

The Causes and Consequences of Wal-Mart's Growth

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Wal-Mart plays a large and ever-growing role in the U.S. economy. As of January 31, 2007, Wal-Mart operated more than 3,400 U.S. Wal-Mart stores along with more than 550 Sam's Club locations. Wal-Mart is the largest private employer in the United States, with 1.3 million employees, and the largest retailer in the United States. In 2004, Wal-Mart handled 6.5 percent of U.S. retail sales (8.8 percent if automobile sales are excluded); this number has since increased. Wal-Mart is the top U.S. seller of apparel, groceries, and music, among other products, and is the top retailer in most states. Wal-Mart's 2005 revenues exceeded those of the next five U.S. retailers combined; these are Home Depot, Kroger, Sears Holding Company (which includes Sears and Kmart), Costco, and Target (Schultz, 2006). Wal-Mart currently accounts for 28 percent of Playtex's sales, 25 percent of Clorox's, 21 percent of Revlon's, 13 percent of Kimberly-Clark's, and 17 percent of Kellogg's (Weinswig and Tang, 2006). Wal-Mart also accounts for over 15 percent of U.S. imports of consumer goods from China. More than 120 million U.S. consumers shop at Wal-Mart every week, and 84 percent of Americans shopped at Wal-Mart at least once during 2005 (Pew Research Center, 2005).¹

Wal-Mart is also the largest retailer in the world. From a global perspective, Wal-Mart's sales are larger than the next three retailers combined: Carrefour (France), Home Depot (United States), and Metro (Germany). Although Wal-Mart recently sold its South Korean and German operations, it currently operates or owns a majority stake in a local firm in Argentina, Brazil, Canada, China, Costa

¹ Some references to Pew Research Center (2005) in the text refer to a special tabulation from the survey generously provided by Peyton Craighill.

Rica, El Salvador, Guatemala, Honduras, Japan, Mexico, Nicaragua, Puerto Rico, and the United Kingdom. It is the largest or second-largest retailer in several of these countries. Wal-Mart recently announced plans to open stores as part of a joint venture in India and is reportedly looking for a partner in Russia (Giridharadas and Rai, 2006; Reuters, 2007).

Wal-Mart's size alone warrants studying its effects. By the end of 2005, 46 percent of Americans lived within five miles of the nearest Wal-Mart or Sam's Club store, and 88 percent lived within 15 miles of the nearest store; and Wal-Mart accounted for nearly 9 percent of all retail workers in the United States. Because the chain has a presence in so many markets, virtually all other retailers compete head-to-head with Wal-Mart: 67 percent of all retail stores in the United States are located within five miles of a Wal-Mart. In addition, Wal-Mart has been a leader in the retail sector on many fronts: its investments in information technology; its transformation of supply-chain relationships by establishing private-label brands and purchasing more products directly from overseas producers; and its embrace of a low-service, "one-stop shopping" format have all been emulated by other retailers. As the retail sector continues to evolve, Wal-Mart provides a useful prism through which to evaluate these changes, and its current innovations may well be harbingers of the future.

Wal-Mart's growth has coincided with and amplified several existing trends in the U.S. retail sector. In this context, Wal-Mart's rise is as much a cause as it is an effect of larger changes in technology, trade patterns, and consumer tastes. Between 1963—one year after the first Wal-Mart store opened in Rogers, Arkansas—and 2002, the number of single-store retailers in the United States declined by 55 percent while the number of chain stores nearly doubled. The number of stores belonging to chains with 100 or more stores more than tripled over this period (U.S. Census Bureau, 1963, 2002). Wal-Mart, Kmart, Target, and Costco combined still account for a very small fraction of all retail stores, but they represent an increasing and disproportionate share of all dollar sales.

The competitive pressures created by large retailers have long been controversial. As far back as the 1920s, retail chains have been accused of "paying low wages, not contributing to their communities, taking money out of communities, paying fewer taxes than local merchants, and turning America into 'a nation of clerks'" (Ross, 1984). Though the identity of large retailers has changed over time, very similar accusations are being leveled at Wal-Mart today. Even as consumers flock to shop at Wal-Mart, many express concerns about its economic impact. In a Pew Research Center (2005) survey, 19 percent of respondents with a Wal-Mart store in their area thought that it had had a negative effect locally, and 24 percent of all respondents thought that Wal-Mart was bad for the country. Perhaps not surprisingly, non-Wal-Mart shoppers were nearly four times more likely than those who shop at Wal-Mart regularly to think Wal-Mart had had a negative effect on their area, and more than four times as likely to think that Wal-Mart has had a bad effect on the country (Pew Research Center, 2005).

This paper begins by exploring the source of Wal-Mart's competitive advantage. It then examines some of the economic effects of Wal-Mart: how Wal-Mart

stores affect local labor markets, consumer prices, product selection, local and global competitors, and suppliers. Sorting out cause and effect in these studies can be tricky because the location of Wal-Mart stores is an endogenous choice. If the places in which Wal-Mart opens stores are systematically different from the places it avoids—for example, if it prefers thriving areas, shying away from declining ones—or if Wal-Mart opens stores during temporary periods of growth, a naive “before-and-after” look would conclude that Wal-Mart has had a more positive effect than it actually does. I then turn to Wal-Mart’s interaction with public policy issues in matters of global trade as well as state and local legislation on wages, benefits, zoning, and subsidies.

This paper aims to dispel some of the myths regarding Wal-Mart and to replace them with a systematic accounting of what is known about Wal-Mart’s impact on the U.S. and global economy. Media reports often portray Wal-Mart as a “job destroyer” and a force that levels Main Streets, but there is little evidence to support this view. Wal-Mart’s impact on jobs is modest, and probably positive; and the effect on other businesses is also relatively small. In the process, I highlight potential areas for future research and discuss available data sources as well as some methodological pitfalls.

Wal-Mart’s Advantage

While Wal-Mart’s advantage over other retailers has been undisputed for some time, the sources and magnitude of this advantage are not fully understood. Part of the reason for this is the retail production function—the relevant inputs and outputs, and the relationship between them—has only recently begun to receive serious academic attention (for an overview of this topic, see Betancourt, 2005). Nevertheless, a number of studies by industry analysts and academic economists provide a glimpse into the sources of Wal-Mart’s advantage.

