Charitable Donation, Market Expansion and Market Presence: The Case of Walmart

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Charitable Donation, Market Expansion and Market Presence: The Case of Walmart*

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Abstract

Walmart stores often bring some negative consequences to their neighborhoods. As a result, Walmart frequently faces strong opposition when they plan to launch new stores. Charitable donations could be a way to compensate the local communities and alleviate the opposition. By leveraging our newly collected data set, we document how Walmart's charitable donations at the city level are associated with its market expansion and presence. Our dataset details every Walmart charitable donation from 2011 to 2015, along with store locations, opening dates, and city characteristics. We document four empirical patterns. First, Walmart makes a higher number of donation instances in the year prior to launching a new store, and the year opening a new store. Second, the donations tend to be more concentrated in the vicinity of a new store. These two findings suggest some donations are strategically motivated. Third, the average store sales are positively associated with the number of donation instances. Fourth, the number of donations is positively associated with Walmart's presence in a city. The last finding is consistent with both altruistic and strategic motives. Our results suggest that regardless of its motives, the negative externalities generated by Walmart stores could be partially mitigated by Walmart's charitable giving.

Keywords: Corporate Philanthropy; Charitable Donation; Walmart; Market Expansion; Market Presence; Mitigation in Marketing

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1 Introduction

Corporate philanthropy has become an important aspect of business activities in the modern economy. In the United States alone, corporate contributions in 2019 were $20.1 billion, which is nearly 1% of companies' pre-tax profits that year (Giving USA 2019 report). In a review article on corporate philanthropy, Gautier and Pache (2015) argue that today, it is even considered illegitimate for a company not to engage in charitable activities.

Although corporate charitable contributions are widespread, it is unclear whether they are entirely due to altruistic motives, in line with their stated mission to achieve certain social goals, or partly strategically motivated to help their business (Gautier and Pache, 2015). In fact, anecdotal evidence of such concerns has occasionally emerged. Bertrand et al. (2021) report a leaked document from the Mobil Foundation, which contains a paragraph "Benefits to Mobil", explaining why some grants would be beneficial for Mobil to support a particular charitable organization. There are also news reports on potential hidden motives behind charitable donations when firms are growing. In a New York Times article, Abrams (2015) reports a few cases where the Walmart Foundation seemingly increased its donations to several cities when Walmart was planning to open new stores there. An example of this kind of activity was a donation of $4 million to the city of New York, in support of summer jobs to young people, while Walmart was contemplating expansion in the city (Hernandez, 2011).

In this paper, we examine the presence of altruistic and strategic motives behind donations. We focus on charitable donations during market expansion, because firms may need to rely on donations to cope with the difficulties they face when entering a new market. To understand the rationale behind the potential strategic role of donation, it is important to highlight that an entry of a large firm, such as Walmart, often hurts some local stakeholders. As shown in Basker (2007) and Ailawadi et al. (2010), when Walmart enters a market, the sales of local smaller businesses will likely drop, and they may even end up shutting down

because of the strong competition from Walmart. Local retail workers might get worried about losing their current jobs, and they may not want to work for Walmart (Torrance, 2021). Moreover, local residents can be negatively affected because of the increase in traffic, noise and air pollution. Shoppers who do not live in the neighborhood may also be less likely to care about the public areas, leading to a negative impact on the local environment. Because of these negative consequences, local stakeholders often oppose Walmart's entry, and lobby their city council to reject Walmart's entry proposal.[1] Recognizing this problem, Walmart may use donations altruistically to mitigate negative impacts or strategically to alleviate stakeholders' concerns and facilitate approval of their entry plan.

Despite some anecdotal evidence reported in the news, to our knowledge, there is no peer-reviewed empirical research that uses a complete charitable donations record from a company to investigate its potential motives behind donations and geographical expansion.[2] The goal of our research is to make use of publicly available data to investigate the motives behind the Walmart Foundation's charitable giving decisions. To achieve our goal, we collect a panel data from 2011 through 2015 on Walmart's donation activities, entry locations, new store opening dates, store sales, and city characteristics from various sources. We make use of a conceptual framework to develop hypotheses that relate Walmart's donation activities with its entry decisions and presence at the city level, and we test them using our newly collected data set. Our conceptual framework relies on the assumption that charitable donation can improve Walmart's corporate/brand image.

We document four empirical patterns. First, Walmart makes a higher number of donation instances in the year prior to launching a new store, and the year opening a new store. Second, the donations tend to be more concentrated in the vicinity of a new store. These

[1] Ingram et al. (2010) provide evidence that opposition can lead to withdrawal or rejection of Walmart's new store proposals.

[2] An exception is the paper by Ingram et al. (2010), where they also use donation data from 2004 to 2007. However, due to the limitations in their data source, Walmart's donation information is collected only for cities and for years in which Walmart opened a new store. For cities and years in which Walmart did not open any new stores, they do not have data on Walmart's donation activities.

two findings suggest some donations are strategically motivated. Third, the average store sales are positively associated with the number of donation instances. Fourth, the number of donations is positively associated with Walmart's presence in a city. The last finding is consistent with both altruistic and strategic motives. Overall, our results provide evidence that there is a strategic motive involved in Walmart's donation decisions. More importantly, Walmart's continuing efforts to donate in cities that it has presence in should help mitigate some negative externalities, associated with its stores, although the motives behind such continuing efforts could be mixed with both altruistism and profit-making.

We make three contributions. First, this is the first comprehensive study that introduces the publicly available donation data from 990-PF forms in the marketing literature. This allows us to go beyond the existing literature of charitable giving, which typically relies on the total annual donation spending done by a firm. Our data detail each donation's amount and recipient's location, provide us with an opportunity to learn more insights about how donation decisions work at a much more local level. Second, the institutional setting is well-suited for studying the issue of mitigation in marketing. Although our research does not directly answer to what degree donations offset such negative externalities, our findings will provide empirical evidence as to how Walmart deploys donation may depend on such motives. Third, our work contributes to the literature that studies what happens when Walmart comes to town, which focuses on shoppers welfare, employment opportunities, wage and housing prices; our paper is the first to document descriptive evidence about Walmart's donation activities in this context.

With respect to related research, the closest work to ours is Ingram, Yue, and Rao (2010), who find that when there are protests against Walmart's new store openings, Walmart's donations amount increases. We differ from their work in three ways. First, their work focuses on protests as the sole determinant of the donation amount in the cities where Walmart on opening a store, whereas our work looks at various stages of the turnover of Walmart stores

(e.g., opening and existing stores) and relates these variables to the discussions of altruistic and strategic motives behind donation decisions. Second, their work examines only the year and city where Walmart has new stores, so their approach is a multiyear cross-sectional study. In contrast, with the panel structure of the data of donations and store counts in all cities and years, we provide comprehensive explanations of Walmart's determinants of donations over time. Finally, their work only has one intensive margin of donation (i.e., donation amount), whereas our measures of donation have both the intensive and extensive margin of donation decisions.

Our research is also related to the literature on corporate philanthropy, conducted in several disciplines, including strategy, economics, sociology, public policy, and marketing.[3] Understanding the determinants of corporate charitable giving has been a major topic of the literature on corporate philanthropy, and several studies propose and test several mechanisms at the firm level, such as available resources, including net assets or net income (e.g., Adams and Hardwick 1998), advertising expenditures (e.g., Wang and Qian 2011), and board memberships (e.g., Dunn 2004). For the mechanisms at the individual (i.e., executive) level, several studies propose a profit-maximizing motive behind donations (e.g., Abzug and Webb 1996; Stendardi 1992). Unlike these studies, our work offers empirical examinations of the hypotheses regarding the determinants of corporate donations. More broadly speaking, this work is related to the studies on strategic philanthropy, where corporate giving is not completely altruistic in the sense that the giving not only benefits the recipients but also improves the firm's strategic position and ultimately firm profits (Saiia, Carroll, and Buchholtz 2003). Unfortunately, there are only a few empirical studies that investigate this perspective. Brammer and Millington (2006) study the effect of organizational visibility, firm size, and industry on corporate giving using 300 UK firms and they find that larger

[3]See Gautier and Pache (2015) for a broad review of the corporate philanthropy in different disciplines. In marketing, a review article by Peloza and Shang (2011) argues that researchers have studied the effects of CSR activities on stakeholder's responses and marketing outcomes, such as increased loyalty and willingness to pay.

companies make more charitable givings. Campbell and Slack (2008) use two samples of UK firms and confirm a high level of policy disclosure on charitable donations in annual reports, but also find that only a minority of firms show evidence of strategic philanthropy. Unlike these studies, our work tests the hypotheses by leveraging on the uniqueness of our panel data– multiple geographically defined markets across years.

Finally, this work is related to the extant literature on firm entry and expansion by relating donation activities and store-opening decisions in the near future. In the literature of quantitative marketing and empirical industrial organization, researchers typically utilize a revealed preference approach to uncover model primitives behind retailers' entry and expansion decisions (e.g., Holmes, 2011; Jia, 2009; Nishida, 2015; Ellickson and Grieco, 2013; Zhu et al., 2009). The vast majority of this literature, however, has ignored the role of a firm's charitable donations as a factor that could favorably influence store-opening decisions. At a more general level, this work is related to the Marketing literature, focused on the competition in the US discount retail industry. Zhu, Singh, and Dukes (2011) analyze the impact of national chains on local retail competition. This paper complements the literature by providing a better understanding of the economic forces behind corporate philanthropy and its link to geographic expansions.

The rest of the paper is organized as follows. Section 2 describes the institutional background and the data. Section 3 introduces the conceptual framework and present our testable hypotheses. Section 4 presents the empirical results. Section 5 offers discussions of the empirical findings and conducts robustness checks. Section 6 concludes.

2 Institutional Background and Data

2.1 Walmart's Charitable Donations

Corporate philanthropy through charitable donations has become an important aspect of

Table 1: 10 Largest Companies in the World by Donation in 2015

Rank	Company	Industry	Cash donation (in million US$)
1	Gilead Sciences, Inc.	Pharmaceutical	447
2	Walmart Inc	Retail	301
3	Wells Fargo	Financial services	281
4	Goldman Sachs	Financial services	276
5	ExxonMobil	Energy	268
6	JPMorgan Chase	Financial services	236
7	Chevron	Energy	225
8	Bank of America	Financial services	168
9	Alphabet Inc.	Communication	168
10	Microsoft	Software	135

Source: Phillpott (2018) and Loudenback (2016)

corporate social responsibility. The Giving USA Foundation reported in 2016 that charitable contributions by corporations and corporate foundations in the United States demonstrated solid growth in 2015 and amounted to $18.45 billion, which increased by 3.9% over 2014 (The Giving USA, 2016). Among these corporations, Walmart, the world's largest company in terms of both sales and number of employees, has been an active charitable donor through its charitable arm, the Walmart Foundation. Table 1 shows the top 10 companies in the world as measured by cash donations in 2015 (Phillpott 2018; Loudenback 2016). Walmart ranks second among all industries and is the most philanthropic company in the retail trade sector.

