for community organizations. Source: http://www.walmartfoundation.org/wmstore/goodworks/scripts/WhatWeFund.jsp?BV_SessionID=@@@@1448639246.1169937274@@@&BV_EngineID=ccciaddimidhfgecfkfcjkjgoodglh.0&oid=-10267&coid=-10267. Accessed January 27, 2007.

¹⁰<http://economics.missouri.edu/~baskere/data>. Last accessed February 15, 2007.

¹¹“Wal-Mart Facts,” 2006. Available <http://www.WalMartfacts.com>. Last accessed February 6, 2007.

Table 1 Summary statistics for variables used in county-level regressions

Variable name	Description	Mean (Std. Dev.)
Wal-Mart	Binary variable equal to 1 if the respondent's county of residence has at least one Wal-Mart and 0 otherwise	0.505 (0.500)
Number of Wal-Marts per 10,000	Number of Wal-Marts in the respondent's county of residence per 10,000 residents	0.145 (0.211)
Number of Wal-Marts per 10,000*Years	The sum of the per-capita number of Wal-Marts in the respondent's county of residence over all years since 1979	1.602 (2.884)
Associations	Number of clubs or associations in the respondent's county of residence in 1997 per 10,000 residents	14.397 (6.667)
Voter turnout	100 times the number of votes cast for president in 1996 in the respondent's county of residence divided by total population over age 18	55.001 (9.668)
Non-profits	Number of tax-exempt non-profit organizations in 1997 in the respondent's county of residence per 10,000 residents	3.893 (3.194)
Census participation	2000 census mail response rate in the respondent's county of residence	62.451 (8.851)
Social capital index	Goetz and Rupasingha's (2006) index of county social capital, which comprises the previous four variables	0.004 (1.293)
Interstate	Binary variable equal to 1 if an interstate on and off ramp is located in county, 0 otherwise	0.427 (0.495)
Pull	County retail pull factor, calculated using 1997 retail data and 2000 population data	0.860 (0.421)
Earnings per job	Average earnings per job	16,115.18 (3,725.67)
Property tax	Average amount of property taxes paid per capita, 1992 values	560.17 (441.54)
Population density	Total population of county divided by geographical area in square miles	243.950 (1,673.317)
Commute	Average commuting time of workers	20.809 (5.520)
Percent 3 cars	Percentage of households owning 3 or more cars or other automobiles	0.062 (0.027)
Percent female-headed	Percent of households that are female headed	0.251 (0.048)
Percent 12 years educ.	Percent of workforce with 12 or more years of education	0.669 (0.079)
Percent white	Number of white people in the county divided by total population	0.848 (0.162)

Table 1 (Continued)

Variable name	Description	Mean (Std. Dev.)
Percent foreign	Number of foreign-born people living in the county divided by total population	0.034 (0.048)
Per capita income	Average income per capita in county	11,123.48 (2,681.33)
Female LFP rate	Percent of women within the workforce	0.584 (0.079)
Percent rural	Number of people in the county who live in rural areas divided by the total number of people	0.609 (0.304)
Percent owner-occupied	Percent of houses occupied by the owner of the home	0.726 (0.078)
Average age	Mean age in years in the county	36.716 (2.830)
Percent more than 1	Percent of households that contain more than one person	0.763 (0.038)
Percent manufacturing	Percent of the workforce employed in manufacturing	0.198 (0.053)
Percent agricultural	Percent of the workforce employed in agriculture	0.138 (0.064)
Percent professional	Percent of the workforce employed in professional careers (Census definition)	0.080 (0.080)
Distance from Bentonville	The center of the county's distance from Bentonville, Arkansas, in hundreds of miles	6.481 (4.764)

Note: All non-Wal-Mart variables are from the 1990 census unless otherwise indicated

Table 1 also reports the summary statistics for other variables used in the county-level regressions based on a sample size of 3,036 counties.¹² We obtained the exact measures of number of associations (1997), number of not-for-profit organizations (1997), and census participation rate (2000)—defined as the number of respondents to the census divided by the county's estimated population—used by Goetz and Rupasingha (2006) from the website of the Northeast Regional Center for Rural Development.¹³ Goetz and Rupasingha's 2000 voter turnout data were not available, so we used 1996 data instead. Their measure of a county's prevalence of religion was also not available. We also used their social capi-

¹²Wal-Mart summary statistics are from 1996, 1997, and 2000, tripling the sample size. All other variables are available for one year only.

¹³<http://www.nercrd.psu.edu/>. We thank Goetz and Rupasingha for graciously making these variables publicly available. "Associations" represents the sum of bowling centers, civic and social associations, physical fitness facilities, public golf courses, religious organizations, sports clubs, political organizations, professional organizations, business associations, labor organizations, and other membership organizations (Rupasingha et al. 2006, p. 89).

Table 2 Summary statistics for variables used in DDB regressions

Variable name	Description	Mean (Std. Dev.)
Wal-Mart	Binary variable equal to 1 if the respondent's county of residence has at least one Wal-Mart and 0 otherwise	0.477 (0.499)
Number of Wal-Marts per 10,000	Number of Wal-Marts in the respondent's county of residence per 10,000 residents	0.060 (0.113)
Number of Wal-Marts per 10,000*Years	The sum of the per-capita number of Wal-Marts in the respondent's county of residence over all years since 1979	0.457 (1.131)
Sports	Number of times the respondent played volleyball, softball, tennis, or golf or went bowling in the preceding 12 months	9.055 (17.956)
Cards	Number of times the respondent played cards in the preceding 12 months	10.323 (14.526)
Religious attendance	Number of times the respondent attended church or another place of worship in the preceding 12 months	21.528 (21.808)
Club meetings	Number of times the respondent went to a club meeting in the preceding 12 months	6.561 (11.799)
Dinner parties	Number of times the respondent gave or attended a dinner party in the preceding 12 months	4.906 (6.785)
Entertaining at home	Number of times the respondent entertained people in her home in the preceding 12 months	10.585 (11.811)
Volunteer	Number of times the respondent did volunteer work in the preceding 12 months	7.287 (13.838)
Family meals	Average of the respondent's level of agreement with the following two statements: (1) Our whole family usually eats dinner together, and (2) We usually have a large family breakfast on weekends; responses ranged from 0 (definitely disagree) to 5 (definitely agree)	2.745 (1.333)
Honest	Level of agreement with the statement "Most people are honest;" responses ranged from 0 (definitely disagree) to 5 (definitely agree)	2.726 (1.282)
Visit friends	Level of agreement with the statement "I spend a lot of time visiting friends;" responses ranged from 0 (definitely disagree) to 5 (definitely agree)	2.024 (1.330)
News	Binary variable equal to 1 if the respondent reads most or all issues of a local newspaper and 0 otherwise	0.701 (0.458)
Same town	Level of agreement with the statement "I would be content to live in the same town for the rest of my life;" responses ranged from 0 (definitely disagree) to 5 (definitely agree)	3.315 (1.642)
Population density 1	Respondent lives in a non-MSA area	0.227 (0.419)

Table 2 (Continued)