By all accounts, technology and scale are at the core of Wal-Mart’s advantage over its rivals. Across the retail sector, stores that belong to retail chains tend to be more efficient than single-store retailers, and chains tend to invest more in information technology (Foster, Haltiwanger, and Krizan, 2006; Doms, Jarmin, and Klimek, 2004). Wal-Mart’s technological edge is in its logistics, distribution, and inventory control; having installed a computer in its first distribution center in 1969, it had, by the late 1970s, connected all Wal-Mart stores and distribution centers along with company headquarters to a computer network. Wal-Mart was an early adopter of bar-code technology. It installed bar-code readers in all distribution centers by the late 1980s, reducing by half the labor cost of processing shipments (Vance and Scott, 1994). In 1990, Wal-Mart introduced Retail Link—software connecting its stores, distribution centers, and suppliers and providing detailed inventory data “to bring our suppliers closer to our individual stores” (Wal-Mart Stores, Inc., 1991, p. 3). Wal-Mart is currently at the forefront of efforts to use Radio Frequency Identification—a technology in which each individual item receives a tag that can be read by a radio signal, thus facilitating tracking shipments,

inventory, and sales. Wal-Mart also operates the largest private satellite communications network in the world.

Empirically, it is difficult to distinguish between two explanations for Wal-Mart's size and high efficiency level. On the one hand, Wal-Mart may have lower costs than other retailers, and this cost advantage could be responsible for its growth. Alternatively, Wal-Mart's expansion could have allowed it to take advantage of economies of scale, reducing its costs relative to competitors. In Basker and Van (2007), my coauthor and I argue that these two explanations are closely related: Wal-Mart's better technology has allowed it to grow, and this growth has lowered its operating costs through economies of scale. Viewed this way, economies of scale at both the store and chain levels *amplify* Wal-Mart's advantage, rather than being its root cause.

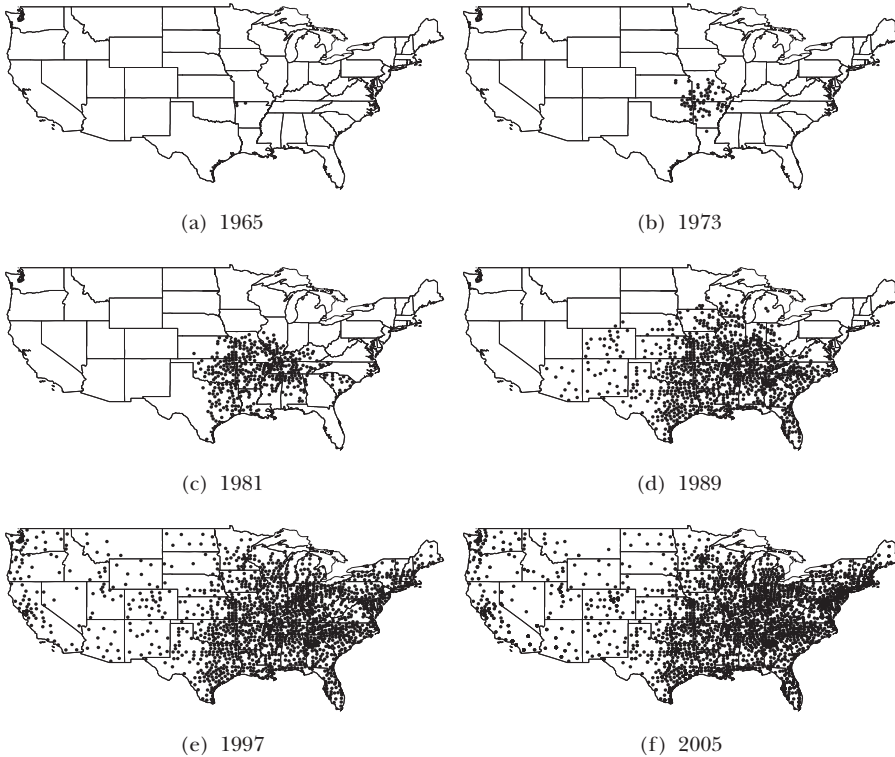
At the chain level, Wal-Mart's scale has increased its market power in input markets. Size also gives Wal-Mart an advantage in any activity that involves a fixed cost, such as contracting with foreign suppliers, so Wal-Mart can import at lower average cost than other retailers, spurring further growth. In Basker and Van (2007), we also argue that scale reduces the marginal cost of a sale: using data for Wal-Mart, we estimate that elasticity of the marginal cost associated with an additional sale with respect to sales volume is approximately -0.2 ; in other words, a 10 percent increase in total sales volume decreases marginal cost by 2 percent.

At the store level, the availability of bar code technology and now Radio Frequency Identification that reduces inventory tracking costs increases the incentives of stores to add product lines (Holmes, 2001). After adding pharmacies and auto services to its stores in the 1980s, Wal-Mart entered the supermarket industry in 1988 with a single Supercenter in Washington, Missouri. (Supercenters sell a full line of groceries in addition to general merchandise, such as clothes, housewares, toys, and cosmetics.) Wal-Mart currently operates more than 2,200 U.S. Supercenters and is the largest supermarket chain by sales in the United States. The interaction of economies of scale and scope increases Wal-Mart's optimal chain size as its stores grow, and the stores' optimal size as the chain grows (Basker, Klimek, and Van, 2007).

Wal-Mart locates its stores in places where it expects to be profitable, taking into consideration, as much as possible, information about demand and cost factors as well as the competitive environment and how this is expected to evolve after Wal-Mart's entry. Holmes (2006) and Jia (2005) discuss various demographic factors that predict Wal-Mart's entry, such as the size and density of the population and its age and income distributions. These and other variables that are harder to observe and measure tend to be spatially correlated: urban counties are located near other urban counties, counties with a given industrial composition tend to be located near other counties with a similar composition, and so on. Such correlations partly explain why Wal-Mart stores tend to locate near one another, an observation first made by Graff and Ashton (1994). Figure 1 shows Wal-Mart's store locations in eight-year intervals from 1965 to 2005. The pattern of expansion repeats itself, in an accelerated mode, for Supercenters; Figure 2 shows Supercenter locations in five-year intervals from 1990 to 2005.