The Walmart Foundation's grantees span a wide range of entities. These include organizations dedicated to the economic empowerment of women (e.g., Washington Area Women's Foundation, Business for Social Responsibility), the growth of small businesses (e.g., Association for Enterprise Opportunity, Opportunity Finance Network), and institutions where Walmart provides programs to revitalize local manufacturing (Oregon State University, North

Carolina State University).[4]

2.2 Data Description

Our data come from four primary sources: (i) Walmart's donations at the city-year level from IRS 990-PF forms, which contain information of each recipient; (ii) Walmart stores' locations, opening and closing years, from Data Axle, supplemented by AggData; (iii) city characteristics from the U.S. Census Bureau's American Community Survey (hereafter ACS); (iv) union coverage at the state level from Unionstats.com.

We collect donation activities data from the Walmart Foundation's Internal Revenue Service (IRS) files, Form 990-PF. Each year, IRS requires all economic entities, which engage in charitable donations and claim private foundation status, to file Form 990-PF. Accordingly, our data from IRS 990-PF forms contains a complete set of information on donations made by Walmart each year. The total number of donation instances made by Walmart is 40,241 from 2011-2015.[5]

Figure 1 provides an example of some original data reported in Form 990-PF in 2014. Each row includes the name of the recipient, its city and state, and the total amount of donations received from the Walmart Foundation. Because all Form 990-PF are scanned and saved as PDF files, we use optical character recognition (OCR) to extract and digitize this information.

For the geographical unit of analysis of donation activities, we choose postal city, which is the "city" name used by the Post Office in the mailing address. The postal city in our data corresponds to the second column in Figure 1. We make this decision for several reasons.

[4]Appendix B provides details of Walmart's charitable donations by categories.

[5]Ingram et al. (2010) also make use of some Walmart donation data in their analysis. Nonetheless, their data source provides limited coverage of Walmart's donation activities. This is because Walmart's news releases about new store openings list the amount of charitable donations, related to the new store openings. Consequently, their source does not have donation information for other years at that location, or for other locations where Walmart has existing stores or does not yet have stores. As a result, they have only collected 968 donation instances from 2004-2007. In contrast, our data contains the comprehensive donation activity by Walmart Foundation in all locations in the U.S. from 2011 to 2015.

Figure 1: Excerpt of the Walmart Foundation's 990-PF Form for 2014

DESCRIPTION			Total
100 BLACK MEN OF AMERICA INC	ATLANTA	GA	$ 100,000 00
4-H CLUBS & AFFILIATED 4-H ORGANIZATIONS	BURLINGTON	KS	$ 2,500 00
826 MICHIGAN	ANN ARBOR	MI	$ 30,000 00
A LEVEL UP	SPRINGDALE	AR	$ 5,000 00
A SERVANTS LOVE INCORPORATED	MOBILE	AL	$ 50,000 00
AARP FOUNDATION TAX-AIDE	Washington	DC	$ 2,300,000 00
ABUNDANT RAIN MINISTRIES INC	COWETA	OK	$ 50,000 00
ABUSED WOMENS AID IN CRISIS INCORPORATED	ANCHORAGE	AK	$ 34,034 00
ACADEMY FOR URBAN SCHOOL LEADERSHIP	CHICAGO	IL	$ 35,000 00
ACCION SAN DIEGO	SAN DIEGO	CA	$ 50,000 00
ACNT Foundation Match for May	BENTONVILLE	AR	$ 638,323 00
ACNT Match	BENTONVILLE	AR	$ 1,325,599 00

First, in all 990-PF forms from 2011 to 2015 (our sample period), they provide the postal city of recipients. Second, the geographical scope of postal cities largely corresponds to their counterparts in cities, towns, villages, and counties, which are established by the state and are authorized to administer local governmental affairs, including whether to allow large discount store chains to open stores. Third, using postal city as a geographical unit of analysis allows us to relate donation instances with city-level demographic variables or other characteristics, which serve as controls in our empirical analysis. We use places as defined by the U.S. Census to integrate demographic information from the ACS and donation decisions at the city level.[6]When matching the postal cities from the 990-PF forms with their counterparts from the ACS Census data, on city name and state, we achieve a high match rate (at least 97.5% by year).

In our analysis, we exclude postal cities that are either very small (bottom 1%) or very large (top 0.5%) in terms of total population. This is because cities with a very low population of less than 100 people hardly receive any donations from Walmart, and donations to very large city, such as Los Angeles, could be motivated by reasons beyond local influence. Furthermore, we drop cities in Arkansas because Walmart has abnormally high charitable

[6]The U.S. Census Bureau (1994) defines a place as, "A place either is legally incorporated under the laws of its respective State, or a statistical equivalent that the Census Bureau treats as a census designated place (CDP)." The majority of the places are incorporated places, which are legally bounded entities and correspond to cities, towns, or villages, depending on the state. Those incorporated cities have active governments.

activities in that state (comparable to California, Texas and Florida, even though Arkansas population is much smaller), indicating that Walmart has home state bias (Walmart was started in Arkansas and its headquarter remains there). We also drop Puerto Rico because it an unincorporated territory and has very different culture compared with the rest of the U.S. After applying this selection criteria, the number of cities left in the sample is 7,502, the total number of donation instances in our data set is 32,911 (down from 40,241 in the complete data set).

Based on our unit of observation, we construct the following donation variables at the city and year level: (i) a binary variable, reflecting whether a donation is made in a given city-year combination, (ii) number of donation instances, and (iii) total dollar amount of donation.

For information on Walmart's store locations, opening and closing dates, and annual sales, we obtain data from Data Axle, which provides information of outlets/stores for a number of retail industries.[7] In rare cases where information about the opening date of a store is missing, we supplement it with data from AggData (https://www.aggdata.com/data).

For city characteristics, we obtain city level demographic characteristics from the U.S. Census Bureau's American Community Survey (ACS). For each city, we use the five-year averages of total population, median income and average number of years of schooling. For union coverage, we use the percentage of union coverage for each state in each year, obtained from Unionstats.com.

Table 2 presents the summary statistics of all our data.The mean total dollar amount of donations, made within a particular city in a given year, is $10,622.66. The vast majority of cities in our sample did not experience donations in most of the years over the period of 2011-2015. The second row in Table 2 shows the summary statistics of the number of donation instances by city-year, while the third row shows a modified version by exclud-

[7]The sales data from Data Axle is estimated based on their proprietary model and data from the US Department of Commerce.

Table 2: Summary Statistics, 2011-2015

Variable	Mean	Median	Min	Max	SD	N
Total Donations ($)	10,622.66	0	0	14,900,000	187,749.20	37,510
Number of Instances of Donations	0.87	0	0	51	2.46	37,510
# of Instances of Donations excl. 0s	2.52	1	1	51	3.59	12,904
Number of New Walmart Stores	0.03	0	0	6	0.19	37,510
Number of Existing Walmart Stores	0.47	0	0	19	0.78	37,510
Number of Closing Walmart Stores	0.01	0	0	2	0.10	37,510
Average Store Sales ($1000s)	54,916	53,924	162	1,955,271	46,246	14,345
Population	20,243	6,691	135	472,481	41,082	37,510
Median Income ($)	26,138	24,430	2,499	98,333	8,818	36,275
Union Coverage (%)	11.96	12.2	2.9	26.1	5.30	37,510
Average Schooling (years)	13.24	13.14	7.61	18.08	0.90	37,500
Population Growth	0.04	0.02	-0.84	2.29	0.17	37,505
Unemployment	0.04	0.04	0.00	0.35	0.02	37,500

Notes: A unit of observation is a city-year combination.

ing the observations with no donation, which account for about two-thirds of our sample. Conditional on that donations have been made, there were, on average, 2.5 donations by city-year, with the maximum number of donations equals 51.

Looking at the number of new, existing, and closing Walmart stores, the average number of new stores by city-year pair is only 0.03 and the average number of existing stores is just under 0.5. Note that the number of existing stores does not include the number of new stores in year t. Interestingly, the average number of closing stores is usually zero and never exceeds two. This indicates that Walmart rarely closes a store once it is launched.

We construct average store sales by summing all the annual sales of existing and new Walmart stores in a given city and year, and then dividing it by the total number of existing and new Walmart stores. The number is in thousands of dollars. The median average annual store sales in our city-year observations is about $54 million with a wide range from $162,000 to nearly $2 billion. It should be noted that some of Walmart's new stores did not operate for the full year in the year they opened. Potentially, this may contribute to a slightly lower

average sales number.

There is a substantial variation in the population of our cities. The population ranges from 135 to 472,481 as the average annual population over the five-year period. About half of our city-year observations have less than 7,000 people in average population over the period 2011-2015. Average median income at the individual level is just over $26,000.

3 Conceptual Framework and Hypotheses Development

This research aims to document to what extent Walmart's donations are consistent with the strategic and altruistic motives. To achieve this goal, we first present our conceptual framework regarding the strategic and altruistic motives in the context of Walmart's donations. Building upon this conceptual framework, we then develop testable hypotheses.

We first start with the strategic motives (Gautier and Pache, 2015) and develop hypotheses that Walmart's charitable activity could be partially driven by its strategic goal of market expansion. Entry by Walmart is often perceived as troubling news by local businesses, residents, and workers (e.g., Crowley and Stainback 2019). Their opposition can play an important role in influencing the city government's decision on granting approval to open a new Walmart store, and affecting consumer's willingness-to-shop at existing stores.

If donations or charitable giving can improve one's corporate image and reputation (e.g., Brown and Dacin, 1997), we would expect Walmart to engage in charitable givings to alleviate these oppositions when opening a new store. This can be achieved by at least two channels: (i) gaining direct support from its beneficiaries; (ii) signaling to the public that the company is a good corporate citizen and socially responsible. If Walmart believes such effects exist, it may coordinate with its charitable arm, the Walmart Foundation, to allocate donations based on its presence in a market, and its intention about where to open a new

store. We refer this rationale to strategic motives.