Variable name	Description	Mean (Std. Dev.)
Population density 2	Binary variable equal to 1 if the respondent lives in the central city of a metropolitan area with population 50,000–499,999 and 0 otherwise	0.092 (0.288)
Population density 3	Binary variable equal to 1 if the respondent lives in the suburbs of a metropolitan area with population 50,000–499,999 and 0 otherwise	0.102 (0.302)
Population density 4	Binary variable equal to 1 if the respondent lives in the central city of a metropolitan area with population 500,000–2,000,000 and 0 otherwise	0.122 (0.327)
Population density 5	Binary variable equal to 1 if the respondent lives in the suburbs of a metropolitan area with population 500,000–2,000,000 and 0 otherwise	0.170 (0.375)
Population density 6	Binary variable equal to 1 if the respondent lives in the central city of a metropolitan area with population greater than 2,000,000 and 0 otherwise	0.095 (0.295)
Population density 7	Binary variable equal to 1 if the respondent lives in the suburbs of a metropolitan area with population greater than 2,000,000 and 0 otherwise	0.193 (0.394)
Income 1	Total annual household income is less than \$20,000	0.271 (0.444)
Income 2	Total annual household income is between \$20,000 and \$40,000	0.348 (0.476)
Income 3	Total annual household income is between \$40,000 and \$60,000	0.212 (0.409)
Income 4	Total annual household income is between \$60,000 and \$80,000	0.098 (0.297)
Income 5	Total annual household income is between \$80,000 and \$100,000	0.038 (0.192)
Income 6	Total annual household income is greater than \$100,000	0.032 (0.176)
Married	Binary variable equal to 1 if the respondent is married and 0 otherwise	0.722 (0.448)
Number of children	Number of children under age 18 living with the respondent	0.501 (0.500)
Self-confidence	Level of agreement with the statement “I have more self-confidence than most of my friends;” responses ranged from 1 (definitely disagree) to 6 (definitely agree)	4.139 (1.228)

Table 2 (Continued)

Variable name	Description	Mean (Std. Dev.)
Home	Level of agreement with the statement “I would rather spend a quiet evening at home than go out to a party;” responses ranged from 1 (definitely disagree) to 6 (definitely agree)	4.485 (1.460)
Age	Respondent’s age	46.780 (16.042)
Female	Binary variable equal to 1 if the respondent is female and 0 otherwise	0.554 (0.497)
Education 1	Respondent did not graduate from high school	0.101 (0.302)
Education 2	Respondent graduated from high school but did not attend college	0.354 (0.478)
Education 3	Respondent attended college but did not graduate	0.285 (0.451)
Education 4	Respondent graduated college but did not take any post-graduate classes	0.131 (0.337)
Education 5	Respondent took post-graduate classes	0.128 (0.334)
Race: non-white	Binary variable equal to 1 if the respondent is not white and 0 otherwise	0.114 (0.318)
Distance from Bentonville	The center of the respondent’s county of residence’s distance from Bentonville, Arkansas	9.104 (5.458)

tal index, which represents a combination of associations, non-profits, census participation, and voter turnout that is normalized to a mean of zero. The average county had 14.4 associations and 3.9 non-profit organizations per 10,000 residents, a 55% voter turnout rate, and a 62% census participation rate. Following Goetz and Rupasingha, we take our control variables and the majority of our instruments from the 1990 census. We control for the percentage of the county’s population that graduated from at least high school, percentage white, percentage foreign-born, per capita income, female labor force participation rate, percentage rural, percentage of homes which are owner-occupied, average age, percentage of households with more than one person, and the percentages of the workforce employed in manufacturing, agriculture, and professional careers. The instruments drawn from the 1990 census are earnings per job, population density, commuter times, percentage of households with three or more cars, and percentage of female-headed households.

Additional sources were needed to construct three of the instruments. Whether or not a county contained an interstate highway on-and-off ramp was determined using the Microsoft MapPoint (2004) mapping software. To construct each county’s retail pull factor (a county’s ability to draw shoppers from surrounding areas, measured as a county’s per capita sales divided by the state’s per capita sales and adjusted for differences in income), state and retail sales data were drawn from the 1997 Census of Retail Trade, and population data

were taken from the 2000 Census of Population and Housing.¹⁴ Property tax payments were calculated by dividing total property tax payments from the 1992 Census of Government by the county's total population in the 1990 census. Last, note that we use Wal-Mart data for the year of the dependent variable (1996, 1997, or 2000).

We supplement our county-level analysis with individual-level data compiled by Putnam for his 2000 study and generously made available online.¹⁵ Putnam draws data from a wide array of sources to present a compelling account of the decline in social capital during the late twentieth century.¹⁶ Drawing on civic records, tax documents, and government surveys, Putnam assembles a complex menagerie of social indicators suggesting that “American Community” has been on the downswing for several decades. He notes that the measures available are incomplete; however, they provide us with a great deal of insight. Furthermore, they can be supplemented by systematically collected survey data which “yield a kind of social time-lapse photography” and “can illuminate the ‘dark matter’ of community life” (Putnam 2000, p. 416). While the data collected by the General Social Survey and the DDB Needham Life Style Survey reflect differing sampling methodologies, the two provide highly comparable pictures of social trends (Putnam 2000, p. 422).¹⁷

Our individual-level regressions use the DDB data, which consists of repeated cross-sections for every year from 1975 to 1998. The DDB surveys asked respondents a total of 389 questions, most of which were the same in every year. We restrict our analysis to the years 1985 and later to allow sufficient time for Wal-Mart entry to affect social capital.¹⁸ Table 2 reports summary statistics for variables used in DDB regressions. Our measures of social capital include the number of times in the preceding year the respondent played a “social” sport (softball, volleyball, tennis, golf, or bowling), played cards, attended a religious service, attended a club meeting, hosted or attended a dinner party, entertained guests

¹⁴Instructions on calculating retail pull factors can be found in a worksheet available online at http://www.cdtoolbox.net/economic_development/retail_worksheets.pdf, last accessed March 27, 2008.

¹⁵www.bowlingalone.com, accessed January 13, 2007.

¹⁶The discussion of Putnam's data is drawn from Putnam (2000, pp. 415–435). Putnam draws most of his evidence from the General Social Survey, the Roper Social and Political Trends data set, and the DDB Needham Life Style surveys. The Needham surveys only included married households until 1985. In addition, the Needham surveys were given to groups that “selected in” to a pool of potential survey respondents. Putnam (2000, p. 421) points out three problems with the surveys:

1. Because the initial recruitment is by mail, literacy in English is an essential requirement, and thus the bottom of the educational ladder is underrepresented, as are non-English speakers.
2. Effective response rates are much lower among racial minorities.
3. Adults under twenty-five are slightly underrepresented, probably because their mobility makes them harder to track.”

Regardless, the DDB data are comparable to GSS data, and the trends in the discrepancies between the DDB Needham data and alternative sources appear to remain relatively unchanged (Putnam 2000, pp. 422–423). In short, Putnam argues that even for all its imperfections the DDB Needham data provide a relatively reliable picture of social change. In comparing the DDB Needham data to the General Social Survey, Putnam reports that “the two surveys are virtually indistinguishable” (Putnam 2000, p. 422).