Figure 1

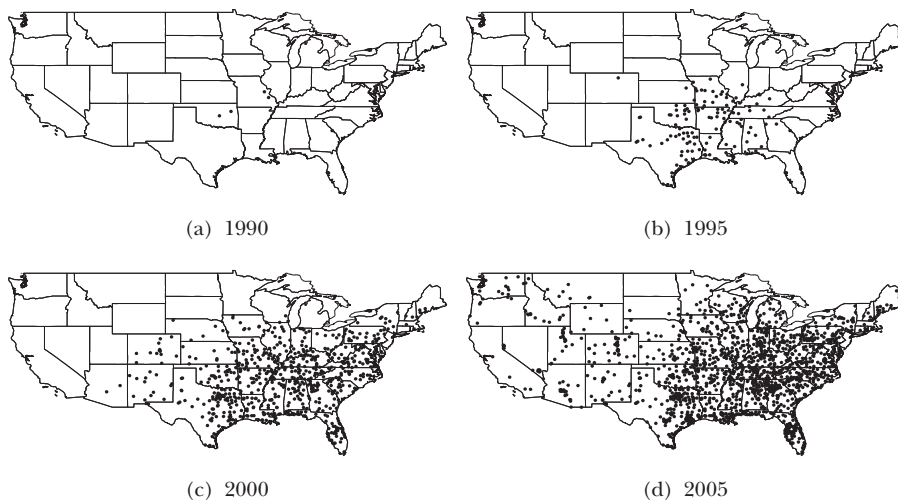
Wal-Mart Store Locations, 1965–2005



The downside of opening stores close to each other is the potential for cannibalizing the sales of other stores in the chain. However, opening stores close to each other has also allowed Wal-Mart to exploit economies of density in distribution, training, and advertising (Holmes, 2006). This positive effect appears to have overwhelmed any negative effect on profit due to self-cannibalization. Wal-Mart's expansion strategy also helps to explain the firm's success relative to Kmart and Target, which had different expansion strategies (Graff, 1998; Holmes, 2006). Holmes (2006) estimates a structural demand model that takes into account both population and store characteristics, and a cost function that depends on store-level employment and the store's distance to the nearest distribution center. He then compares store-by-store operating profits (actual dollar sales less estimated costs based on known store-level employment and other factors) with those that would have obtained had the store faced the same demand conditions but different costs. His estimates suggest that, all else equal, locating a store immediately next to a distribution center increases its annual operating profit by \$220,000 (in 2005 dollars) relative to locating it 100 miles away.

The combination of technological prowess and economies of scale, scope, and density have made Wal-Mart a major contributor to the overall increase in productivity in the retail sector. As a back-of-the-envelope calculation, Table 1

Figure 2

Wal-Mart Supercenter Locations, 1990–2005

compares growth in real dollar sales per worker in the general-merchandise sector, using Census of Retail Trade publications, with growth in real dollar sales per worker in Wal-Mart's U.S. stores. By this metric, Wal-Mart's productivity increased by 54.5 percent over the period 1982–2002, while productivity in the general merchandise sector as a whole (including Wal-Mart) increased by only 35.3 percent.² If Wal-Mart's employment and sales are subtracted from the sector's aggregate numbers, productivity growth in this sector over this 20-year period is reduced to just 18.5 percent. One way to interpret these numbers is that Wal-Mart is responsible for almost half of the productivity growth, measured as growth in sales per worker, in the general merchandise sector. In a similar vein, McKinsey Global Institute (2001) calculates that in the late 1980s and 1990s, Wal-Mart's real value-added per worker was more than 40 percent higher than that of other general merchandise retailers. Consistent with these calculations, U.S. Census Bureau data show that almost all labor productivity growth in the U.S. retail sector in the 1990s came from the expansion of more-productive retail chains and the contraction and exit of less-productive retailers (Foster, Haltiwanger, and Krizan, 2006). Disclosure limitations prevent identifying individual firms in Census data, but Wal-Mart was the single-fastest growing retail chain during this period.

Foster, Haltiwanger, and Krizan (2006) do not estimate within-firm productivity growth, but Wal-Mart's investment in information technology does appear to have increased its own productivity over the last several decades. Computations from Basker and Van (2007) indicate that improvements in Wal-Mart's technology

² The composition of the "general merchandise" sector was largely unaffected by the switch from the Standard Industrial Classification, which was used to classify industries in the 1982 Census, to the North American Industrial Classification System, used in the 2002 Census.

Table 1

Labor Productivity Growth in the General Merchandise Sector and at Wal-Mart

	<i>General merchandise sector</i>	<i>Wal-Mart</i>	<i>General merchandise sector excluding Wal-Mart</i>
Sales, 1982 (millions of \$)	252,217	6,833	245,384
Sales, 2002 (millions of \$)	483,338	204,987	278,351
Employment, 1982	1,875,965	46,000	1,829,965
Employment, 2002	2,524,729	800,000	1,724,729
Sales per worker, 1982 (\$)	134,447	148,543	134,092
Sales per worker, 2002 (\$)	191,441	256,234	161,388
Growth in sales per worker ^a	0.353	0.545	0.185

Source: Author's calculations from U.S. Census Bureau (1982, 2002) and Wal-Mart Annual Reports (Wal-Mart Stores, Inc., 1983, 2003).

Notes: Wal-Mart's figures refer to U.S. Operations. Sales are in millions of 2005 dollars; sales per worker are in 2005 dollars.

^a Growth rate calculated as a log difference.

have reduced its cost of operating a large chain. Had these technological innovations taken place holding fixed Wal-Mart's chain size, its logistics and distribution costs would have fallen by an average of 5.4 percent per year between 1980 and 2005. Instead, Wal-Mart's chain grew by approximately 12 percent annually, taking advantage of this increased efficiency.

Labor Markets

A new Wal-Mart store hires several hundred workers when it opens. Depending on local market conditions, the number of applicants is frequently five, ten, or even 25 times larger than the number of positions advertised. In October 2005, for example, 11,000 applicants applied for 400 positions at a new Wal-Mart store in Oakland, California; this number of applicants is not unusual in high-unemployment urban areas. According to press releases Wal-Mart issues when new or renovated stores open for business, the median new or newly-renovated Wal-Mart store has about 400 employees, or "associates" as the company calls them (300 for Discount Stores, 425 for Supercenters). But these increases in jobs are mostly offset by job losses at competing retailers that contract or exit as a consequence of Wal-Mart's entry.

The net effect on jobs is positive, even five years after Wal-Mart's entry, but it is quite small. To study this issue, I collected approximate opening dates for all Wal-Mart stores from various public sources, including Wal-Mart Annual Reports, annual directories of discount department stores published by Chain Store Guides, and special Wal-Mart editions of Rand McNally Road Atlases (Basker, 2005a).³ I

³ The data are available at (<http://economics.missouri.edu/~baskere/data/>). The appendices in Neumark, Zhang, and Ciccarella (2005) and Basker (2006) provide some detail—and contrasting perspec-

combined these data with County Business Patterns data from the U.S. Census Bureau, which include the number of jobs in each county by sector and year for the period 1977–1999, to estimate Wal-Mart’s effect on the number of retail and wholesale jobs. After controlling for time-invariant county characteristics using county fixed effects and for different exogenous time patterns of employment for urban, rural, and suburban counties, I find that the number of retail jobs in a county increases by 100 the year Wal-Mart opens a new store (relative to what would have happened had Wal-Mart stayed out of the county), and by 50 after five years.⁴ However, the number of wholesale jobs declines by about 30 in the long run, reflecting the fact that Wal-Mart is vertically integrated: unlike the merchants it replaces, Wal-Mart does not rely on local wholesalers.