Meanwhile, Walmart's donation activities could also be driven by its altruistic motives. In particular, opening Walmart stores may induce negative consequences in the neighborthood, e.g., increasing in traffic and noise, and hurting local small retailers. Such negative externalities remain as long as a Walmart store operates. Walmart may then feel responsible and use donations to compensate the local communities and mitigate the negative consequences due to existing stores.

With these potential donation motives in mind, we use this conceptual framework to develop hypotheses that we can test using our data collected from the public domain. As we will show in the subsequent parts of the paper, the hypotheses and empirical findings will allow us to gain more insights of how Walmart donation activities may reflect a combination of the strategic and altruistic motives.

3.1 Donations and Number of New Stores

Our first set of hypotheses is related to the anecdotal evidence presented earlier, regarding some suspicious donation activities associated with Walmart's intention to open a store. Building upon the strategic motives in our conceptual framework, there are at least three reasons why Walmart may want to donate more to a city in which it plans to expand in the near future: (i) donations benefit local beneficiaries, and, hence, can weaken opposing forces in lobbying against Walmart's store openings; (ii) while the city council is still deliberating whether to approve Walmart's store proposal, local donation signals that Walmart will be a good corporate citizen and help local community; (iii) even if the city council has already approved Walmart to set up a new store, it may still want to use donations to improve its image in order to attract new customers and employees, or facilitate its relationship with other local business partners.

Following the above argument, ideally we would like to test whether Walmart will increase

its donation to a city that it plans to enter. However, we face one challenge: we do not observe "Walmart's intention to open a store." We therefore resolve to using a proxy for it. Our idea is to use the number of new Walmart stores in year $t+1$ as a proxy for "intention to enter" in year t. The logic is simple: If Walmart launches a new store in year $t+1$, it must be the case that Walmart intends to enter in year t. We should note that there are many city-year observations in which Walmart did not donate. Hence, we focus on the following hypothesis first,

H1a: Walmart's likelihood of making donations to a city in year t will be higher if it launches a new store in that city in year t+1.

Following the third reason for the hypothesis above, Walmart also has an incentive to donate more to a market where it has just opened a new store in year t. A better corporate image may also lead to fewer people joining protest activities, which will likely be organized by opposing groups at around the time when Walmart opens its new store. This leads to another closely related hypothesis that links the current year donation decisions with new store opening in the current year.

H1b: Walmart's likelihood of making donations to a city in year t will be higher if it launches a new store in that city in year t.

If Walmart has made more donation in the year prior to a new store entry, and the year that a new store enters, it is conceivable that Walmart will allocate fewer donations to that city right after these two years, so that it can provide more donations to other cities with new store openings in that year. Hence, if the data supports H1a and H1b, we expect to see that Walmart will make fewer donations to a city the year after it has opened a new store. This leads to the following hypothesis:

H1c: Walmart's likelihood of making donations to a city in year t will be lower if it launches a new store in that city in year t-1.

Note that H1a, H1b, and H1c focus on the extensive margin of Walmart's donation

decision (i.e., whether to donate). We can apply the same theoretical arguments to extend these hypotheses to study the intensive margin of Walmart's donations as well. There are two possible measures for the intensive margin: (i) the number of donation instances; (ii) the total dollar amount of donation. Note that the number of donation instances can capture how widespread the donations are. If Walmart tries to reach a larger set of consumers, it would make sense to divide a donation budget into a larger number of donations, so that it can benefit more organizations and recipients. Hence, this leads to the following hypotheses.

H1a': Walmart's number of donation instances will be higher in year t if it launches a new store in year t+1.

H1b': Walmart's number of donation instances will be higher in year t if it launches a new store in year t.

H1c': Walmart's number of donation instances will be lower in year t if it launches a new store in year t-1.

Similarly, we have another set of hypotheses based on the total dollar amount of donations.

H1a": Walmart's total dollar amount of donation will be higher in year t if it launches a new store in year t+1.

H1b": Walmart's total dollar amount of donation will be higher in year t if it launches a new store in year t.

H1c": Walmart's total dollar amount of donation will be lower in year t if it launches a new store in year t-1.

3.2 Donations and Number of Existing Stores

We now turn to the second set of hypotheses regarding donations and the number of existing stores. The negative consequences of Walmart stores on the local neighborhood (such as noise, increased traffic, etc.) continue as long as a Walmart store operates there.

Hence, it is possible that Walmart might try to mitigate such negative impacts or compensate the local community through charitable contributions out of altruistic motives. Moreover, the higher the number of existing stores, the more negative externalities they may generate, and, hence, the more likely Walmart will donate. This leads to the following hypotheses.

H2: Walmart's likelihood of making donations to a city in year t increases with the number of existing stores in that city.

H2': Walmart's number of donation instances to a city in year t increases with the number of existing stores in that city.

H2": Walmart's total dollar amount of donation to a city in year t increases with the number of existing stores in that city.

We should note that an alternative rationale behind these three hypotheses could also be strategic motives. If donations can improve Walmart's corporate image and attract more consumers to shop at local Walmart stores, it would also make sense for Walmart to make more donations to a city where it has stronger presence (measured by the number of existing stores).

3.3 Donations and Average Store Sales

The strategic motives behind hypotheses H1, H1' and H2' (and to some degree also behind H2, H2' and H2") rely on the mechanism that charitable donations can improve a firm's brand image and reputation (e.g., Brown and Dacin, 1997). Ideally, we would like to test this mechanism in the empirical context of Walmart. However, there is no publicly available data about a company's image at the local level. We therefore indirectly test this channel by exploring a closely related implication – the better Walmart's brand image or reputation in a particular city, the higher the sales its stores have in that city. Hence, if local donations lead to an improved corporate image of Walmart in that city, we would expect to see more consumers shopping at Walmart stores. Using the three measures of intensive margin of donations in the previous subsection, this discussion leads to the following hypotheses.

H3: Average sales of Walmart stores is positively correlated with whether Walmart donates to that city.

H3': Average sales of Walmart stores is positively correlated with the number of donation instances, made by Walmart, to that city.

H3": Average sales of Walmart stores is positively correlated with the dollar amount of donations by Walmart to that city.

3.4 Size Distribution of Donations and New Store Opening

Building on the previous subsection where we consider the relationship between the number of new stores and the number of donation instances and the amount of donations, we investigate how Walmart may or may not change the size distribution of donations when Walmart expects a new store.

If Walmart has a strategic motive for donations when opening a store and intends to focus its donation budget on the new store, Walmart might allocate a higher amount of donations to new recipients in the vicinity of the new store by reducing the amount of donations to existing recipients. If that is the case, the distribution of donation becomes more concentrated in a city that experiences a new store opening. Alternatively, if Walmart mechanically donates the same amount to new recipients as it donates to existing recipients, the degree of concentration will decrease, because the average share of the donation amount for a given recipient decreases for all existing recipients. Hence, we have the following hypotheses.

H4a: Walmart's concentration of donations will be higher in year t if it launches a new store in year t+1.

H4b: Walmart's concentration of donations will be higher in year t if it launches a new store in year t.

H4c: Walmart's concentration of donations will be higher in year t if it launches a new store in year t-1.

We then turn to the relationship between the number of existing stores and the degree of concentration of donations. As we argue in H2', if operating an existing store generates negative externalities to its neighborhood, Walmart may have an incentive to make donations to that neighborhood to mitigate these negative effects. Therefore, with more Walmart stores in a city, which tend to spatially spread out, this incentive will lead to the need of donating to more entities and hence lead to a lower concentration of donations, all else equal.

H4d: Walmart's concentration of donations in year t decreases with the number of existing stores in that city.

The next section introduces the Herschman-Herfindahl index (hereafter HHI) as a measure of concentration of charitable donations.

4 Econometric Models and Results

In this section, we present the econometric models, empirical results and discuss the findings.

4.1 Models of Extensive and Intensive Margin of Donation

To examine hypotheses H1 and H2, we apply a binary probit model. We assume the dependent variable y_{jt} attains a value of 1 if a positive amount of donations was donated to recipients in city j in year t and 0 otherwise. In our empirical specification, we model the latent variable, y^*_{jt} as,

$$\begin{aligned} y^*_{jt} = \delta + \sum_{i=-1}^{1} \alpha_i \cdot NewStores_{j,t+i} + \beta \cdot ExistingStores_{jt} \\ + \gamma_1 \cdot UCov_{st} + \gamma_2 \cdot TotPop_{jt} + \gamma_3 \cdot MedInc_{jt} + \gamma_4 \cdot YrsSch_{jt} + \eta_{st} + \varepsilon_{jt}, \end{aligned} \tag{1}$$

where $NewStores_{j,t+i}$ is the number of new Walmart stores in city j and year $t+i$, with $i \in \{-1, 0, 1\}$; $ExistingStores_{jt}$ is the number of existing Walmart stores in city j and year t; other variables, $UCov_{st}, TotPop_{jt}, MedInc_{jt}, YrsSch_{jt}$, serve as controls as explained below.

Here, ε_{jt} captures the unobserved disturbance to account for idiosyncratic factors affecting Walmart's donation activities, such as prominent activities of recipients or natural disasters in a given city and year, and we assume this component to be normally distributed. As in a standard probit model, $y_{jt} = 1$ if $y^*_{jt} > 1$, and $y_{jt} = 0$ if $y^*_{jt} \leq 1$. Accordingly, this model generates the likelihood of donations in city j in year t.

To control for the labor union strength, which may affect Walmart's incentive to set up new stores and donate, we include $UCov_{st}$, the percentage of union coverage in state s (where city j belongs) and year t. We use $TotPop_{jt}$, the total population, to control for the market size of city j in year t. We also include $MedInc_{jt}$, the median income among the population, to control for the purchasing power and general preferences of consumers. To allow for further characterization of the tastes of the consumers of the market, we include $YrsSch_{jt}$, which is the average number of years of schooling among the population. Finally, to control for the systematic differences in the propensity to donate across states and across years, we include a state-year fixed effect η_{st}.

For H1, the key variable of interest is $NewStores_{j,t+i}$. If the coefficients for $NewStores_{t+1}$ ($NewStores_t$) are positive, that will provide support for H1a (H1b). For H2, the key variable of interest is $ExistingStores_{jt}$. We expect its coefficient to be negative.