¹⁷Putnam compares the difficulties plaguing his program for the study of social change to the difficulties associated with measuring global warming. Citing Smith (1997), Putnam (2000, p. 416) notes that “(o)ne scholar . . . estimates that 80 percent of all community groups represent social ‘dark matter’—that is, without formal structure, without an address, without archives, without notice in newspapers, and thus invisible to conventional chroniclers.” He also cautions us (p. 416) to note that “if community life is, for whatever reason, becoming richer, but less formally organized, tracking membership figures alone would lead us to precisely the wrong conclusion.”

¹⁸Results are robust to the choice of starting year. Also note that the 1990 data does not county identifiers, and is therefore dropped from our sample.

at home, and did volunteer work.¹⁹ These variables capture the degree of social interaction experienced by the respondent, and should be higher in areas with more social capital. Additionally, engaging in volunteer work represents one's level of desire to help the community, which is likely a function of quality of local social networks. We also use the following ordinal categorical social capital measures: level of belief that most people are honest, frequency of visiting friends, frequency of reading the newspaper, and level of affection for one's town (see Table 2 for more detailed descriptions). Our control variables include population density, income, marital status, number of children, self-confidence, preference for evenings at home as opposed to parties, age, gender, education, and race. After eliminating observations with missing values, our sample size for regressions using DDB data varies from 26,762 to 37,506.

Table 3 displays the summary statistics for all 17 of our social capital proxies both for counties with at least one Wal-Mart and counties with no Wal-Marts. Social capital is higher in non-Wal-Mart counties using 12 of the 17 measures. When the sample is restricted to rural areas or small towns ("rural"), where people generally assume Wal-Mart's destruction of communities to be the strongest, social capital becomes higher in non-Wal-Mart counties using 13 of the 17 measures. However, this correlation may be due to the ability of high social capital areas to mobilize and prevent Wal-Mart entry, or to a number of factors that could affect both Wal-Mart prevalence and social capital, such as income or population density. In order to reach a more definitive conclusion, we next turn to regression analysis.

4 County-level estimation

We begin by estimating the effect of Wal-Mart entry on county-level measures of social capital. We first adapt the approach of Goetz and Rupasingha (2006), and then consider several variations of their approach to test the robustness of their findings.

4.1 Goetz and Rupasingha's approach

Goetz and Rupasingha (2006) found a negative association between Wal-Mart presence and social capital using a variety of county-level social capital proxies: number of clubs or associations per 10,000 inhabitants in 1997, number of tax-exempt non-profit organizations per 10,000 inhabitants in 1997, the participation rate for the 2000 census, voter turnout in 2000, a measure of church attendance, and an index of a county's social capital developed in Rupasingha et al. (2006). They estimate six models in which these measures of social capital are taken to be a function of the number of Wal-Marts per 10,000 residents in 1987, growth in the total number of Wal-Marts in each county between 1987 and 1998, and an array of control variables. In three of their six regressions, the number of Wal-Marts per capita in 1987 reduced social capital. In five of the six, an increase in Wal-Marts from 1987 to 1998 led to a decrease in social capital. Goetz and Rupasingha therefore concluded that Wal-Mart entry and social capital are inversely related.

Goetz and Rupasingha acknowledge possible reverse causality, as high social capital areas may be able to mobilize to prevent Wal-Mart entry. Alternatively, Wal-Mart may prefer

¹⁹The survey questions grouped responses into the following categories: none, 1–4 times, 5–8 times, 9–11 times, 12–24 times, 25–51 times, and 52+ times. We constructed continuous variables by assigning them the mean of the chosen category. We assigned a value of 52 if "52+ times" was chosen; for all variables, very few people were in this category.

Table 3 Comparison of social capital in Wal-Mart and non-Wal-Mart counties

Variable name	Wal-Mart counties	Non-Wal-Mart counties	Rural Wal-Mart counties	Rural non-Wal-Mart counties
Associations	13.440 (4.508)	15.335 (8.146)	13.917 (4.374)	15.649 (8.547)
Voter turnout	51.904 (7.950)	58.037 (10.227)	51.624 (7.451)	58.613 (10.519)
Non-profits	4.052 (2.644)	3.736 (3.648)	3.124 (2.200)	3.325 (3.312)
Census participation	64.003 (7.553)	60.652 (9.851)	61.600 (7.423)	60.172 (9.930)
Social capital index	-0.161 (1.080)	0.167 (1.457)	-0.332 (1.030)	0.141 (1.486)
Sports	8.290 (17.087)	9.623 (18.552)	7.792 (16.635)	8.387 (17.355)
Cards	9.763 (14.131)	10.897 (14.885)	10.620 (14.767)	12.191 (15.739)
Religious attendance	21.877 (21.828)	21.323 (21.793)	24.121 (21.865)	23.358 (21.855)
Club meetings	6.085 (11.401)	6.991 (12.136)	6.190 (11.546)	7.297 (12.384)
Dinner parties	4.443 (6.380)	5.276 (7.063)	3.834 (6.029)	4.305 (6.209)
Entertaining at home	9.824 (11.240)	11.263 (12.246)	9.823 (11.467)	10.853 (12.364)
Volunteer	7.290 (13.811)	7.312 (13.863)	6.768 (13.070)	7.491 (13.710)
Family meals	2.687 (1.326)	2.782 (1.336)	2.757 (1.329)	2.892 (1.298)
Honest	2.674 (1.287)	2.760 (1.280)	2.632 (1.307)	2.764 (1.287)
Visit friends	2.012 (1.327)	2.030 (1.329)	2.038 (1.371)	2.111 (1.360)
News	0.740 (0.439)	0.659 (0.474)	0.711 (0.453)	0.660 (0.474)
Same town	3.344 (1.619)	3.295 (1.657)	3.561 (1.613)	3.558 (1.600)

Notes: Means are on the first line, with standard deviations in parentheses

to locate in areas with high levels of social capital. Therefore, they instrument for the change in number of stores between 1987 and 1998. For their approach to produce a credible Wal-Mart effect, their instruments must affect the number of Wal-Mart stores but not influence social capital directly. All of Goetz and Rupasingha's instruments may violate at least one of the two conditions for validity.

Their first instrument is whether or not an interstate highway runs through the county. An interstate may influence the rate at which people move into or out of the county, and shifting populations may lower community cohesiveness. Additionally, counties with interstates may have larger social networks than other counties due to the relative ease of travel. Their second instrument is the retail pull factor, or the degree to which residents from other areas travel to a county to shop there. Areas with high social capital have establishments such as bars or coffee shops that contribute to this pull. On the other hand, high social capital areas may have social networks that can prevent commercial development, meaning that such areas would have a relatively small pull. Another instrument is earnings per job. This is essentially an income measure, and income affects social capital (Glaeser et al. 2002, p. F449), as does population density, their next instrument.²⁰ Average commuting time to work also is potentially endogenous since people in high social capital areas could have a greater reluctance to leave the community to work than those in low social capital areas. The percentage of households with more than three vehicles, another instrument, is determined largely by income. The other two instruments, property tax per capita and percentage of households headed by females, are not statistically significant in their first-stage regression.