Because Wal-Mart stores are not randomly placed, estimating Wal-Mart’s impact on labor markets without accounting for the potential endogeneity of Wal-Mart’s entry decision, both regarding the *locations* of Wal-Mart stores and the *timing* of entry, is subject to omitted-variable and selection biases. There is no ironclad solution to this problem, but several approaches have been used.

In Basker (2005a), I address selection bias by dropping from the sample very small and historically declining counties—the sorts of places that Wal-Mart very rarely enters. I address the endogeneity of the timing of Wal-Mart’s entry with an instrumental-variables specification that exploits information on stores’ *planned* opening dates. Using planned opening dates as an instrument for actual openings cannot address endogeneity in the *locations* Wal-Mart chooses to enter, because locations with no Wal-Mart store do not have a planned opening date. It is a valid instrument for the endogenous *timing* of entry if Wal-Mart is unable to forecast economic conditions one or two years ahead. As a specification check, I estimate Wal-Mart’s effect on manufacturing employment and find an economically small and statistically insignificant impact. Most of Wal-Mart’s purchasing is done through centralized facilities, so adding a single store in a county is unlikely to affect local manufacturing employment.

A recent paper by Neumark, Zhang, and Ciccarella (2005) uses an alternative methodology and concludes that Wal-Mart is a net job destroyer. Like Basker (2005a), Neumark, Zhang, and Ciccarella use local economic data from the County

tives—on the quality of the data. Other data on Wal-Mart store openings are also available. Following a recent public relations campaign, Wal-Mart selectively released data on store openings it had previously been reluctant to share; Neumark, Zhang, and Ciccarella (2005) were the first to use these data; I used them subsequently in Basker (2006). In late 2005, Wal-Mart posted a spreadsheet with the original opening dates of its existing stores on its public relations site, (<http://www.walmartfacts.com>), but later modified the spreadsheet by removing the opening dates and years. Dube, Eidlin, and Lester (2007) use these data. An anti-Wal-Mart umbrella group called Wal-Mart Watch, which can be contacted at (<http://www.walmartwatch.com>), has also compiled a list of all Wal-Mart’s store locations and opening dates, along with store characteristics, including employment and square footage, which it makes available to researchers who sign a confidentiality agreement. Store-level characteristics are also available from TradeDimensions, a unit of ACNielsen, and have been used by Holmes (2006).

⁴ Consistent with these results, regulations restricting entry of large retailers into French and Italian retail markets have had negative effects on employment growth (Bertrand and Kramarz, 2002; Viviano, 2006).

Business Patterns, which they combine with administrative data from Wal-Mart on store locations and opening dates. To address endogeneity, Neumark, Zhang, and Ciccarella use an instrumental variables specification that exploits the geographic pattern of Wal-Mart's expansion, as depicted in Figure 1.⁵ They argue that until 1995, the distance from each county to Wal-Mart's headquarters in Bentonville, Arkansas, largely determined when a Wal-Mart store first opened in the county. However, this instrument can be questioned because counties that are close to Bentonville, Arkansas, share many other characteristics, including low population density and similar demographic and industrial compositions. Conversely, counties that are far from Bentonville tend to have other common features: for example, almost all major population centers in the United States are concentrated in a band between 900 and 1,300 miles from Bentonville. Thus, the distance from Bentonville can have a direct effect on economic fluctuations, independent of Wal-Mart's entry pattern.⁶

In another analysis, Drewianka and Johnson (2006) estimate Wal-Mart's job effects in an ordinary least squares specification that includes a full set of county-specific trends and find small but positive employment effects. They argue that their use of county-specific trends allows them to sidestep the identification problem by controlling for trends that predate Wal-Mart and are likely to have influenced its entry decision. This specification is valid, providing unbiased estimates of Wal-Mart's causal impact, if Wal-Mart selects locations based only on a country's growth rate and is not influenced by other factors that are also correlated with future economic performance.

On balance, it seems clear that Wal-Mart has a small net impact on retail and wholesale jobs. Thus, it is perhaps not surprising that effects on aggregate county-level employment—across all sectors in the local economy—cannot be precisely estimated (Basker, 2005a). On average, about 12 percent of a county's workers are employed in the retail sector, and another 6 percent are employed in the wholesale sector. While it is possible with some statistical confidence to detect fluctuations of 20–100 jobs in a sector that employs only a few hundred or even a couple of thousand workers, it is nearly impossible to do this at the aggregate level when 50 jobs constitute less than 1 percent of total employment.

These results remain open to various questions. For example, county-level data on retail employment do not distinguish between part-time and full-time jobs, so if Wal-Mart employs more part-time workers than the retailers it replaces, the total number of jobs may rise while the number of full-time equivalent jobs actually falls. Unfortunately, there is no definitive evidence on average hours of work by Wal-Mart employees compared with other retail employees, and at present, the importance of this effect is unknown.

In addition, any gains in retail employment in the county in which Wal-Mart

⁵ Dube, Eidlin, and Lester (2007), discussed below, independently proposed this same instrumental variables method, but they focus on Wal-Mart's effect on wages and other compensation.

⁶ For a technical discussion and critique of the Neumark, Zhang, and Ciccarella (2005) methodology, see Basker (2006).

opens may come at the expense of jobs across county lines. To date, attempts to quantify cross-county effects have not been successful (Basker, 2005a). One possible indirect test is that the own-county employment effect of Wal-Mart should be larger (more positive) when Wal-Mart opens close to a county line—so that some of its competitors are in another county—than when it is located far from any neighboring counties. Another way to evaluate the importance of this explanation would be to estimate the rate at which Wal-Mart's impact diminishes with distance using finer geographic data—for example from Zip Code Business Patterns. Neither of these approaches has been pursued to date.