Table 3: Binary Probit Regressions of Donation on Store Count

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# New stores$_t$	0.126**			0.117**	0.133***		0.123**
	(0.0498)			(0.0489)	(0.0490)		(0.0481)
# New stores$_{t+1}$		0.0867**		0.0747**		0.0876**	0.0752**
		(0.0395)		(0.0381)		(0.0394)	(0.0381)
# New stores$_{t-1}$			-0.0661		-0.0824	-0.0683	-0.0832
			(0.0565)		(0.0561)	(0.0564)	(0.0561)
# Existing stores$_t$	0.196***	0.194***	0.199***	0.194***	0.200***	0.197***	0.198***
	(0.0200)	(0.0200)	(0.0204)	(0.0199)	(0.0204)	(0.0203)	(0.0203)
Union coverage	-0.147**	-0.149**	-0.150**	-0.148**	-0.148**	-0.151**	-0.149**
	(0.0697)	(0.0698)	(0.0698)	(0.0697)	(0.0696)	(0.0698)	(0.0696)
Population	6.06e-06***	6.10e-06***	6.20e-06***	6.00e-06***	6.08e-06***	6.12e-06***	6.02e-06***
	(5.74e-07)	(5.73e-07)	(5.72e-07)	(5.76e-07)	(5.75e-07)	(5.73e-07)	(5.76e-07)
Median income	-1.94e-05***	-1.94e-05***	-1.94e-05***	-1.94e-05***	-1.94e-05***	-1.94e-05***	-1.94e-05***
	(1.98e-06)	(1.98e-06)	(1.98e-06)	(1.98e-06)	(1.98e-06)	(1.98e-06)	(1.98e-06)
Schooling	0.0851***	0.0851***	0.0852***	0.0849***	0.0848***	0.0849***	0.0847***
	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0179)
Observations	36275	36275	36275	36275	36275	36275	36275

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city).
The dependent variable takes a value of 1 if donations are made in a given city-year observation.
refers to a number. All specifications include a state-year level fixed effect.

Columns 1 through 7 in Table 3 present the results from our empirical specification. The standard errors are clustered at the city level to allow for the serial correlation of the unobserved disturbance. The specification in column 7 has the full set of explanatory variables. The estimated coefficients on the number of new Walmart stores have signs consistent with H1. In particular, the estimate of $NewStores_{j,t+1}$ is 0.0752 and significant at the 5% level, providing evidence that Walmart is more likely to donate to a city where it plans to open a store(s) (H1a). Moreover, the estimate of $NewStores_{j,t}$ is 0.123 and statistically significant at the 5% level, providing support that Walmart continues to donate to a city where it opens a new store (H1b). In addition, the coefficient of $NewStores_{j,t-1}$ is not statistically significant, but the negative sign is consistent with H1c. These empirical findings are robust across specifications that use a different set of the variables (i.e., columns 1 through

6). Overall, we find that the parameter estimates support the hypotheses that Walmart's likelihood of making donations is higher when it has new stores opened next year (H1a) or this year (H1b).

To put the magnitude of these estimates into perspective, we quantify to what extent an increase in the number of new Walmart stores is associated with the likelihood of donation, evaluated at median values of the explanatory variables in Florida in 2011. We find that one additional new Walmart store in year t and $t+1$ is associated with an increase of 3.7 and 2.3 percentage points in the donation probability, respectively. Given that the average likelihood of donations evaluated at median values of the explanatory variables in Florida in 2011 is around 22.6%, we find the magnitude of the coefficients is economically significant. It is important to highlight that we do not intend to make causal statements here and when we discuss the point estimates in other econometric models below. Instead, the discussion here merely conveys the degree of positive correlation between Walmart donation likelihood and $NewStores_{j,t+1}$ (and $NewStores_{j,t}$) revealed in the data.

For H2, $ExistingStores_{jt}$ in column 7 is 0.198, which is statistically significant at the 1% level. By setting the explanatory variables at their medium values, this implies that an additional existing Walmart store is associated with a 2.27 percentage points higher probability of donating by Walmart. This is consistent with our conceptual framework, which assumes that donations can mitigate the negative externality, generated by the presence of Walmart stores, and/or enhance its image, so as to provide higher customer satisfaction.

To test H1' and H2', we run an ordered probit model of Equation 1, where the the dependent variable is the number of donation instances made by Walmart in city j and year t. The empirical results are presented in Table 4. Focusing on specification 7, all signs are in the expected direction. Although the estimate of $NewStores_{j,t+1}$ is insignificant and hence the results does not support H1a', the results support H1b' and H1c'. The estimates of $NewStores_{j,t}$ and $NewStores_{j,t-1}$ are 0.0792 at the 5% significance and -0.154 at the 1%

significance, respectively. We also find support for H2': the estimate of $ExistingStores_{jt}$ is 0.275 and statistically significant at the 1% level. Overall, the empirical findings largely support H1' and H2'.

Table 4: Ordered Probit Regressions of Instances of Donations on Store Count

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
#New Stores$_t$	0.0647			0.0621	0.0817**		0.0792**
	(0.0436)			(0.0413)	(0.0414)		(0.0392)
#New Stores$_{t+1}$		0.0244		0.0172		0.0260	0.0170
		(0.0369)		(0.0347)		(0.0371)	(0.0351)
#New Stores$_{t-1}$			-0.141***		-0.154***	-0.141***	-0.154***
			(0.0514)		(0.0503)	(0.0510)	(0.0503)
#Existing Stores$_t$	0.267***	0.267***	0.276***	0.267***	0.276***	0.275***	0.275***
	(0.0236)	(0.0235)	(0.0236)	(0.0236)	(0.0235)	(0.0236)	(0.0235)
Union Coverage	-0.148**	-0.149**	-0.151**	-0.148**	-0.150**	-0.151**	-0.150**
	(0.0649)	(0.0652)	(0.0651)	(0.0649)	(0.0647)	(0.0651)	(0.0647)
Total Population	6.07e-06***	6.10e-06***	6.16e-06***	6.05e-06***	6.09e-06***	6.13e-06***	6.07e-06***
	(4.63e-07)	(4.62e-07)	(4.56e-07)	(4.69e-07)	(4.63e-07)	(4.63e-07)	(4.69e-07)
Median income	-2.48e-05***	-2.48e-05***	-2.47e-05***	-2.48e-05***	-2.47e-05***	-2.47e-05***	-2.47e-05***
	(2.02e-06)	(2.02e-06)	(2.02e-06)	(2.02e-06)	(2.02e-06)	(2.02e-06)	(2.02e-06)
Years of schooling	0.124***	0.124***	0.123***	0.124***	0.123***	0.123***	0.123***
	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0179)
Observations	36,275	36,275	36,275	36,275	36,275	36,275	36,275

*$p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Note: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city).
All specifications are ordered probit models, where the categories of the dependent variable are the number of instances of donations made to city j at time t. Cases, where the instances of donations exceed 10, are placed in a single category. # refers to a number. All specifications include a state-year level fixed effect.

We also test H1" and H2" using the dollar amount of donation as the dependent variable. Table 5 presents the results. We do not find that any of the parameters, related to the store counts, are precisely estimated. This result implies neither H1" nor H2" is supported by the findings in specification 7. Combining the findings of Table 4 and Table 5, it suggests that although Walmart does not change the donation budget for each city systematically, except for the size (i.e., population) of the city, it tends to spread out the total amount of donations by having more donation instances when launching new stores and when its presence varies across cities.

Furthermore, from the perspective of the conceptual framework, the results from Table 5 offer two possible interpretations, which are not mutually exclusive. On one hand, the positive correlation between population and the donation amount may suggest that Walmart has altruistic motives and is attempting to meet the existing social needs of the city, which may be in general proportional to the size of the city. On the other hand, the lack of statistical significance in the parameters regarding store counts may be consistent with Walmart's strategic motives. Namely, it could be that Walmart might not be choosing the dollar amount of donations as a way to increase the sales performance of Walmart. To further clarify the latter possibility, we study how different measures of intensity of donations activities (i.e., instances of donations vs. dollar amount of donations) may influence the average sales performance at the store level in the next subsection.

Table 5: Linear Regressions of Total Donations Value on Store Count

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
#New Stores$_t$	10,706			9,783	8,102		7,154
	(14,883)			(12,699)	(13,513)		(11,396)
#New Stores$_{t+1}$		7,369		6,173		7,168	6,302
		(17,189)		(15,752)		(17,026)	(15,810)
#New Stores$_{t-1}$			27,144		25,896	27,044	25,954
			(21,667)		(20,352)	(21,454)	(20,448)
#Existing Stores$_t$	4,730	4,621	3,287	4,584	3,302	3,116	3,150
	(5,550)	(5,685)	(5,566)	(5,708)	(5,548)	(5,806)	(5,767)
Union Coverage	333.5	419.1	384.1	378.7	356.7	433.1	403.0
	(479.7)	(493.7)	(491.0)	(474.0)	(482.5)	(500.5)	(481.3)
Total Population	0.656***	0.660***	0.661***	0.651***	0.652***	0.653***	0.647***
	(0.182)	(0.179)	(0.184)	(0.175)	(0.178)	(0.174)	(0.172)
Median income	-0.124	-0.125	-0.151	-0.124	-0.149	-0.150	-0.149
	(0.848)	(0.848)	(0.846)	(0.848)	(0.845)	(0.846)	(0.845)
Years of schooling	8,128	8,124	8,269	8,114	8,253	8,252	8,240
	(5,230)	(5,228)	(5,225)	(5,226)	(5,220)	(5,219)	(5,216)
Observations	36,275	36,275	36,275	36,275	36,275	36,275	36,275
R-squared	0.034	0.034	0.034	0.034	0.034	0.034	0.034

*$p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city). All specifications are linear regression models, where the dependent variable is the total dollar value of donations made to city j at time t. # refers to a number. All specifications include a state-year level fixed effect.

4.2 Average Sales and Donation Activities

The hypotheses we tested above rely on the assumption that charitable contributions can improve a company's image. However, because data on company's image, especially at the local level, is not available, we cannot test this assumption directly. We therefore resolve to indirectly examine this assumption by testing some closely related empirical implications related to store sales, summarized in H3, H3', and H3". We estimate the following model

using a linear regression.

$$AveSales_{jt} = \delta + \sum_{i=-1}^{1} \alpha_i \cdot NewStores_{j,t+i} + \beta_1 \cdot ExistingStores_{jt} + \beta_2 \cdot Donation_{jt} + \gamma_1 \cdot UCov_{st} + \gamma_2 \cdot TotPop_{jt} + \gamma_3 \cdot MedInc_{jt} + \gamma_4 \cdot YrsSch_{jt} + \eta_{st} + \varepsilon_{jt}, \quad (2)$$

where $AveSales_{jt}$ is the average store sales in city j and year t; $Donation_{jt}$ captures Walmart's donation activities and we use a donation dummy variable, the number of donation instances, and the total donation amount for H3, H3', and H3", respectively. All other explanatory variables are the same as those in Equation 1.