This analysis does not prove that Goetz and Rupasingha's estimates are inconsistent, but merely suggests that we should evaluate the robustness of their findings. We consider alternative instrumental variable and fixed effects estimations, as well as 17 social capital measures. In general, we find that Goetz and Rupasingha's results are not robust to different specifications. Wal-Mart appears to be associated with an increase in some measures of social capital and a decrease in others, but has an indeterminate effect on most.

The availability of most of Goetz and Rupasingha's measures of social capital allows us to re-examine their results. Because of data and methodological differences, however, our estimations constitute an adaptation instead of a precise replication.²¹

Following their method, we estimate the following two-stage least squares model:

$$\Delta Wal\hat{M}art98 = \alpha_1 + \alpha_2 WalMartPop87 + \alpha_3 Instruments + \alpha_4 Controls + \eta, \quad (1)$$

$$SocialCapital = \beta_1 + \beta_2 WalMartPop87 + \beta_3 \Delta Wal\hat{M}art98 + \beta_4 Controls + \varepsilon \quad (2)$$

where $WalMartPop87$ is the number of Wal-Mart stores per 10,000 residents in the county in 1987; $\Delta Wal\hat{M}art98$ is the change in the number of Wal-Mart stores (not per capita) from 1987 to 1998; $Instruments$ contains a set of variables including whether or not the county has an interstate highway exit, the retail pull factor, earnings per job, property taxes per capita, population density, average commuting time, percentage of households with three or more cars, and percentage of households headed by a woman; $Controls$ is a set of variables

²⁰There is some evidence for the relationship between income and social capital in Appendices A1 and A2. Also, Brueckner and Laregy (2006) suggest that high population density is correlated with lower social capital.

²¹First, we use different data on Wal-Mart location, and some of our controls may come from different sources since they do not disclose where they obtained these variables. Additionally, Goetz and Rupasingha use 1996 voter turnout data in their study, but post 2000 data on the website. Also, they use predicted values of income and education obtained using a set of auxiliary equations, while we use actual values.

Table 4 Coefficient estimates for Wal-Mart variables; Replications

	Goetz and Rupasingha		Replication		Alternative
	Wal-Marts per 10,000; 1987	Change in Wal-Marts; 1987–98	Wal-Marts per 10,000; 1987	Change in Wal-Marts; 1987–98	Wal-Marts per 10,000; year of dependent variable
Associations	0.083	−0.875***	−4.060 (1.004)***	−3.075 (1.071)*** [0.000]***	13.39 (4.10)*** [0.01]***
Voter turnout rate	−2.313***	−0.641**	−3.937 (1.212)***	−6.094 (1.360)*** [0.000]***	−11.07 (3.33)*** [0.02]**
Non-profits	−1.058***	−0.527***	−0.799 (0.405)**	−1.769 (0.465)*** [0.000]***	6.86 (2.12)*** [0.01]***
Census participation	2.046***	0.080	2.325 (0.894)***	2.312 (1.065)** [0.000]***	−1.97 (3.66) [0.03]**
Social capital index	−0.130**	−0.198***	−0.606 (0.162)***	−0.779 (0.178)*** [0.000]***	1.49 (0.73)** [0.01]**

Notes: Robust standard errors are in parentheses. *p*-values from the overidentification tests are in brackets. ***Indicates statistically significant at the 1% level; **5% level; *10% level. All regressions include the control variables discussed in the paper. All standard errors are heteroskedasticity-robust

including percentage of residents with at least a high school degree, percentage white, percentage foreign-born, per capita income, female labor force participation rate, percentage living in rural areas, percentage of housing that is owner-occupied, average age, percentage of households with more than one person, percentage of the population working in manufacturing, percent in agriculture, and percentage in professional positions drawn from the 1990 census.

SocialCapital is one of five measures of social capital: number of associations, voter turnout, number of non-profit organizations, census participation, and the social capital index. Goetz and Rupasingha have data only on Wal-Mart locations in 1987 and 1998, so they elect to divide Wal-Mart's presence into two variables. However, they only instrument for the change in the number of stores between 1987 and 1998.

We report the results from Goetz and Rupasingha's paper in the first two columns of Table 4 (without standard errors, which they did not report), and the results from our estimations in the third and fourth columns.

These estimates support Goetz and Rupasingha's finding that Wal-Mart reduces all measures of social capital except for census participation. Because of the data and methodological differences, our magnitudes are different; we actually find a stronger negative effect of Wal-Mart on social capital.

We employ the overidentification test suggested by Baum et al. (2003) to evaluate the validity of Goetz and Rupasingha's instruments in our replication.²² A rejection of the null hypothesis indicates that at least one of the instruments is correlated with the error term in the second stage. We report the *p*-values from the overidentification tests in brackets in the fourth column of Table 4. The test rejects the null hypothesis that the set of instruments is valid at the 0.1% level in all regressions.

We next make a slight change to the model to assess the robustness of these results. We use only one Wal-Mart variable—number of stores in the county per 10,000 residents in the year of the dependent variable—and instrument for it with the same set of instrumental variables. This change eliminates two unusual features of Goetz and Rupasingha's model: they instrument for only one of the two Wal-Mart variables, and they convert only one of the two Wal-Mart variables to per capita, meaning that the second is not adjusted for market size.²³

The last column of Table 4—labeled “alternative”—reports the results. Despite the fact that the general identification approach is the same, the results change considerably. Wal-Mart entry is now associated with a statistically significant increase in the number of associations, the number of non-profit organizations, and the overall social capital index, and a statistically significant decrease in the other two measures. In all regressions, the overidentification test rejects the null hypothesis that the set of instruments is valid at the 5% level. Because the results using Goetz and Rupasingha's methodology are sensitive to specification changes and their set of instruments consistently fails the overidentification test, we next turn to other identification approaches in an attempt to determine the effect of Wal-Mart on social capital.

4.2 Distance from Bentonville as an instrument

We first consider another instrumental variable approach found in the Wal-Mart literature. Neumark et al. (2005) and Dube et al. (2007) use distance from Bentonville, Arkansas—the location of Wal-Mart's headquarters—as an instrument for Wal-Mart presence in their studies of the effect of Wal-Mart on job creation and earnings, respectively.²⁴

With social capital, we are concerned that the distinct culture of the South may create stronger social networks and levels of local and national pride, biasing our estimate of the effect of Wal-Mart on social capital upwards. However, despite the fact that Bentonville is in the South, it is located in the northwest corner of Arkansas, less than 500 miles from the geographic center of the United States. Columbus, GA and Denver, CO are roughly equidistant from Bentonville, as are Shreveport, LA, and St. Louis, MO. Bentonville is also roughly equidistant from Knoxville, TN, and Madison, WI.²⁵ We therefore do not expect that a short distance from Bentonville is strongly correlated with southern culture. Nonetheless, we account for unobservable regional characteristics by including a set of seven regional fixed effects in both stages.²⁶

²²The overidentification test statistics are computed using the Stata command `ivreg2` by Baum et al. (2007).

²³In this and all subsequent county-level regressions, we cluster standard errors at the state level since states may have unique unobservable characteristics which cause the social capital levels in their counties to be correlated.

²⁴See Neumark et al. (2005) and Basker (2007b) for discussion.

²⁵We calculate distances using <http://www.mapquest.com>.