Very little is known about Wal-Mart's effect on the composition of the work force—its age, education, and experience—and the wages and benefits it receives. The starting wage and pattern of raises varies across Wal-Mart stores, depending on local market conditions. Two studies find negative effects of Wal-Mart on the pay of retail employees, but due to a lack of available data, these studies are limited in their ability to control for worker and job characteristics (such as hours, shifts, and job responsibilities). Neumark, Zhang, and Ciccarella (2005), discussed above, use local economic data from the County Business Patterns, while Dube, Eidlin, and Lester (2007) use data from the Quarterly Census of Employment and Wages. Both use an interaction of time and distance from Bentonville to address endogeneity in the firm's location decisions and are subject to the criticism discussed above. A further difficulty in interpreting these results comes from the absence of controls for job and worker quality, although Dube, Eidlin, and Lester (2007) make an effort to address this issue using supplemental data from the March Current Population Survey. The Current Population Survey includes information on hourly wages, education, and demographic variables and specifies the occupation and industry of the worker's primary job. Because of data limitations, Dube, Eidlin, and Lester (2007) use state-level averages to estimate the effect of Wal-Mart on hourly wages; they control for average demographics (average age, percent white, percent of workers with a high school education or lower level of educational attainment) and find that entry of ten Wal-Mart stores causes the average hourly wage of retail workers in the state to fall by 2 percent.

Talk of Wal-Mart's effect on wages often turns to the company's famously antiunion labor practices. The retail sector is, as a rule, less unionized than other sectors. According to the Bureau of Labor Statistics, in 2004, 5.7 percent of retail workers were union members as compared to 7.9 percent of workers in the private sector overall, and weekly earnings of unionized retail workers were approximately 11 percent higher than weekly earnings of their nonunionized peers (Bureau of Labor Statistics, 2005). If the retail sector is relatively nonunionized, Wal-Mart is an extreme example: there are no unionized Wal-Mart stores in North America. After meat packers in a Texas Wal-Mart Supercenter voted to unionize in 2000, Wal-Mart switched to prepackaged beef and closed down its meat-packing departments in several states. In 2005, Wal-Mart closed a store in Quebec whose workers had voted to unionize.

Wal-Mart's antiunion stance has changed practices throughout the retail sector. In October 2003, approximately 60,000 unionized grocery workers in Califor-

nia went on a four-month strike when their employers wanted to lower starting wages in anticipation of competition from Wal-Mart Supercenters. Grocery stores eventually won this concession, giving some legitimacy to the view that Wal-Mart's rise has had a negative effect on retail wages. At least where the retail sector is unionized, it seems reasonable that Wal-Mart's entry or threat of entry could similarly reduce wages even if it increases employment.

Wal-Mart's benefits packages have come under scrutiny and have been improved in recent years. According to the company, 47 percent of employees are covered by its health plans, some of which feature very low monthly premiums (as low as \$11 a month), but 10 percent of Wal-Mart's employees have no health insurance at all (Barbaro and Abelson, 2007). Comparable figures for other retailers are hard to find, and despite wide speculation about Wal-Mart's role in increasing low-income workers' dependence on Medicaid, there is no systematic research about this issue.

Lawsuits by current and former employees have accused Wal-Mart of various illegal and unethical practices, including requiring employees to work off the clock or miss mandated meal breaks. Indeed, workers have filed lawsuits accusing Wal-Mart of requiring off-the-clock work in at least 30 states. Some cases have settled, including one in Colorado, but others have gone to trial. In October 2006, a jury in Pennsylvania awarded current and former workers \$78 million in unpaid wages. In addition, a federal class-action lawsuit against Wal-Mart for discrimination against female employees is currently pending; the potential plaintiff pool consists of a record-breaking 1.5 to 2.0 million current and former female employees. Other accusations against Wal-Mart include locking overnight employees in stores (Greenhouse, 2004) and hiring illegal immigrants. Of course, any large employer inevitably attracts some accusations and lawsuits, and no research to date has examined whether Wal-Mart has committed more actual violations than its competitors on an employee-weighted basis.

Consumers

Consumers favor Wal-Mart for its lower prices. Answering an open-ended question soliciting the "best thing about Wal-Mart," 50 percent of respondents of a Pew Research Center (2005) poll named low prices, 22 percent named broad selection/variety, and 13 percent gave answers related to location, hours, and other convenience factors. Poorer consumers are much more likely to shop at Wal-Mart than are richer ones and have benefited disproportionately from Wal-Mart's rise. In the Pew survey, 53 percent of respondents reporting annual earnings below \$20,000 said they shopped at Wal-Mart "regularly," compared with 33 percent of respondents earning more than \$50,000. The average annual household income among Wal-Mart shoppers is \$40,000–\$45,000, roughly equal to the U.S. median household income, compared with \$60,000 for Target shoppers and \$74,000 for Costco shoppers (Greenhouse, 2005; Mui, 2005).

The price differences between Wal-Mart and other retailers and the downward pressure that Wal-Mart's presence puts on other stores' prices combine to mitigate—and possibly reverse—any negative effect Wal-Mart may have on workers' wages. Estimates of the differences between Wal-Mart's and competitors' prices range from 8–27 percent, depending on the market and the selection of products. In Basker and Noel (2006), my coauthor and I use store-level price data of specific grocery items from the American Chamber of Commerce Research Association (ACCRA) and find in a cross-sectional analysis that for cities with at least one Wal-Mart Supercenter, Wal-Mart's prices are on average 10 percent lower than competitors' prices. Moreover, this difference has increased over the period 2001–2004 from approximately 5 percent to 15 percent. There is also considerable variation by product, with Wal-Mart's 2004 prices representing a discount of approximately 25–30 percent over traditional grocery stores for some items (chicken, canned peas, and frozen corn) and only 4 percent for others (including soda and milk). Hausman and Leibtag (2004; forthcoming (a)) use Homescan data from ACNielsen to study price impacts of “nontraditional” food retail outlets like superstores, mass merchandisers, and clubs on “traditional” outlets like grocery stores and supermarkets over the period 1998–2001; they find that these nontraditional outlets charged lower average prices for 19 of 20 products (the exception was soda), with an average price difference of 27 percent.⁷

Wal-Mart's entry tends to lower the prices that incumbent competitors charge and in that way indirectly affects even consumers who shop elsewhere. (This effect does show up in Consumer Price Index calculations.) Estimating the precise effect on competitors requires addressing the same issues of endogeneity that arise when considering Wal-Mart's effect on labor markets. In Basker (2005b), I use the same instrumental variables approach as in Basker (2005a), namely store planning dates, to estimate Wal-Mart's effect on citywide average prices of drugstore and clothing products in 165 U.S. cities and find short-run declines of 1.5–3.0 percent in the prices of aspirin, detergent, Kleenex, and toothpaste, with no statistically significant effect on the prices of three clothing items. But because citywide price averages may include Wal-Mart's own prices (once a Wal-Mart opens in town), the estimated effect may be an upper bound. In Basker and Noel (2006), my coauthor and I attempt to overcome this problem by using store-level data for grocery items, from which Wal-Mart's own prices can be removed. We use a short time series of three years and assume if a Wal-Mart Supercenter opened in a city over the period

⁷ The differences between the results in Hausman and Leibtag's (forthcoming (a)) and Basker and Noel (2006) are probably due to two factors. First, Hausman and Leibtag calculate average prices using quantity weights, which is not possible to do with the ACCRA data. Second, ACCRA data exclude membership clubs, which use two-part tariff pricing (an annual membership fee and lower prices) and are therefore likely to pull down the average price for the nontraditional outlets relative to Wal-Mart's prices. Hausman and Leibtag (2004; forthcoming (b)) make the point that outlet substitution by consumers—switching from traditional grocery stores to the nontraditional superstores, mass merchandisers, and clubs—has increased the bias in the Consumer Price Index because the Bureau of Labor Statistics makes the strong assumption that all price differences between stores in a single market at a given point in time are due to quality differences, even if the good is homogeneous.