Our empirical findings are presented in Tables 6, 7, and 8 for H3, H3', and H3", respectively. Focusing on specification (7) in Table 6 and Table 7, we find that both the coefficient of the donation dummy (Table 6) and the coefficient of number of donation instances (Table 7) are positive and significant at the 5% level, providing support for H3 and H3'. By contrast, Table 8 shows we do not find support for H3". That is, we do not find evidence that there is any significant positive association between the total donation amount and the average sales of Walmart stores in a given city. Taking these results in conjunction with the findings presented earlier, it is evident that it is the donation distribution, rather than the total dollar amount of donation, that can impact the store sales. This suggests another possible explanation about why we do not find evidence that Walmart's donation budget is associated with its store openings and presence in a city. If Walmart's understanding about the markets is consistent with our findings in H3, H3', and H3", when deciding how to use donation to improve its corporate image, it would likely keep its donation budget unchanged, and focus on how to divide it and spread it out according to its store opening plans and presence in a city. Naturally, this points to the question of how the donation size distribution may be associated with Walmart's entry planning and presence in a city. Our next subsection will shed some light on this by examining H4.

Table 6: Linear Regressions of Average Store Sales – Donation Dummy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# New Stores$_t$	-8,247***			-8,971***	-7,285***		-8,002***
	(1,363)			(1,338)	(1,283)		(1,253)
# New Stores$_{t+1}$		3,140***		4,226***		3,125***	4,096***
		(894.1)		(879.6)		(906.9)	(894.9)
# New Stores$_{t-1}$			-8,121***		-7,066***	-8,113***	-6,951***
			(1,292)		(1,206)	(1,302)	(1,228)
# Existing Stores	-2,264***	-2,554***	-1,657*	-2,428***	-1,617*	-1,790**	-1,786**
	(811.6)	(808.2)	(846.0)	(812.6)	(860.4)	(851.5)	(859.7)
Donation Dummy	6,248***	6,188***	6,160***	6,226***	6,202***	6,141***	6,181***
	(1,084)	(1,085)	(1,079)	(1,085)	(1,080)	(1,081)	(1,081)
Union Coverage	-945.6	-991.6	-1,000.0	-934.7	-954.6	-995.2	-943.9
	(761.4)	(761.4)	(760.3)	(763.6)	(760.8)	(761.2)	(762.7)
Total Population	0.0354**	0.0226	0.0261*	0.0317**	0.0345**	0.0228	0.0309**
	(0.0154)	(0.0150)	(0.0152)	(0.0151)	(0.0154)	(0.0149)	(0.0151)
Median income	-0.0561	-0.0549	-0.0426	-0.0542	-0.0442	-0.0412	-0.0425
	(0.0866)	(0.0864)	(0.0866)	(0.0864)	(0.0866)	(0.0865)	(0.0865)
Years of schooling	1,327	1,278	1,322	1,287	1,337	1,291	1,298
	(914.2)	(912.6)	(911.8)	(912.2)	(912.7)	(910.3)	(910.6)
Observations	14,235	14,235	14,235	14,235	14,235	14,235	14,235
R-squared	0.103	0.102	0.103	0.104	0.104	0.103	0.105

*$p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city). The dependent variable is the average sales of a Walmart store in a given city in a particular year. # refers to a number. All specifications include a state-year level fixed effect.

Table 7: Linear Regressions of Average Store Sales – #Donation instances

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# New Stores$_t$	-8,349***			-9,086***	-7,406***		-8,137***
	(1,355)			(1,330)	(1,266)		(1,236)
# New Stores$_{t+1}$		3,200***		4,301***		3,185***	4,173***
		(932.1)		(904.1)		(946.1)	(920.9)
# New Stores$_{t-1}$			-7,994***		-6,920***	-7,985***	-6,803***
			(1,268)		(1,185)	(1,277)	(1,205)
# Existing Stores	-2,469***	-2,762***	-1,872**	-2,637***	-1,833**	-2,007**	-2,007**
	(766.1)	(765.6)	(796.9)	(769.2)	(810.4)	(804.9)	(811.8)
# Instances of Donations	1,027***	1,018***	1,008***	1,028***	1,017***	1,007***	1,018***
	(256.1)	(257.6)	(256.0)	(256.3)	(255.4)	(256.4)	(255.6)
Union Coverage	-972.7	-1,019	-1,027	-961.3	-981.4	-1,022	-970.2
	(733.7)	(735.9)	(736.2)	(734.9)	(734.2)	(736.6)	(735.1)
Total Population	0.0258	0.0128	0.0166	0.0220	0.0250	0.0132	0.0213
	(0.0171)	(0.0168)	(0.0170)	(0.0168)	(0.0171)	(0.0167)	(0.0168)
Median income	-0.0526	-0.0514	-0.0398	-0.0504	-0.0412	-0.0382	-0.0392
	(0.0851)	(0.0850)	(0.0852)	(0.0850)	(0.0852)	(0.0850)	(0.0851)
Years of schooling	1,422	1,371	1,416	1,381	1,431	1,384	1,391
	(903.0)	(901.4)	(900.7)	(901.0)	(901.6)	(899.2)	(899.5)
Observations	14,235	14,235	14,235	14,235	14,235	14,235	14,235
R-squared	0.105	0.104	0.105	0.106	0.106	0.105	0.107

*$p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city).
The dependent variable is the average sales of a Walmart store in a given city in a particular year.
refers to a number. All specifications include a state-year level fixed effect.

Table 8: Linear Regressions of Average Store Sales – Total Donations ($)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# New Stores$_t$	-8,147***			-8,883***	-7,173***		-7,902***
	(1,349)			(1,325)	(1,267)		(1,238)
# New Stores$_{t+1}$		3,221***		4,297***		3,205***	4,164***
		(896.8)		(880.8)		(912.1)	(898.6)
# New Stores$_{t-1}$			-8,206***		-7,170***	-8,197***	-7,052***
			(1,295)		(1,211)	(1,304)	(1,232)
# Existing Stores	-2,059**	-2,352***	-1,446*	-2,226***	-1,405	-1,582*	-1,578*
	(836.6)	(833.2)	(874.5)	(837.2)	(888.3)	(879.8)	(887.5)
Total Donations ($)	-0.00106	-0.00116	-0.00100	-0.00108	-0.000951	-0.00102	-0.000972
	(0.000889)	(0.000929)	(0.000868)	(0.000903)	(0.000879)	(0.000879)	(0.000880)
Union Coverage	-1,014	-1,059	-1,067	-1,003	-1,023	-1,062	-1,012
	(748.4)	(749.0)	(748.1)	(750.5)	(748.1)	(749.0)	(749.9)
Total Population	0.0482***	0.0353**	0.0387***	0.0444***	0.0470***	0.0353**	0.0434***
	(0.0145)	(0.0140)	(0.0142)	(0.0142)	(0.0145)	(0.0139)	(0.0142)
Median income	-0.123	-0.121	-0.108	-0.121	-0.110	-0.107	-0.108
	(0.0859)	(0.0858)	(0.0858)	(0.0857)	(0.0858)	(0.0857)	(0.0857)
Years of schooling	1,662*	1,611*	1,652*	1,621*	1,668*	1,620*	1,628*
	(907.8)	(906.2)	(905.2)	(905.9)	(906.3)	(903.8)	(904.3)
Observations	14,235	14,235	14,235	14,235	14,235	14,235	14,235
R-squared	0.100	0.099	0.100	0.101	0.102	0.101	0.102

*$p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city).
The dependent variable is the average sales of a Walmart store in a given city in a particular year.
refers to a number. All specifications include a state-year level fixed effect.

4.3 Concentration of Donations around New Stores

We now turn to examine the relationship between the concentration of Walmart's donations and $NewStores_{j,t}$ and $NewStores_{j,t+1}$.

To formally conceptualize the degree of concentration of donations within a city-year observation, we employ the Herschman-Herfindahl index (hereafter HHI) as a measure of concentration of charitable donations. We adopt the HHI because it is a function of every donation amount made and its share, and, hence, it can capture the size distribution of donation.[8] To compute HHI for city i in year t, we treat each donation as an observation within a given city-year pair. The formal definition is as follows:

$$HHI_{it} = \sum_{k=1}^{K_{it}} \left(\frac{d_{kit}}{\sum_{k=1}^{K_{it}} d_{kit}} \right)^2,$$

where HHI_{it} is the Herschman-Herfindahl index of donations made to recipients in city j in year t, d_{kit} is the amount of a single donation k made to an entity in city i in year t, K_{it} is the number of instances of donations in city i in year t, and $\frac{d_{kit}}{\sum_{k=1}^{K} d_{kit}}$ is the share of donation k. By construction, the HHI takes values between 0 and 1, and the closer it is to 1, the higher the concentration.[9]

To test H4, we estimate the following model:

$$\begin{aligned} HHI_{jt} = \delta + \sum_{i=-1}^{1} \alpha_i \cdot NewStores_{j,t+i} + \beta \cdot ExistingStores_{jt} \\ + \gamma_1 \cdot UCov_{st} + \gamma_2 \cdot TotPop_{jt} + \gamma_3 \cdot MedInc_{jt} + \gamma_4 \cdot YrsSch_{jt} + \eta_{st} + \varepsilon_{jt}. \end{aligned} \tag{3}$$

[8] Because the change in HHI has the advantage of capturing the level and changes in the size distribution of the variable of interest, the HHI is often described as "the most useful concentration index currently available" (Viscusi, Harrington, Sappington 2018) and thus commonly applied in antitrust and competition law.

[9] For instance, suppose that a city has three instances of donations of \$1,000 in year 2010. Its HHI in 2010 is $0.333 = (\frac{1,000}{3,000})^2 + (\frac{1,000}{3,000})^2 + (\frac{1,000}{3,000})^2$. Suppose further that the total amount of donations and number of recipients remain the same in 2011, but one recipient receives a larger donation than others, with the following breakdown: \$2,000, \$500, and \$500. This city's HHI in 2011 becomes $0.5 = (\frac{2,000}{3,000})^2 + (\frac{500}{3,000})^2 + (\frac{500}{3,000})^2$.

The explanatory variables are the same as those in Equation 1. To estimate Equation 3, we employ a multivariate linear regression.