²⁶Using region classifications from the Library of Congress, we divide the United States into the northeast, south, midwest, west, and northwest. We further divide the south into three sub-regions using the classifica-

We allow for a non-linear relationship between distance from Bentonville and Wal-Mart presence by including both distance (in miles) and the square of distance. The inclusion of two instruments allows us to examine their validity by performing the overidentification test.²⁷ Our two-stage model becomes:

$$\widehat{WalMartPop} = \alpha_1 + \alpha_2 Distance + \alpha_3 Distance^2 + \alpha_4 Controls + \alpha_5 Region + \eta, \quad (3)$$

$$SocialCapital = \beta_1 + \beta_2 \widehat{WalMartPop} + \beta_3 Controls + \beta_4 Region + \varepsilon \quad (4)$$

where *WalMartPop* is the number of Wal-Marts per 10,000 residents in the county, *Distance* is the distance from Bentonville, and *Region* is the region fixed effect.

We also estimate this two-stage model using an alternative measure of Wal-Mart presence, defined by

$$LWalMartYrsPop = \ln(WalMartYrsPop + 1) \quad (5)$$

where *WalMartYrsPop* is the number of Wal-Marts multiplied by the number of years each Wal-Mart has been open per 10,000 inhabitants. This measure accounts for the length of time that Wal-Mart has been in a community, which is important since social capital may respond gradually to economic shocks, and the possibility that Wal-Mart's marginal impact on social capital may become smaller the longer it has been in a county. We add one to prevent the measure from being undefined in counties where a Wal-Mart has never entered.²⁸

We report the key results from the first-stage regressions in Table 5.

The first-stage regressions are the same when associations, non-profits, and the social capital index are the second-stage dependent variables because each of these regressions uses Wal-Mart presence in 1997. Since the voter turnout and census participation regressions use Wal-Mart presence from 1996 and 2000, respectively, their first-stage regressions are slightly different. The columns labeled (1) use *WalMartPop* as the first-stage dependent variable while those labeled (2) use *LWalMartYrsPop*. In all regressions, distance from Bentonville is negatively correlated with Wal-Mart presence and statistically significant at the 1% level, with *p*-values ranging from 0.004 to 0.009. Distance squared is positively correlated with Wal-Mart—indicating a diminishing marginal effect—and is significant at the 1% or 5% level in all regressions, with *p*-values ranging from 0.006 to 0.023. Excluding distance and distance squared reduces the R^2 by an average of 0.016 in the regressions using *WalMartPop* and 0.041 using *LWalMartYrsPop*. Testing the restriction that the coefficients for distance and distance squared are jointly equal to zero produces F-statistics ranging from 21.5 to 30.8, using *WalMartPop*, and 74.2 to 105.3, using *LWalMartYrsPop*. According to Staiger and Stock (1997), F-statistics of 10 or higher are acceptable, suggesting that our analysis does not suffer from the problem of weak instruments.

The first three columns of Table 6 report the coefficient estimates from the second stage, while the first three columns of Table 7 convert these estimates to percentage changes in

tions of the US Census Bureau: the south Atlantic states (Florida, Georgia, North Carolina, South Carolina, and Virginia), the east south central states (Alabama, Kentucky, Mississippi, and Tennessee), and the west south central states (Arkansas, Louisiana, Oklahoma, and Texas). Three states—Delaware, Maryland, and West Virginia—are classified in the south Atlantic region by the Census and the northeast by the Library of Congress; we place them in the northeast.

²⁷We acknowledge that the overidentification test may be less suggestive than if our instruments were distinct variables.

²⁸The signs of the coefficients in virtually all the regressions in this paper are the same using a linear measure instead of the natural log. However, the fit of the model is better in most regressions using the log.

Table 5 Key first-stage results; County-level regressions

	Associations, non-profits, social capital index		Voter turnout		Census participation	
	(1)	(2)	(1)	(2)	(1)	(2)
Distance	-0.024 (0.008)***	-0.131 (0.043)***	-0.024 (0.008)***	-0.132 (0.043)***	-0.021 (0.008)***	-0.131 (0.045)***
Distance squared	0.0009 (0.0003)***	0.0043 (0.0017)**	0.0009 (0.0003)***	0.0040 (0.0017)**	0.0008 (0.0003)**	0.0043 (0.0018)**
R ² including instruments	0.1544	0.2982	0.1583	0.3162	0.1357	0.2884
R ² excluding instruments	0.1375	0.2585	0.1411	0.2685	0.1232	0.2534
Number of observations	3,036	3,036	3,036	3,036	2,995	2,995
F-statistic	30.159	85.362	30.836	105.264	21.528	74.220

Notes: (1) Indicates that number of Wal-Marts per 10,000 residents is the dependent variable; (2) $\ln(\text{number of Wal-Mart years per 10,000})$ is the dependent variable Robust standard errors are in parentheses. ***Indicates statistically significant at the 1% level; **5% level; *10% level. All regressions include year fixed effects and the control variables discussed in the paper. Regressions include the control variables and year and region fixed effects

social capital that would result if two Wal-Marts entered a county (of population 500,000 and the mean level of social capital), which previously had no Wal-Marts and stayed for ten years.²⁹ We use *WalMartPop* as the variable of interest in column (1) and *LWalMartYrsPop* in column (2). Since Wal-Mart's effect on social capital may be strongest in rural areas or small towns, we also estimate models using *LWalMartYrsPop* and restricting the second-stage sample to these areas. We report these results in column (3).

Wal-Mart is associated with a decrease in associations using *WalMartPop* as the variable of interest but an increase using both specifications with *LWalMartYrsPop*. All three estimates are statistically insignificant, and the magnitudes are small as two Wal-Marts lead to less than a 1% change in the number of associations. Wal-Mart increases voter turnout in all three regressions, although again the estimates are small and statistically insignificant. The entry of two Wal-Marts reduces the number of non-profits by a sizeable 8–17%, and two of the three estimates are statistically significant. However, Wal-Mart entry increases census participation by 3–5%, and two of the three estimates are significant at the 10% level. The effect of Wal-Mart on the social capital index, which comprises the other four measures of social capital, is positive but small and insignificant.

Our set of instruments fails the overidentification test at the 10% level in all three specifications with the number of associations as the dependent variable, suggesting that those estimates should be interpreted with caution. However, the overidentification test does not reject the null hypothesis that our set of instruments is valid in any of the other 12 regressions, with *p*-values ranging from 0.3 to 0.9.

²⁹We do not report the percentage change in the social capital index since its mean is zero.