2001–2004, the exact timing of the store opening is exogenous. With this assumption, we estimate a short-run 1–2 percent price reduction by competing grocery stores due to Wal-Mart's entry.

The most ambitious work to date on the effect of new nontraditional grocery formats like superstores, mass merchandisers, and clubs on consumers is by Hausman and Leibtag (forthcoming (a)). Hausman and Leibtag do not distinguish between Wal-Mart stores and other nontraditional new sellers in their data, although Wal-Mart is likely responsible for the bulk of nontraditional expenditures. Using household-level grocery purchase data that include not only prices but also quantity purchased and store, Hausman and Leibtag estimate the effect of the expansion of the nontraditional format on prices at traditional grocery stores and use these estimates to calculate welfare gains. To estimate the price effect on competitors, Hausman and Leibtag regress the average quantity-weighted price charged by traditional supermarkets for a given item—such as apple juice, eggs, or ice cream—on city and time fixed effects and on the share of consumer expenditures at superstores, mass merchandisers, and clubs for that item in each city and month. Because consumers' expenditure share at superstores, mass merchandisers, and clubs is in part a function of the prices that traditional grocery stores charge, Hausman and Leibtag instrument for this product-specific expenditure share using the expenditure share at superstores, mass merchandisers, and clubs aggregated across all products in the data, arguing that each good contributes a negligible share to overall expenditure. The instrument is valid—picking up shifts due to all other factors—as long as the price of good 1 (say, bananas) in one venue does not have a direct effect on the price of good 2 (say, yogurt) in another venue and no omitted variable affects both. They find that over a four-year period, expansion of superstores, mass merchandisers, and clubs has caused traditional supermarkets to lower prices by approximately 3 percent, with some variation across products.

One as-yet unstudied example of competitors' responses to Wal-Mart's price reductions is Wal-Mart's \$4 prescription drug plan, announced in September 2006, under which Wal-Mart offers prescriptions of over 300 generic drugs (up to a 30-day supply) for \$4 each. This offer prompted several other retailers including Target and Kmart to start similar programs, while others such as CVS and Walgreens declined to follow suit (Rowland and Krasner, 2006). Very little is known about the effect of this competition on the prices consumers actually pay for prescription drugs, on brand-name premiums, and on the drugstore and brand choices consumers make.

In addition to a wide range of products and a growing menu of services, Wal-Mart also sells convenience associated with one-stop shopping (Basker, Klimek, and Van, 2007). Consistent with the idea that consumers value one-stop shopping, Chiou (2005) finds that consumers have a preference for shopping at Wal-Mart, even after controlling for Wal-Mart's lower prices. She estimates a discrete choice model using data on consumers' DVD purchases by title, store, and price; consumer demographic information; and consumers' travel distance from the relevant stores (including Kmart, Target, Best Buy, and Blockbuster Video). When consumer preferences are allowed to depend on travel distance, price, individual demographic

ics, and store identity, parameter estimates imply that the average consumer would be willing to pay a premium to shop at Wal-Mart over the alternatives.

For some goods, however, lower prices and increased convenience are partially mitigated by lower service levels, reduced product offerings, and other disamenities. It is often observed that Wal-Mart carries fewer brands and varieties of common goods—that it specializes in product breadth rather than depth—a strategy that may have contributed to its lower inventory costs and stronger bargaining position with suppliers. By revealed preference, many consumers are willing to accept this tradeoff, but those whose tastes do not conform to Wal-Mart’s selection could be made worse off if their favored retailers shut down or scale back operations. For example, Wal-Mart does not carry music CDs whose lyrics or cover art it considers offensive; consumers seeking such items have to go elsewhere, and often pay a higher price.

Competitors

Inevitably, in a competitive environment, the emergence of a more-efficient firm will tend to edge out some less-efficient incumbents and is likely to prompt others to change some of their practices. This is, indeed, what we observe in the case of Wal-Mart.

Wal-Mart’s competitors divide into two broad categories: “local” competitors, mostly incumbent retailers in markets Wal-Mart enters, and other large retail chains with which Wal-Mart competes in many markets. Wal-Mart’s entry causes a small number of local competitors in each market to shut down. Its effect on large chain competitors is more complicated and needs further study to be properly quantified.

Local Competitors

Micro data from the U.S. Census Bureau shows that normal “churn” is already high in the retail sector—50 to 60 percent of retailers that exist one year disappear within five years (Jarmin, Klimek, and Miranda, 2004). Wal-Mart creates an even tougher competitive environment. Each new Wal-Mart store reduces local competitors’ market share and profit margins, and causes some businesses to close. To quantify this effect, Jia (2005) estimates a structural equilibrium model in which first, two large discount chains (Wal-Mart and Kmart) make simultaneous moves; and second, a competitive fringe of small retailers decides whether to open. She uses the count of small general merchandise retailers from County Business Patterns data for 1988 and 1997 and Wal-Mart and Kmart data from the Directory of Discount Stores. The large chains’ entry behavior is assumed to depend on local economic conditions and anticipation of the decisions of competitors (both large and small) as well as on an incentive to locate stores in nearby markets to reduce costs. Small stores’ entry decisions are assumed to be based on the observed entry of each of the large chains. Jia (2005) finds that, on average, a county is served by two or three fewer small general merchandise stores, such as dollar and variety stores, if Wal-Mart or Kmart enter it than if either of these large retailers stays out.

Since the average county had 3.86 small discount stores in 1988, this represents a large percentage decline in the number of small discount stores. Jia (2005) argues that Wal-Mart's expansion alone explains 50–70 percent of the net exit of small discount retailers between 1988 and 1997. In Basker (2005a), I use the instrumental-variables approach discussed above to estimate the effect of Wal-Mart's entry on competitors, and I include not just general merchandisers, but all retailers—grocery stores, apparel stores, and more—in the competitor universe. I find that, in total, approximately four small competitors close within five years of Wal-Mart's entry. Since the average county has more than 200 small stores, these estimates suggest Wal-Mart's entry has only a minor effect on the number of small stores.