Table 9: Linear Regressions of HHI of Donations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# New Stores$_t$	0.0271**			0.0222**	0.0235**		0.0183*
	(0.0107)			(0.00990)	(0.0104)		(0.00969)
# New Stores$_{t+1}$		0.0307***		0.0276**		0.0306***	0.0281**
		(0.0116)		(0.0111)		(0.0118)	(0.0114)
# New Stores$_{t-1}$			0.0331**		0.0285**	0.0330**	0.0294**
			(0.0140)		(0.0137)	(0.0141)	(0.0139)
# Existing Stores$_t$	-0.0652***	-0.0658***	-0.0670***	-0.0659***	-0.0669***	-0.0677***	-0.0676***
	(0.00696)	(0.00694)	(0.00714)	(0.00687)	(0.00709)	(0.00705)	(0.00702)
Union Coverage	-0.00272	-0.00326	-0.00378	-0.00286	-0.00329	-0.00383	-0.00344
	(0.00867)	(0.00882)	(0.00917)	(0.00863)	(0.00894)	(0.00909)	(0.00891)
Total Population	-6.34e-07***	-6.38e-07***	-6.10e-07***	-6.59e-07***	-6.34e-07***	-6.44e-07***	-6.60e-07***
	(8.91e-08)	(8.91e-08)	(8.63e-08)	(9.10e-08)	(8.86e-08)	(8.87e-08)	(9.06e-08)
Median income	4.79e-06***	4.77e-06***	4.74e-06***	4.77e-06***	4.75e-06***	4.72e-06***	4.73e-06***
	(5.38e-07)	(5.39e-07)	(5.40e-07)	(5.38e-07)	(5.40e-07)	(5.40e-07)	(5.40e-07)
Years of schooling	-0.0214***	-0.0213***	-0.0211***	-0.0213***	-0.0211***	-0.0210***	-0.0210***
	(0.00508)	(0.00509)	(0.00509)	(0.00508)	(0.00509)	(0.00510)	(0.00509)
Observations	12,534	12,534	12,534	12,534	12,534	12,534	12,534
R^2	0.158	0.159	0.158	0.159	0.159	0.159	0.159

*$p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Note: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city).
The dependent variable is the Herschman-Herfindahl index, based on the donations that were made in a given city-year observation. # refers to a number. All specifications include a state-year level fixed effect.

Column 7 in Table 9 presents the results of our baseline specification with the full set of explanatory variables. The coefficient for $NewStores_{j,t+1}$ is 0.0281 and statistically significant at the 5% level. This provides support for H4a. Similarly, the coefficient for $NewStores_{j,t}$ is 0.0183, and is significant at the 10% level, providing some weak support for H4b. Both coefficients imply that when Walmart opens a new store in the current or the next year, the degree of concentration of donations increases.

We should note that the HHI incorporates two aspects of donation activities at the city-year level: the number of instances (i.e., number of recipients) of donations and the amount of donation each recipient receives. Accordingly, the increase in the concentration index that

we observe in Table 9 could arise not only from reallocation of donation amount toward a particular recipient(s), but also from a decrease in the number of instances of donations when Walmart opens its new store(s). Nonetheless, as Table 4 shows, the latter possibility is unlikely, because the number of instances of donations increases when Walmart opens a new store in the current year in that city, all else equal.

Meanwhile, the coefficient for $NewStores_{j,t-1}$ is 0.0294 and statistically significant at the 5% level, which offers support for H4c. This result suggests that Walmart cares about equity when it comes to charitable giving. If Walmart concentrates its donation in the neighborhood of its new store in the year it plans to launch it or the year it opens it, in order to maintain equity, Walmart may then distribute more donations to farther from the new store. Turning to the relationship between the HHI of donation and the number of existing stores, the estimated coefficient for $ExistingStores_{j,t}$ is -0.0676 and statistically significant at the 1% level. The negative sign provides support for H4d, because it implies that when Walmart has more existing stores in a given city, it tends to donate to more entities in that city, thereby reducing the degree of concentration of donations.

Overall, we find that the empirical evidence supports H4a, H4b, H4c, and H4d. Nonetheless, these analyses are an indirect way to test whether donations tend to concentrate around new store locations within a city, because the unit of analysis is a city-year combination. We now turn to the evidence that shed some light to this issue.

4.4 Geographical Analysis of Donation Activities and New Stores

The previous subsection does not directly test whether Walmart tends to concentrate its donations within the neighborhood of their new stores, because exact locations of recipients are not reported in the 990-PF forms, with the exception of year 2011 and 2012. In these two years of the 990-PF forms, Walmart also reported the zip code of each recipient that

received donation. [10] This allows us to check if we can find some more direct evidence for our theory. But with only two years of data with donation recipients locations, we cannot run panel regressions which involve one-period lagged and one-period forward of the number of new stores. Hence, we resolve to provide descriptive evidence.

Using these two years of data, we construct a ratio of the total amount of donations, made within a 5 mile radius of the location of a new Walmart store (one, that will be built in the next year), over the total amount of donations, made in the city-year observation. We then tabulate to observe the relative frequency of the different values of that ratio, among cities, which experienced donations in the current year and had a new Walmart store built in the next year. Our distance measure is the distance between the centroid of the zip code area, where the receiver of the donations is located, and the respective Walmart store, in the same city.

Table 10: Ratio of Total Donations, Made Within 5 Miles Radius of a New Walmart Store, Over Total Donations, Made within the Same City

Panel A: Donations Made and Stores Opened in 2011				**Panel B: Donations Made and Stores Opened in 2012**			
Ratio	# Cities	Percent	Cumulative %	Ratio	# Cities	Percent	Cumulative %
0.0-0.1	10	17.24%	17.24%	0.0-0.1	28	30.77%	30.77%
0.1-0.2	1	1.72%	18.97%	0.1-0.2	1	1.10%	31.87%
0.2-0.3	1	1.72%	20.69%	0.2-0.3	0	0.00%	31.87%
0.3-0.4	0	0.00%	20.69%	0.3-0.4	6	6.59%	38.46%
0.4-0.5	6	10.34%	31.03%	0.4-0.5	3	3.30%	41.76%
0.5-0.6	2	3.45%	34.48%	0.5-0.6	10	10.99%	52.75%
0.6-0.7	1	1.72%	36.21%	0.6-0.7	0	0.00%	52.75%
0.7-0.8	0	0.00%	36.21%	0.7-0.8	4	4.40%	57.14%
0.8-0.9	1	1.72%	37.93%	0.8-0.9	1	1.10%	58.24%
0.9-1.0	6	10.34%	48.28%	0.9-1.0	1	1.10%	59.34%
1.0	30	51.72%	100.00%	1.0	37	40.66%	100.00%

[10] Walmart's 990-PF forms for 2011 and 2012 also reported recipients' addresses. However, we find many typos in the exact addresses. Hence, we only use the zip codes as a recipient address.

Tables 10A and 10B show the relationship between donation in year t and the new Walmart store entered in year t. Table 10A shows that 68.97% (=100%-31.03%) of the cities had at least 50% of the total donations made within 5 miles radius of the new Walmart store in 2011. Table 10B shows that 58.24% (=100%-41.76%) of the cities had at least 50% of the total donations made within 5 miles of radius of the new Walmart store in 2012.

Table 11: Ratio of Total Donations in Year t, Made within 5 Miles Radius of a New Walmart Store, over Total Donations, Made Within the Same City in Year $t+1$

Panel A: Donations Made in 2011 and Stores Opened in 2012				**Panel B: Donations Made in 2012 and Stores Opened in 2013**			
Ratio	# Cities	Percent	Cumulative %	Ratio	# Cities	Percent	Cumulative %
0.0-0.1	27	26.73%	26.73%	0.0-0.1	45	28.13%	28.13%
0.1-0.2	2	1.98%	28.71%	0.1-0.2	3	1.88%	30.00%
0.2-0.3	7	6.93%	35.64%	0.2-0.3	13	8.13%	38.13%
0.3-0.4	4	3.96%	39.60%	0.3-0.4	5	3.13%	41.25%
0.4-0.5	9	8.91%	48.51%	0.4-0.5	4	2.50%	43.75%
0.5-0.6	3	2.97%	51.49%	0.5-0.6	4	2.50%	46.25%
0.6-0.7	1	0.99%	52.48%	0.6-0.7	9	5.63%	51.88%
0.7-0.8	1	0.99%	53.47%	0.7-0.8	7	4.38%	56.25%
0.8-0.9	1	0.99%	54.46%	0.8-0.9	2	1.25%	57.50%
0.9-1.0	0	0.00%	54.46%	0.9-1.0	6	3.75%	61.25%
1.0	46	45.54%	100.00%	1.0	62	38.75%	100.00%

Table 11A and Table 11B show the relationship between donation in year t and the new Walmart store entered in year t+1. Table 11A shows that 51.49% (=100%-48.51%) of the cities had at least 50% of the 2011 total donations made within 5 miles radius of the new Walmart store opened in 2012. Table 11B shows that 56.25% (=100%-43.75%) of the cities had at least 50% of the 2012 total donations made within 5 miles of radius of the new Walmart store opened in 2013. Although Tables 10A, 10B, 11A and 11B cannot be considered as causal evidence, they do provide some suggestive evidence that donations tends to be concentrated in close proximity of a new Walmart store opened either in the current or next year.

5 Discussions and Robustness Checks

Let us recap our findings. Although we do not attempt draw any welfare statements about Walmart's donation activities and its market expansion, we believe our empirical findings have generated some new insights about their donation decisions.

1. Our findings of donation activities support the assumption that Walmart is aware of the negative externalities that its stores generate, and it uses charitable donations to mitigate them. It is worth highlighting that Walmart tends to make a higher number of donations when it plans to opens a new store (H1a & H1a'), and in the year that a new store is opened (H1b & H1b'), possibly as an attempt to smooth out the opposition. Moreover, our positive findings of H2 suggest that Walmart continues to donate more to the city where it is present. Our study cannot tease out the real rationales behind it: (i) (Altrustic) Walmart may responsible for the negative externalities that it generates and uses donations to make up to the local communities; (ii) (Profits) Our positive findings in H2 and H2' suggest that donations might help store sales, possibly through the channel of improving its corporate image. But regardless of its rationale, to some extent Walmart uses charitable donations to internalize the negative externalities its stores generate. Hence, the local communities are at least somewhat compensated. Consumers who shop at Walmart likely benefit from its everyday low price.

2. Some activists have been critical about Walmart by just focusing on the company's seemingly strategic charitable giving activities in cities that Walmart plans to enter. Our study suggests that it is also important to pay attention to Walmart's donation activities after their store opening. The negative externality problem is at least partially addressed because Walmart continues to donate in a city after successfully launching a store.