Table 6 Coefficient estimates for Wal-Mart variables; County-level regressions

Measure of social capital	Instrumental variables			State fixed effects		
	(1)	(2)	(3)	(1)	(2)	(3)
Associations	-2.78 (9.39) [0.06]*	0.15 (1.59) [0.07]*	0.30 (2.55) [0.01]***	2.07 (0.93)**	0.36 (0.26)	-0.02 (0.25)
Voter turnout	9.43 (14.44) [0.30]	1.10 (2.09) [0.27]	0.84 (2.77) [0.29]	-2.14 (0.59)***	-1.07 (0.27)***	-0.86 (0.29)***
Non-profits	-7.98 (2.79)*** [0.84]	-1.30 (0.48)*** [0.78]	-1.65 (0.91) [0.73]	0.57 (0.41)	0.08 (0.09)	0.03 (0.07)
Census participation	42.66 (25.25)* [0.53]	6.05 (3.36)* [0.25]	8.95 (6.83) [0.35]	-0.66 (0.57)	0.10 (0.20)	0.34 (0.22)
Social capital index	0.41 (1.98) [0.80]	0.08 (0.31) [0.89]	0.12 (0.46) [0.37]	0.15 (0.13)	-0.01 (0.03)	-0.03 (0.04)

Notes: (1) Indicates that number of Wal-Marts per 10,000 residents is the variable of interest; (2) ln(number of Wal-Mart years per 10,000) is the variable of interest; (3) ln(number of Wal-Mart years) is the variable of interest, and sample is restricted to rural areas. Robust standard errors are in parentheses. *p*-values from the overidentification tests are in brackets. *** Indicates statistically significant at the 1% level; **5% level; *10% level. All regressions include year fixed effects and the control variables discussed in the paper. Regressions in the Instrumental variables columns include region fixed effects

Table 7 Percentage change in social capital ten years after the entry of the county's first two Wal-Marts; County-level regressions

Measure of social capital	IV 2			State fixed effects		
	(1)	(2)	(3)	(1)	(2)	(3)
Associations	-0.8%	0.3%	0.7%	0.6%**	0.8%	-0.1%
Voter turnout	0.7%	0.7%	0.5%	-0.2%***	-0.7%***	-0.5%***
Non-profits	-8.2%***	-11.2%***	-17.0%*	0.6%	0.7%	0.3%
Census participation	2.7%*	3.3%*	5.0%	-0.0%	0.1%	0.2%

See notes for Table 6

4.3 State fixed effects

A limitation of the analysis in the preceding section is that, while the first-stage F-statistic indicates that our instruments are sufficiently strong, the IV estimates are still not precise enough to rule out the possibility that Wal-Mart reduces social capital. We therefore consider another—more efficient—estimator in this section: state fixed effects. Our regression

equation becomes

$$\text{SocialCapital} = \beta_1 + \beta_2 \text{WalMartPop} + \beta_3 \text{Controls} + \beta_4 \text{State} + \varepsilon \quad (6)$$

where *State* is the set of state effects.

By including state fixed effects, we remove any sources of bias from unobservable state-level characteristics that are correlated with the regressors. Since the cultural characteristics of counties in a state are likely to be similar, including state effects should provide more consistent estimates of the effect of Wal-Mart on social capital than OLS without state effects. The advantage of this approach is that, because of the large number of counties per state, our estimates should be considerably more precise than those obtained using instrumental variables. A limitation, however, is that state effects do not account for reverse causality or unobservable characteristics that vary between counties in a state.

The final three columns of Tables 6 and 7 display the results. Wal-Mart entry is associated with a statistically significant increase in the number of associations using *WalMartPop*, an insignificant increase using *LWalMartYrsPop*, and a slight decrease in rural areas. Wal-Mart leads to a statistically significant reduction in voter turnout in all three models, although the magnitudes are modest (0.2–0.7%). Wal-Mart increases the number of non-profits by a small and insignificant amount, and has essentially no effect on either census participation (–0.0 to 0.2%) or the social capital index.³⁰

As shown by the results from Sects. 4.2 and 4.3, we fail to find a strong robust effect—in either direction—of Wal-Mart on any of the five measures of social capital. The effect of the entry of two Wal-Marts on the number of associations ranges from –0.8% to 0.8%, suggesting that, while we cannot definitively identify the direction of the effect, it is small. Similarly, our IV regressions find a positive impact of Wal-Mart on voter turnout, while our state fixed effect regressions find a negative effect. However, none of the percentage changes are larger than 0.7%. While the large negative effect on census participation in the IV regressions suggests that further study is warranted, this finding is not robust to the use of state effects. Wal-Mart may increase the census participation rate as five of the six estimates are positive, but none are significant at the 5% level. Similarly, the effect of Wal-Mart on the social capital index is positive in five of the six models, but all of the estimates are small and insignificant.

5 Individual-level estimation

Our next set of estimations uses the DDB Needham data to consider Wal-Mart's impact on individual-level indicators of social capital. The individual-level data increase the total sample size while allowing for a broader spectrum of social capital measures. Also, because these data exist for a number of years, we are able to eliminate bias from time-invariant unobservable county characteristics, which are correlated with Wal-Mart presence and social capital, by including county fixed effects. We regress a number of individual-level measures of social capital on our county-level measures of Wal-Mart while controlling for a variety of personal, demographic, and economic variables.

Our individual measures of social capital encompass four important aspects of social capital: participation in organizations, trust, family strength, and community spirit. Participation

³⁰In Appendix A1, we present full output for the state fixed effects regressions with *WalMarYrsPop* as the variable of interest and discuss the results for the controls.

in organizations creates social capital by providing a means for members of a community to interact with other community members, thereby creating and strengthening the interpersonal ties that are the *sine qua non* of social capital. The variables that measure participation in organizations are participation in sports, which involve social interaction, religious attendance, and attendance at club meetings. The category of trust reflects an individual's views towards how much he or she would rely on another individual for assistance and thus acts as a measure of an individual's stock of social capital. The variable that measures trust is the degree to which the person believes that other people are honest.

Family strength measures how much members of a family interact with one another and thus serves as a measure similar to the "participation in organizations" variable except at the family level. We measure this variable using information on the number of meals eaten together as a family. Finally, community spirit measures how much an individual cares about the community in which he or she lives; this depicts how much value that individual places on the social capital that he or she has within that community. The variables that measure community spirit are time spent playing cards, attending dinner parties, entertaining at home, volunteering, visiting friends, reading the local newspaper, and willingness to "live in the same town for the rest of (the respondent's) life."

Our regression equation then is:

$$SocialCapital = \beta_1 + \beta_2 WalMartPop + \beta_3 Controls + \beta_4 County + \beta_5 Time + \varepsilon \quad (7)$$

where *SocialCapital* stands for one of the 12 different social capital variables, *WalMart* stands for one of the three specifications of the Wal-Mart approximation, *Controls* are the individual-level controls, *County* is the set of county fixed effects, and *Time* is a set of year dummies. Since our variable of interest is county-level, our inclusion of county effects should remove sources of bias that are constant over time. Our standard errors are heteroscedasticity-robust and clustered by county. We again estimate models using the number of Wal-Marts per 10,000 residents and the natural log of the per capita number of Wal-Marts times the number of years each Wal-Mart has existed. We also estimate models in which this latter measure is restricted to rural counties only.

Seven of our 12 dependent variables are the number of times a person participates in an activity per year, which has a lower bound of 0 and an upper bound of 52. For these variables, we also estimate left- and right-censored Tobit models since OLS estimates for censored variables may be biased toward zero (Wooldridge 2002, p. 524).³¹ A concern with this approach is that Tobit fixed effects models produce biased estimates as a result of the incidental parameters problem, although the extent of the bias should be small given our large number of observations per county and per year (Greene 2004).