Although many incumbent competitors do not shut down, they may experience large reductions in revenues: In one study of a single market in upstate New York, an incumbent supermarket lost 17 percent of its sales volume—but did not shut down—in the year following a Wal-Mart Supercenter entry two miles away (Singh, Hansen, and Blattberg, *forthcoming*).

Wal-Mart's net effect on the number of retailers operating in a market masks variation across both location and retail category. Within a county, some businesses fare better than others, and there may be pockets of decline and other pockets of growth both at the subsector level (say, grocery stores vs. home improvement stores) and geographically. For example, in a case study of the Chicago market using scanner data from Dominick's Finer Foods, the entry of a Wal-Mart Discount Store, which does not sell groceries, was estimated to increase revenue at an adjacent traditional grocery store but to reduce revenue at a grocery store two miles away (Zhu, Singh, and Dukes, 2005). This effect is similar to a mall anchor store that increases traffic to smaller stores in the mall (Pashigian and Gould, 1998; Gould, Pashigian, and Prendergast, 2005). Relatedly, Sobel and Dean (2006) cite anecdotal evidence that the composition of retailers changes following Wal-Mart's expansion into an area, but this finding has not been confirmed in systematic studies.

Large Retail Chain Competitors

As large retail chains grow in importance (Jarmin, Klimek, and Miranda, 2005), so do the strategic interactions among them. Wal-Mart's decisions not only affect its large chain competitors, but are also shaped by their anticipated responses, creating an interaction that is more subtle and complex than the relationship between Wal-Mart and its small-scale, local competitors. McKinsey Global Institute (2001) cites evidence that other chain retailers have either explicitly emulated Wal-Mart or, more broadly, changed their practices in ways that reflect Wal-Mart's influence: Target's vice chairman is quoted as saying that Target is “the world's premier student of Wal-Mart” (p. 11).

The location patterns of the major chain retailers are jointly determined. For example, Kmart and Target take Wal-Mart's current and anticipated store locations into account when they decide which markets to enter. Estimates from structural models that account for this simultaneity indicate that Wal-Mart's deterrent effect on Kmart and Target is large relative to the counter effect these competitors exert on Wal-Mart, and has increased over time (Jia, 2005; Zhu, Singh, and Manuszak,

2005). This deterrent effect, combined with economies of density, amplifies the chains' natural advantage in different regions—Wal-Mart, for example, is most popular in the South and Midwest (Pew Research Center, 2005).

Internet retailers are also affected by Wal-Mart's expansion. Using an ordinary least squares difference-in-difference specification, Forman, Ghose, and Goldfarb (2007) find that the types of books consumers purchase from Amazon.com changes when a Wal-Mart or Target store opens in their town: more popular titles, which are likely to be carried by these large discounters, become relatively less popular on Amazon.com, and relatively more obscure titles take their place.

Suppliers

Wal-Mart's buying power has affected both its business relationships with suppliers and the way these suppliers organize internally. Several hundred of Wal-Mart's major suppliers have permanent offices near Wal-Mart's headquarters in Bentonville, Arkansas, to facilitate these relationships (Useem, 2003); information sharing occurs in real time via Wal-Mart's Retail Link software. Wal-Mart also serves as a coordinating device for technology adoption where network externalities affect the profitability of adoption. According to Javorcik, Keller, and Tybout (2006), Wal-Mart's entry into Mexico, for example, has resulted in large efficiency gains among (Mexican) upstream suppliers of soaps, detergents, and surfactants. Most recently, Wal-Mart is requiring its major suppliers to provide Radio Frequency Identification tags (Boyle, 2003).

Wal-Mart's growth, and with it buying power, may have been originally motivated by a desire to obtain countervailing power against manufacturers and thereby to lower costs (Chen, 2003). Some anecdotal evidence suggests that Wal-Mart has used its bargaining power to push down wholesale prices, leading some to blame it for business failures among U.S. producers of consumer goods (Fishman, 2006). If suppliers are perfectly competitive and already earning zero economic profit, it is hard to tell a story where Wal-Mart can force prices down. If suppliers are earning some rents, however, Wal-Mart's share of any surplus could well have increased as the chain has grown.

Wal-Mart is also at the center of anxieties about importing manufactured goods from low-cost producers: Wal-Mart's suppliers are disproportionately foreign and increasingly producing private-label goods. Wal-Mart was not always a major importer. From 1985 to 1992, Wal-Mart's "Buy American" campaign received much media attention. Wal-Mart promised, among other things, to pay up to a 5 percent premium for U.S.-made goods (Zellner, 1992). This campaign ended abruptly in late 1992 after Dateline NBC aired a segment accusing Wal-Mart of producing private-label goods in Bangladesh, smuggling textiles into the United States in excess of quotas, and placing imported clothes on racks marked "Made in the USA" (Gladstone, 1992). By 2004, Wal-Mart imported \$18 billion worth of goods from China alone, accounting for 15.4 percent of U.S. imports of consumer goods from China that year (Basker and Van, 2007). Wal-Mart sources 100 percent of its

apparel from low-cost countries and sells a much higher share of private-label apparel than other national apparel sellers (Gereffi, 2006). Wal-Mart's scale facilitates its disproportionate use of direct global sourcing because direct sourcing entails large fixed costs, which require large volumes to justify. At the same time, global sourcing has contributed to Wal-Mart's advantage over smaller retailers by allowing it to procure inputs at lower cost; and as trade barriers have fallen, making imports cheaper, Wal-Mart's advantage has increased even further (Basker and Van, 2007).

A public argument rages over whether a high level of imports of low-cost manufactured goods from China is good for the U.S. economy. This paper isn't the place to tackle that issue. Whatever one's standpoint in that dispute, however, Wal-Mart's position as a global purchaser puts it at the center of the action.

Wal-Mart and Government Policy

As a national chain with many retail outlets, Wal-Mart interacts with all levels of government. At the federal level, Wal-Mart's dependence on global suppliers is behind its interest in a U.S. trade policy that allows for ease of importing. To that end, Wal-Mart has participated in and helped to shape the Central American Free Trade Agreement (CAFTA) (Cummings, 2004), and has lobbied for other open trade deals. At the state and local levels, Wal-Mart has an interest in regulations that affect wage and benefit policies, zoning, subsidies, and infrastructure development.