3. Note that when the number of existing stores increases, we do not see evidence that Walmart systematically increases the total donation spending for that city. Instead, the company tends to spread out the donation budget more. This likely implies that each neighborhood receives less donations, on average, when Walmart increases its presence in a city by having more stores.

5.1 Robustness Checks

A potential concern about our regression results is whether they would remain robust if we include more controls. Here, we examine the results' robustness by including the population growth rate, the number of closing stores, and the unemployment rate. We also discuss the issue of political donation and charitable donations done by Target and Kmart.

5.1.1 Population Growth

As the market size increases, Walmart may want to keep or acquire a larger share of it by marketing itself successfully to the new portion of the market. One way to do that would be through the use of donations.

Suppose Walmart recognizes that charitable donation is a way to improve its brand image and store sales. If Walmart anticipates that the market size will increase (or decrease), it may change its incentive to donate accordingly. Population growth could be correlated with $NewStores_{j,t}$ or $ExistingStores_{j,t}$ and could lead to omitted variable bias if we do not include it.

To examine this possibility, we re-estimate all models (Equations 1, 2, and 3) by adding the population growth rate variable. We define the population growth as the change of population between the average population for the period 2006-2010 and the period 2011-2015, divided by the average population for the period 2006-2010. Table 12 presents our

results with the inclusion of the population growth variable. Overall, population growth is not statistically significant in all models, and our previous findings remain robust.

Table 12: Models Specifications: Including Population Growth

	Probit	Ordered Probit	Donation ($)	Av. Sales	Av. Sales	Av. Sales	HHI
# New Stores$_t$	0.123**	0.0794**	7,159	-8,001***	-7,771***	-7,902***	0.0184*
	(0.0481)	(0.0392)	(11,401)	(1,255)	(1,227)	(1,240)	(0.00969)
# New Stores$_{t+1}$	0.0758**	0.0172	6,310	4,103***	4,350***	4,172***	0.0281**
	(0.0381)	(0.0352)	(15,822)	(886.9)	(886.2)	(891.6)	(0.0114)
# New Stores$_{t-1}$	-0.0827	-0.153***	25,968	-6,941***	-6,756***	-7,040***	0.0295**
	(0.0561)	(0.0503)	(20,465)	(1,206)	(1,195)	(1,211)	(0.0139)
# Existing Stores$_t$	0.198***	0.275***	3,144	-1,793**	-2,030**	-1,587*	-0.0676***
	(0.0203)	(0.0236)	(5,770)	(861.7)	(827.0)	(887.3)	(0.00702)
Donations Dummy				6,182***			
				(1,072)			
#Instances of Donations					1,592***		
					(265.4)		
Total Donations Value						-0.000975	
						(0.000907)	
Union Coverage	-0.149**	-0.150**	406.4	-945.0	-939.1	-1,013	-0.00341
	(0.0696)	(0.0647)	(480.4)	(762.7)	(727.0)	(750.0)	(0.00892)
Total Population	6.03e-06***	6.07e-06***	0.647***	0.0311**	0.0194	0.0436***	-6.58e-07***
	(5.77e-07)	(4.69e-07)	(0.172)	(0.0144)	(0.0155)	(0.0137)	(9.06e-08)
Population Growth	-0.0830	-0.0543	-1,148	-1,063	-1,053	-1,320	-0.0157
	(0.0651)	(0.0594)	(2,972)	(18,973)	(18,978)	(19,007)	(0.0182)
Median income	-1.92e-05***	-2.45e-05***	-0.146	-0.0396	-0.0170	-0.105	4.77e-06***
	(1.98e-06)	(2.03e-06)	(0.846)	(0.101)	(0.0991)	(0.0982)	(5.42e-07)
Years of schooling	0.0850***	0.123***	8,239	1,312	1,308*	1,646**	-0.0210***
	(0.0179)	(0.0179)	(5,215)	(802.3)	(793.8)	(805.0)	(0.00510)
Observations	36,270	36,270	36,270	14,232	14,232	14,232	12,534
R-squared			0.034	0.105	0.107	0.102	0.159

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city).
The dependent variable in column 1 takes a value of 1 if donations are made in a given city-year observation. The dep. variable in column 2 is the number of instances of donations. The dep. variable in column 3 is the total donation spending in a given city-year observation. The dependent variable in columns 4-6 is the average sales of a Walmart store in a city-year observation. The dependent variable in column 7 is the Herschman-Herfindahl index of donations.
refers to a number. All specifications include a state-year level fixed effect.

5.1.2 Number of Closing Stores

We have been focusing on the number of new (entering) Walmart stores and existing Walmart stores. It is natural to ask how donation activities and average store sales may be associated with the number of closing stores, and whether including that number could change our findings. However, as we pointed out in section 2.2, Walmart rarely closes stores. Hence, we do not expect the number of closing stores variable to have enough variation to identify its coefficient, in particular, the probit and ordered probit model specifications, where the dependent variable is discrete.

Keeping the data limitation in mind, we re-estimate all models by including the past, current and future number of closing Walmart stores in a given city and year. Table 13 presents the results. For the donation equations (Probit. Ordered Probit and donation spending) and HHI equation, none of the $\#ClosingStores_{j,t+i}$, $i = -1, 0, 1$, is significant at the 5% level; we do not read too much into it, as we have already noted the limited variation in $\#\text{ClosingStores}_{j,t+i}$. The only place that we find statistically significant results is the the average store sales regression, where we find $\#ClosingStores_{j,t+1}$ is negative and significant at 5% level. This is consistent with our intuition that low current year store sales can trigger Walmart to close some stores next year.

Most importantly, by examining the estimates for $\#NewStores_{j,t+i}$ and $\#ExistingStores_{j,t}$, all of our findings presented earlier remain robust.

Table 13: Models Specifications: Including the Number of Closing Walmart Stores

	Probit	Ordered Probit	Donation ($)	Av. Sales	Av. Sales	Av. Sales	HHI
# New Stores$_t$	0.150***	0.0916**	4,351	-7,357***	-7,079***	-7,233***	0.0190*
	(0.0498)	(0.0414)	(9,166)	(1,355)	(1,327)	(1,342)	(0.00997)
# New Stores$_{t+1}$	0.0742*	0.0144	6,661	4,053***	4,306***	4,120***	0.0285**
	(0.0381)	(0.0354)	(15,943)	(896.7)	(895.3)	(900.7)	(0.0115)
# New Stores$_{t-1}$	-0.0850	-0.174***	28,100	-7,188***	-6,891***	-7,286***	0.0366**
	(0.0580)	(0.0526)	(20,868)	(1,277)	(1,263)	(1,283)	(0.0152)
# Existing Stores$_t$	0.199***	0.275***	3,137	-1,657*	-1,889**	-1,445	-0.0672***
	(0.0204)	(0.0238)	(6,057)	(879.8)	(844.9)	(908.1)	(0.00707)
# Closing stores$_t$	0.0308	0.131*	-14,800	1,685	1,023	1,686	-0.0409
	(0.0786)	(0.0773)	(11,679)	(1,723)	(1,732)	(1,742)	(0.0266)
# Closing stores$_{t+1}$	-0.142*	-0.0701	14,430	-3,698**	-3,982**	-3,840**	-0.00547
	(0.0732)	(0.0702)	(16,425)	(1,549)	(1,549)	(1,552)	(0.0205)
# Closing stores$_{t-1}$	0.0307	0.0735	-10,159	-1,265	-1,442	-1,241	-0.0173
	(0.0610)	(0.0523)	(11,185)	(1,319)	(1,322)	(1,328)	(0.0165)
Donations Dummy				6,169***			
				(1,081)			
#Instances of Donations					1,593***		
					(266.6)		
Total Donations Value						-0.000955	
						(0.000885)	
Union Coverage	-0.149**	-0.149**	353.6	-919.6	-911.7	-986.5	-0.00294
	(0.0696)	(0.0647)	(465.5)	(765.5)	(727.6)	(752.5)	(0.00861)
Total Population	6.01e-06***	6.05e-06***	0.650***	0.0305**	0.0189	0.0429***	-6.52e-07***
	(5.75e-07)	(4.68e-07)	(0.173)	(0.0151)	(0.0160)	(0.0142)	(8.99e-08)
Median income	-1.94e-05***	-2.46e-05***	-0.158	-0.0422	-0.0198	-0.108	4.69e-06***
	(1.98e-06)	(2.02e-06)	(0.839)	(0.0864)	(0.0856)	(0.0857)	(5.42e-07)
Years of schooling	0.0845***	0.122***	8,312	1,297	1,295	1,626*	-0.0208***
	(0.0179)	(0.0179)	(5,203)	(908.8)	(897.6)	(902.5)	(0.00512)
Observations	36,275	36,275	36,275	14,235	14,235	14,235	12,534
R-squared			0.034	0.105	0.107	0.102	0.160

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city).
The dependent variable in column 1 takes a value of 1 if donations are made in a given city-year observation. The dep. variable in column 2 is the number of instances of donations. The dep. variable in column 3 is the total donation spending in a given city-year observation. The dependent variable in columns 4-6 is the average sales of a Walmart store in a city-year observation. The dependent variable in column 7 is the Herschman-Herfindahl index of donations.
refers to a number. All specifications include a state-year level fixed effect.

5.1.3 Unemployment Rate

We include the city's unemployment rate as an additional control in our specifications. A city's unemployment rate can be viewed as one measure of the need for charitable activities. If donation activities have a positive association with local unemployment rate, it will provide

evidence to support an altruistic motive. The unemployment rate by city is taken from the ACS.

The results are presented in Table 14. Interestingly, the estimate for *Unemployment Rate* is statistically insignificant across all models at 5% level, and is only negative and significant in the HHI regression at 10% level. Higher unemployment rate may indicate that more people need help, and Walmart can use the same donation budget to reach to more people in need by spreading its donation more evenly. However, including local unemployment rate does not change our results in the equations that use donation activities as the dependent variables (i.e., donation dummy, number of donations, donation spending). Our earlier reported results on $\#NewStores_{j,t+i}$ and $\#ExistingStores_{j,t}$ remain robust in this set of regressions after including *Unemployment Rate*.

In Appendix A, we present specifications which include all of the additional controls considered above (population growth, no. of closing stores, and unemployment rate) in Table 15. The main findings for our hypotheses remain robust.