We next add a set of county-specific linear time trends as another robustness check. If our estimate of β_2 suffers from bias owing to unobservable county characteristics that vary over time, including county-specific trends in social capital will affect our coefficient estimates. County trends may also help to correct for reverse causality; Gruber and Frakes (2006, p. 194) point out that the use of such trends may capture general trends in a dependent variable that might cause changes in the independent variable of choice. Including additional variables for every county in the sample reduces the precision of our estimates, but the direction in which our coefficient estimates change will still be informative.

³¹We do not right-censor with sports as the dependent variable since this variable is the sum of participation in five sports, and no respondent participated in each of the five sports 52 times.

Finally, we address the issues of time-variant omitted variable bias and reverse causality by using the distance from Bentonville of the respondent's county of residence as an instrument for Wal-Mart. Following Neumark et al. (2005) and Dube et al. (2007), we interact distance with the set of year dummies to allow the effect of distance on Wal-Mart presence to vary over time. Since distance is constant over time, we do not include county fixed effects, but we do include regional effects. In the first stage each distance*year term in every regression is statistically significant at the 0.1% level. Tests of the hypothesis that the distance*year terms are equal to zero produces F-statistics between 14.6 and 16.5 in the regressions using *WalMartPop* and between 25.1 to 28.5 using *LWalMartYrsPop*, indicating that the instruments are not weak using the criteria of Staiger and Stock (1997).³²

We present our estimates of the coefficient of interest in Table 8. We then calculate the percentage change in the dependent variables ten years after the entry of two Wal-Marts in the first five columns of Table 9.

None of the eight columns show a robust negative effect of Wal-Mart on the 12 measures of social capital. In fact, Wal-Mart is associated with an increase in social capital in more than half of the regressions. In those with county fixed effects and *WalMartPop* as the variable of interest (labeled (1)), the Wal-Mart effect is positive and statistically significant (at the 10% level or better) for three measures of social capital, positive and insignificant for four, negative and insignificant for four, and negative and significant for one. Using county effects and *LWalMartYrsPop*, the Wal-Mart effect is positive and significant for two measures, positive and insignificant for seven, negative and insignificant for two, and negative and significant for one. In rural areas, with county effects the effect of Wal-Mart on social capital is positive and significant for two measures, positive and insignificant for six, and negative and insignificant for four. Using Tobit and *WalMartPop*, the effect is positive in three regressions (significant in two) and negative in four. Including county-specific trends, the Wal-Mart effect is positive and significant for one measure of social capital, positive and insignificant for seven, negative and insignificant for three, and negative and significant for one. The standard errors in the county trend regressions are large because of the reduced degrees of freedom from adding nearly 3,000 variables, and in every regression the coefficient estimate for *WalMartPop* without county trends lies within the 95% confidence interval of the estimate with county trends. In the instrumental variables regressions with *WalMartPop*, three of the estimates are positive and significant, one is positive and insignificant, seven are negative and insignificant, and one is negative and significant. With *LWalMartYrsPop*, two estimates are positive and significant, three are positive and insignificant, five are negative and insignificant, and two are negative and significant. In rural areas, the Wal-Mart effect is positive and significant in three regressions, positive and insignificant in six, negative and insignificant in three, and negative and significant in one. Using the overidentification test, we cannot reject the null hypothesis that our set of instruments is valid at the 5% level in 31 of the 36 IV regressions and at the 10% level in 26 of the 36 regressions.

We cannot conclude that Wal-Mart either increases or decreases 11 of the 12 measures of social capital. Wal-Mart is associated with an increase in social sports in the fixed effects models, but a statistically insignificant decrease in two of the three IV regressions. The coefficient on Wal-Mart is positive in three of the regressions for playing cards and negative in the other five; all are statistically insignificant and small in magnitude. Wal-Mart reduces religious attendance in the fixed effects regressions, but increases it when we add county trends. In the IV regressions, the Wal-Mart effect becomes significant and large.

³²These F-statistics—computed using the Stata command *ivreg2* (Baum et al. 2007)—are adjusted for clustering by county.

Table 8 Coefficient estimates for Wal-Mart variables; Individual-level regressions

Measure of social capital	County fixed effects			Tobit with county effects (1)	County effects and trends (1)	Instrumental variables		
	(1)	(2)	(3)			(1)	(2)	(3)
Sports	1.56 (2.19)	1.31 (0.64)**	0.36 (1.02)	1.25 (0.14)***	4.63 (3.97)	-3.04 (4.27) [0.69]	-0.20 (0.75) [0.64]	0.88 (0.92) [0.47]
Cards	-0.76 (1.64)	-0.32 (0.48)	0.40 (0.80)	0.47 (1.72)	-3.11 (3.09)	-0.34 (3.49) [0.20]	-0.10 (0.56) [0.21]	0.45 (0.69) [0.22]
Religious attendance	-1.21 (2.20)	-0.38 (0.67)	-0.54 (1.06)	-0.40 (2.23)	1.36 (3.54)	37.28 (6.07)*** [0.10]*	5.49 (0.97)*** [0.00]***	4.68 (1.10)*** [0.29]
Club meetings	1.61 (1.29)	0.21 (0.35)	0.34 (0.57)	-0.20 (1.18)	1.08 (2.27)	-0.48 (2.43) [0.44]	-0.06 (0.39) [0.44]	0.07 (0.57) [0.67]
Dinner parties	0.32 (0.66)	0.40 (0.20)**	-0.07 (0.30)	-0.52 (0.69)	0.08 (1.28)	0.17 (1.54) [0.64]	0.25 (0.27) [0.66]	0.27 (0.28) [0.71]
Entertaining at home	-0.97 (1.28)	0.13 (0.38)	0.05 (0.64)	-1.17 (-1.55)	-4.77 (2.29)**	-0.79 (2.68) [0.33]	-0.08 (0.43) [0.33]	1.87 (0.54)*** [0.80]
Volunteer	3.52 (1.49)**	0.41 (0.42)	1.01 (0.66)	4.42 (0.40)***	0.46 (2.84)	-3.76 (2.97) [0.06]*	-0.60 (0.49) [0.07]*	-0.23 (0.64) [0.09]*
Family meals	0.31 (0.16)*	0.06 (0.05)	0.13 (0.08)*	-	0.26 (0.33)	-0.02 (0.33) [0.45]	0.01 (0.06) [0.44]	-0.09 (0.07) [0.35]
Honest	0.09 (0.14)	0.03 (0.04)	0.19 (0.06)***	-	-0.12 (0.27)	-0.33 (0.28) [0.20]	-0.10 (0.04)** [0.47]	0.02 (0.06) [0.59]
Visit friends	-0.40 (0.14)***	-0.08 (0.04)*	-0.04 (0.07)	-	-0.46 (0.31)	0.72 (0.33)** [0.02]**	0.06 (0.05) [0.01]***	0.08 (0.07) [0.69]
News	-0.02 (0.08)	0.004 (0.02)	-0.01 (0.03)	-	0.23 (0.16)	-0.29 (0.12)** [0.01]**	-0.04 (0.02)** [0.01]***	-0.03 (0.02) [0.30]

However, the set of instruments fails the overidentification test at the 10% level or higher in the two full-sample regressions, so the true effect of Wal-Mart on religious attendance is