Until 1998 when Wal-Mart hired its first Washington lobbyist, it was fairly detached from the national political process. But by 2005, its Political Action Committee (PAC) was one of the largest in Washington (Cummings, 2004). In the 2004 election cycle, the Wal-Mart PAC donated over \$2.7 million to political campaigns, four times as much as it had contributed in 2000 and more than 10 times the amount it contributed to national campaigns in 1996. Wal-Mart's PAC was the twentieth-largest contributor in the 2004 election cycle and the ninth-largest contributor to the Republican Party and Republican candidates. Over time, the fraction of Wal-Mart's contributions that have gone to Republican candidates has declined from 98 to 80 percent (details available from the Center for Responsive Politics at <http://www.crp.org>). A major objective of Wal-Mart's political involvement at the federal level is to reduce U.S. trade barriers against countries from which Wal-Mart would like to import more.

At the state level, the focus has been on wage and benefit laws that potentially affect Wal-Mart's cost advantage and its incentives to operate in different communities. Maryland's "Fair Share Health Care Act," which would have required Wal-Mart to spend at least 8 percent of its total wage bill on health insurance, was to take effect in 2007 but was overturned by a judge in July 2006. The bill would have applied to all companies with at least 10,000 employees in the state, but Wal-Mart, which had 15,681 employees in Maryland in March 2006, was the only company to pass this threshold. Several other states (including New Jersey, Tennessee, and Wisconsin) have considered similar legislation. In a similar vein, Chicago's City

Council approved a minimum wage bill in July 2006 which, had it not been vetoed by Mayor Daley, would have doubled the effective minimum wage paid by stores with at least 90,000 square feet operated by retailers with at least \$1 billion in annual sales.

If any such a law ever takes effect, Wal-Mart could attempt to minimize the impact by reducing store staffing levels, shutting down stores, or opening new stores at a reduced rate. As a result, such a law would likely benefit competitors at the expense of consumers. Given the estimates cited earlier of Wal-Mart's effect on labor markets, it seems likely that limiting Wal-Mart would slightly reduce the number of retail jobs in many markets. If such legislation passes, a difference-in-difference comparison of the behavior of Wal-Mart and other large retailers in the affected city or state with the behavior of these retailers in comparable regions (neighboring states or other large cities, for example) with regard to employment levels, hours of operation, wages, benefits, and prices would be useful in informing the public-policy debate.

Local governments have been split in their response to Wal-Mart: some have attempted to limit Wal-Mart's access with zoning regulations and "living wage" ordinances, while others have welcomed Wal-Mart with infrastructure developments and other subsidies. An anti-Wal-Mart organization called Good Jobs First found that 90 percent of Wal-Mart's Distribution Centers and many of its stores received government subsidies totaling over \$1 billion (Mattera and Purinton, 2004). These subsidies have taken various forms, including infrastructure and site preparation assistance, job training grants, property tax exemptions and abatements, and sales tax abatements. Places that have limited Wal-Mart's entry have often cited its potential impact on urban sprawl, traffic, and congestion; however, research is needed to test these claims. One reason some communities offer Wal-Mart "welcome mats" is the common but statistically unconfirmed perception that it is better to have a Wal-Mart open in one's own jurisdiction than in a neighboring community. As a result, Wal-Mart may be able to pit local municipalities against one another to bid away a large share of the rents to the local community. An alternative explanation for subsidization—that Wal-Mart would not open in an area without it—is harder to support: Jia's (2005) estimates indicate that subsidized Wal-Mart stores are no less profitable than unsubsidized stores, gross of the subsidies.

Concluding Remarks

Wal-Mart's productivity advantage due to its large and early investment in information technology has permanently changed the retail sector. Wal-Mart continues to formulate ambitious expansion plans, including the addition of geographic markets both in the United States and abroad and new products such as

organic foods and financial services.⁸ As its large chain competitors strive to emulate Wal-Mart's technological innovations and suppliers worldwide become increasingly connected to their downstream buyers, the retail sector as a whole has become more efficient at providing consumers with the goods they want at better prices and with increased convenience.

Wal-Mart's biggest and most obvious effect is that it provides lower prices to consumers. The competitive pressure of Wal-Mart has lowered prices that consumers pay even when they do not shop at Wal-Mart; but this pressure also reduces the profitability of other stores and in some cases causes stores, especially small ones, to shut down. Wal-Mart's investment in technology and its tight control over the supply chain have also changed the competitive environment upstream. As Wal-Mart's size has made direct sourcing more profitable, and as the fixed costs of doing business with Wal-Mart have increased (due to factors ranging from the need for a local office in Bentonville, to Wal-Mart's requirement that suppliers install Radio Frequency Identification tags on shipments), small producers have made room for larger ones, and local producers have been displaced by foreign ones. Wal-Mart has therefore contributed to the trend of increased outsourcing and imports.

While much is known about Wal-Mart, many of its economic effects remain unquantified. Wal-Mart's effect on jobs is modest and likely to be positive, but its effect on wages—controlling for workers' characteristics—requires further investigation. Only anecdotal evidence exists about Wal-Mart's effects on product selection; and its impact on upstream industrial structure and the location of production are only beginning to be explored. Wal-Mart's effects on local government expenditures, urban sprawl, traffic, crime, and social capital have received some attention in popular discourse. Hicks (2005a,b) takes a first look at Wal-Mart's impact on government expenditures, but there are no systematic studies establishing Wal-Mart's effect on these outcomes. Retail markets differ in important ways across countries, and Wal-Mart's impact is likely to vary with industrial structure, regulation, and consumer tastes, but no studies have yet quantified the local impact of Wal-Mart's international stores. In this context, Wal-Mart's anticipated entry into Indian and Russian markets and its recent exit from the South Korean and German markets could serve as useful case studies.

Another important open question is the extent to which Wal-Mart's impact on local economies is qualitatively or quantitatively different from the effects of other "big box" retailers such as Kmart, Target, or Costco. These smaller chains have not attracted the same level of public interest and, therefore, research as Wal-Mart. One notable exception is Jia (2005), who estimates the effect of both Wal-Mart and Kmart on small general merchandise stores and finds that they have similar impacts on exit decisions.

Finally, what is known about Wal-Mart's economic impact mainly concerns its short- and medium-run partial-equilibrium effects, but as Wal-Mart enters more

⁸ Wal-Mart withdrew its application to the Federal Deposit Insurance Corporation (FDIC) to open a bank in March 2007, but it continues to provide various financial services, both directly and through partnerships with existing banks.

and more markets, the general equilibrium interactions in markets as a whole could become substantial. In the long run, Wal-Mart's impact on local, national, and global economies will depend on the general-equilibrium responses of other firms, consumers, workers, and governments and on the strategic interactions between these players and Wal-Mart.

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