Table 8 (Continued)

Measure of social capital	County fixed effects			Tobit with county effects (1)	County effects and trends (1)	Instrumental variables		
	(1)	(2)	(3)			(1)	(2)	(3)
Same town	0.39 (0.18)**	0.09 (0.06)	0.05 (0.08)	–	0.71 (0.37)*	1.20 (0.43)*** [0.48]	0.19 (0.07)*** [0.41]	0.01 (0.07) [0.09]*

Notes: (1) Indicates that number of Wal-Marts per 10,000 residents is the variable of interest; (2) ln(number of Wal-Mart years per 10,000) is the variable of interest; (3) log(number of Wal-Mart years per 10,000) is the variable of interest, and sample is restricted to rural areas. Robust standard errors in parentheses. *p*-values from the overidentification tests are in brackets. ***Indicates statistically significant at the 1% level; **5% level; *10% level. All regressions include year fixed effects and the control variables. Marginal effects are reported in the Tobit column

unclear. Wal-Mart is associated with a statistically insignificant increase in club meetings in five specifications and a statistically insignificant decrease in the other three. Wal-Mart increases the frequency of attending dinner parties in six of eight regressions, but is only statistically significant in one. Wal-Mart is associated with a drop in entertaining guests at home in five of eight specifications, but only one of the five positive coefficients and one of the three negative coefficients are significant. Wal-Mart entry increases the frequency of volunteer work in the fixed effects models but decreases it in the IV regressions, which all fail the overidentification test at the 10% level. The coefficient on Wal-Mart is positive in five of the seven family meals regressions, but none are significant at the 5% level and the largest percentage impact of two additional Wal-Marts is 1.6%. Wal-Mart increases the degree to which people believe others are honest in four of seven regressions, but only one positive and one negative coefficient are significant. Wal-Mart is associated with a decrease in the frequency of visiting friends in all fixed effects regressions but an increase in all IV regressions. While two of the four negative coefficients and one of the three positive coefficients are statistically significant at the 10% level or better, the magnitudes are small, as the estimated percentage changes if two Wal-Marts enter range from -1.3% to 1.4% . The effect of Wal-Mart on newspaper reading is negative in two of the three county fixed effects regressions but positive when we include county trends. While the IV results are negative, the set of instruments fails the overidentification test in the two full sample regressions.

Despite the fact that we do not find a robust relationship between Wal-Mart and these 11 measures of social capital, Wal-Mart entry appears to increase the remaining measure: a person's desire to stay in the same town for the rest of her life. All seven estimates are positive and four of the seven are significant. Given the results for the other dependent variables, this result may not reflect an increase in social capital. Instead, if Wal-Mart lowers prices and makes shopping more convenient, Wal-Mart entry may make living in a community more desirable, even holding stocks of social capital constant.³³

³³ Appendix A2 displays full regression output for selected regressions, and Appendix A2 contains a short discussion of the effects of the control variables.

Table 9 Percentage change in social capital ten years after the entry of the county's first two Wal-Marts; Individual-level regressions

Measure of social capital	County fixed effects			Tobit with county effects (1)	County effects and trends (1)	Instrumental variables		
	(1)	(2)	(3)			(1)	(2)	(3)
Sports	0.7%	4.8%**	1.5%	0.6%***	2.0%	-1.3%	-0.7%	3.6%
Cards	-0.3%	-1.0%	1.2%	0.2%	-1.2%	-0.1%	-0.3%	1.3%
Religious attendance	-0.2%	-0.6%	-0.8%	-0.1%	0.3%	6.9%***	8.5%***	6.6%***
Club meetings	1.0%	1.1%	1.7%	-0.1%	0.7%	-0.3%	-0.3%	0.4%
Dinner parties	0.3%	2.7%**	-0.6%	-0.3%	0.1%	0.1%	1.7%	2.2%
Entertaining at home	-0.4%	0.4%	0.2%	-0.4%	-1.8%**	-0.3%	-0.2%	6.0%***
Volunteer	1.9%**	1.9%	4.7%	2.4%***	0.2%	-2.1%	-2.8%	-1.1%
Family meals	0.5%*	0.8%	1.6%*	-	0.4%	-0.02%	0.1%	-1.0%
Honest	0.1%	0.3%	2.3%***	-	-0.2%	-0.4%	-1.2%**	0.3%
Visit friends	-0.8%***	-1.3%*	-0.6%	-	-1.0%	1.4%**	1.0%	1.3%
News	-0.1%	0.2%	-0.7%	-	1.4%	-1.6%**	-1.9%**	-1.5%
Same town	0.5%**	0.9%*	0.5%	-	0.9%*	1.4%***	1.9%***	0.1%

See notes for Table 8

6 Conclusion

Social capital is an important and under-explored aspect of economic, political, and social life. It has been argued that Big Box retailing—Wal-Mart in particular—reduces social capital. Wal-Mart has been criticized for paying low wages, for relying on government subsidies for infrastructure (and healthcare), and for destroying communities. This study fails to identify a robust “Wal-Mart effect” on various measures of social capital. We are unable to conclude that Wal-Mart has any effect on most of the 17 measures that we consider.

Why does Wal-Mart not reduce most indicators of social capital? One explanation is that Wal-Mart reduces social capital by moving the locus of commerce from independent “Mom and Pop” retailers, but these effects are balanced because Wal-Mart increases social capital by providing a new, larger community center and by reducing the amount of time and money that has to be devoted to basic consumption. This implies that the type of pre-entry business in a community is immaterial.

It is important to note that this study does *not* show that Wal-Mart is in any way inherently good or bad. Our results suggest that Wal-Mart does not destroy communities by

reducing their stocks of social capital. However, social capital is only one of many areas in which Wal-Mart may have an impact. Others include real income, employment, poverty, and entrepreneurship. More research is necessary to determine if the net effect of Wal-Mart entry on a community is positive or negative.

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Appendix A1: County-level estimation: results for the controls

The regression output for relationships between the control variables and social capital are reported in an appendix, available online or by request. A larger proportion of foreign-born inhabitants appears to reduce social capital, perhaps because of difficulty assimilating into the community. As expected, social capital is higher in wealthier areas. A rise in female labor force participation is associated with a rise in four of the five social capital measures, suggesting that perhaps women begin to take a more active role in the community if they are employed. An increase in the percentage of households that have more than one person appears to lead to a decrease in social capital. Possibly people begin to withdraw from the community after starting a family. For most measures of social capital, high levels of manufacturing or professional employment and low levels of farming mean higher social capital. Living on large farms in sparsely populated areas may limit interaction with others. Results for the other controls are not robust.

Appendix A2: Individual-level estimation: results for the controls

Full regression output for selected individual-level regressions is reported in an appendix available, online or by request. Living in a non-metropolitan area appears to increase social capital. More children lead to more social capital in three of the four measures. People who prefer to stay at home participate in fewer social-capital producing activities. People also appear to acquire more social capital as they grow older; the negative effect of age on sports is likely a consequence of diminished physical abilities and not a decline in social capital. Women have higher levels of social capital than men in all areas except sports. More education leads to higher social capital. Results for the other controls are inconclusive.

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