Table 14: Models Specifications: Including Unemployment

	Probit	Ordered Probit	Donation ($)	Av. Sales	Av. Sales	Av. Sales	HHI
# New Stores$_t$	0.123**	0.0794**	7,153	-8,000***	-7,770***	-7,899***	0.0182*
	(0.0481)	(0.0391)	(11,396)	(1,254)	(1,225)	(1,239)	(0.00968)
# New Stores$_{t+1}$	0.0751**	0.0169	6,288	4,097***	4,345***	4,166***	0.0280**
	(0.0381)	(0.0351)	(15,812)	(895.3)	(893.2)	(898.9)	(0.0113)
# New Stores$_{t-1}$	-0.0832	-0.153***	25,958	-6,956***	-6,771***	-7,059***	0.0294**
	(0.0561)	(0.0502)	(20,447)	(1,225)	(1,214)	(1,230)	(0.0139)
# Existing Stores$_t$	0.198***	0.275***	3,128	-1,783**	-2,019**	-1,573*	-0.0675***
	(0.0203)	(0.0235)	(5,755)	(857.5)	(823.0)	(885.3)	(0.00701)
Unemployment rate	0.445	0.977	77,626	12,359	14,658	18,221	-0.333*
	(0.600)	(0.628)	(61,474)	(38,433)	(38,113)	(38,545)	(0.195)
Donations Dummy				6,169***			
				(1,088)			
#Instances of Donations					1,591***		
					(267.1)		
Total Donations Value						-0.000985	
						(0.000882)	
Union Coverage	-0.150**	-0.151**	322.6	-955.1	-951.2	-1,028	-0.00305
	(0.0696)	(0.0647)	(504.3)	(763.7)	(727.5)	(750.2)	(0.00896)
Total Population	6.00e-06***	6.04e-06***	0.644***	0.0305**	0.0187	0.0427***	-6.49e-07***
	(5.77e-07)	(4.69e-07)	(0.171)	(0.0150)	(0.0159)	(0.0141)	(9.05e-08)
Median income	-1.91e-05***	-2.40e-05***	-0.101	-0.0340	-0.00964	-0.0955	4.51e-06***
	(2.03e-06)	(2.06e-06)	(0.875)	(0.0921)	(0.0907)	(0.0922)	(5.48e-07)
Years of schooling	0.0858***	0.125***	8,434	1,330	1,332	1,674*	-0.0219***
	(0.0179)	(0.0179)	(5,150)	(915.3)	(904.1)	(907.1)	(0.00513)
Observations	36,275	36,275	36,275	14,235	14,235	14,235	12,534
R-squared			0.034	0.105	0.107	0.102	0.160

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city).
The dependent variable in column 1 takes a value of 1 if donations are made in a given city-year observation. The dep. variable in column 2 is the number of instances of donations. The dep. variable in column 3 is the total donation spending in a given city-year observation. The dependent variable in columns 4-6 is the average sales of a Walmart store in a city-year observation. The dependent variable in column 7 is the Herschman-Herfindahl index of donations.
refers to a number. All specifications include a state-year level fixed effect.

5.1.4 Political Donations to Local Politicians, Donations by Kmart and Target

One potential concern in our specifications is that Walmart may donate directly to local politicians at the city council or county council level, who may decide whether to approve Walmart's new store proposal. Such political donations are not included in the 990-PF forms. To investigate this concern, we search the past history of Walmart's donations to politicians from https://www.opensecrets.org. We find that Walmart only makes donations

to politicians who are running for House of Representatives or the US Senate at the state or federal levels. For the state-level systematic differences in donation activities, we address them by including state-year fixed effects in the empirical specification.

We also look into the charitable donation activities by Kmart and Target during our sample period, 2011-2015. To do this, we look for the 990-PF forms for Kmart and Target during our sample period. Kmart was acquired by Sears in 2005, and it does not have its own charitable foundation. Target Foundation exists during our sample period. Unfortunately, Target Foundation's 990-PF forms for 2012-2015 only provide the names of recipients without their city and state, and hence we are not able to incorporate it in our empirical analysis – this is one potential limitation for our research. However, we should note that Target's 2011 990-PF form includes the recipients' city and state and the vast majority of them are located in Minneapolis and St. Paul, MN, and almost all donations are made in MN where Target's headquarter is located. We also checked Target's 990-PF forms in 2009 and 2010, and they show the same patterns. If Target's donation activities follow the patterns in 2009-2011 (i.e., they are focused on Minneapolis and St Paul, MN), we do not expect that omitting them would have any material impact on our results (recall our sample includes 7502 cities).

6 Conclusion

As the first study that makes use of the donation data available from 990-PF forms, we document to what extent Walmart donation activities are associated with its market expansion and presence at the local level. Our findings are consistent with our conceptual framework that Walmart potentially uses donation to overcome entry barriers, and helps local communities to mitigate the negative externalities generated by Walmart stores.

We conclude by discussing future research directions. Most existing studies on the impacts of Walmart's entry do not quantify the benefits generated by Walmart donations. The

data from the 990-PF forms give us a starting point to answer this question, by providing us with the name of each donation recipient. It may be possible to find out more information about each recipient, e.g., what role(s) they play in the local community. We may then be able to learn more about how the donations help the local communities.

One may even be able to classify donations as either strategic or altruistic based on the nature of the recipients. It is also possible to study the interaction between advertising and donation activities, whether they are substitutes or complements. Studying these research questions is beyond the scope of this paper. We leave them for future research.

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Appendix A: Additional Tables

Table 15: Models Specifications: Including Population Growth, the Number of Closing Walmart Stores, and Unemployment

	Probit	Ordered Probit	Donation ($)	Av. Sales	Av. Sales	Av. Sales	HHI
# New Stores$_t$	0.150***	0.0918**	4,344	-7,355***	-7,078***	-7,232***	0.0190*
	(0.0498)	(0.0414)	(9,177)	(1,354)	(1,326)	(1,341)	(0.00997)
# New Stores$_{t+1}$	0.0747**	0.0146	6,657	4,062***	4,314***	4,130***	0.0286**
	(0.0381)	(0.0353)	(15,956)	(889.7)	(889.4)	(894.6)	(0.0115)
# New Stores$_{t-1}$	-0.0844	-0.174***	28,112	-7,183***	-6,888***	-7,282***	0.0366**
	(0.0580)	(0.0525)	(20,883)	(1,251)	(1,238)	(1,258)	(0.0151)
# Existing Stores$_t$	0.199***	0.274***	3,108	-1,661*	-1,892**	-1,450	-0.0671***
	(0.0204)	(0.0237)	(6,046)	(879.3)	(844.7)	(905.5)	(0.00706)
# Closing stores$_t$	0.0305	0.131*	-14,764	1,682	1,023	1,685	-0.0406
	(0.0787)	(0.0772)	(11,654)	(1,757)	(1,768)	(1,776)	(0.0265)
# Closing stores$_{t+1}$	-0.142*	-0.0693	14,476	-3,688**	-3,970**	-3,826**	-0.00549
	(0.0731)	(0.0702)	(16,407)	(1,549)	(1,551)	(1,553)	(0.0205)
# Closing stores$_{t-1}$	0.0315	0.0746	-10,072	-1,251	-1,426	-1,222	-0.0176
	(0.0610)	(0.0523)	(11,141)	(1,305)	(1,308)	(1,314)	(0.0165)
Unemployment rate	0.431	0.969	77,540	12,128	14,234	17,909	-0.329*
	(0.600)	(0.628)	(60,888)	(38,538)	(38,225)	(38,653)	(0.195)
Donations Dummy				6,159***			
				(1,079)			
#Instances of Donations					1,592***		
					(267.2)		
Total Donations Value						-0.000972	
						(0.000914)	
Union Coverage	-0.150**	-0.151**	276.7	-931.7	-925.7	-1,004	-0.00252
	(0.0696)	(0.0647)	(486.9)	(766.4)	(728.4)	(753.0)	(0.00867)
Total Population	6.00e-06***	6.02e-06***	0.647***	0.0302**	0.0185	0.0424***	-6.40e-07***
	(5.77e-07)	(4.69e-07)	(0.172)	(0.0143)	(0.0152)	(0.0136)	(8.99e-08)
Population Growth	-0.0840	-0.0563	-1,168	-1,065	-1,079	-1,324	-0.0142
	(0.0651)	(0.0592)	(2,937)	(18,980)	(18,986)	(19,015)	(0.0182)
Median income	-1.89e-05***	-2.38e-05***	-0.106	-0.0309	-0.00698	-0.0916	4.51e-06***
	(2.04e-06)	(2.07e-06)	(0.870)	(0.104)	(0.102)	(0.102)	(5.52e-07)
Years of schooling	0.0860***	0.125***	8,506*	1,342*	1,346*	1,689**	-0.0216***
	(0.0179)	(0.0179)	(5,138)	(802.1)	(794.2)	(803.4)	(0.00516)
Observations	36,270	36,270	36,270	14,232	14,232	14,232	12,534
R-squared			0.034	0.105	0.107	0.102	0.160

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors in parentheses. We cluster the standard errors on the panel identifier (i.e., city).
The dependent variable in column 1 takes a value of 1 if donations are made in a given city-year observation. The dep. variable in column 2 is the number of instances of donations. The dep. variable in column 3 is the total donation spending in a given city-year observation. The dependent variable in columns 4-6 is the average sales of a Walmart store in a city-year observation. The dependent variable in column 7 is the Herschman-Herfindahl index of donations.
refers to a number. All specifications include a state-year level fixed effect.

Appendix B: Walmart's Charitable Donations by Categories

Walmart's charitable activity tend to fall in one of three categories. Those are "Opportunity", related to "shifting the practices of employers and training providers, placement agencies and others to help workers advance more quickly", "Sustainability", related to "strengthening the charitable food system by building capacity and providing greater access to healthier food", and "Community", dealing with "providing relief to communities when natural disasters strike and building preparedness for disasters in the future" (Using our Strengths to Help Others - 2016 Report).

Examples of the "Opportunity" category is the act of stimulating small business growth through awarding $3.6 million to the Opportunity Finance Network and the act of enhancing local manufacturing through launching the Walmart U.S. Manufacturing Innovation Fund in 2014, providing a total of $10 million in grants through the year 2019, towards advancing technologies in the production or assembly of consumer products (2016 Report). Examples of the "Sustainability" category is the improvement in nutritional education through "donating $1.2 million to Food Corps to teach children in 500 schools about nutrition, including tending school gardens and bringing locally sourced food to school cafeterias" and contributing to hunger relief through donating $10.7 million to Feeding America (2016 Report). Finally, examples of the "Community" category are the funding of over 800 scholarships for U.S. Walmart associates and their dependents, amounting to nearly $4.7 million and the investment of over $46 million in local grants in the U.S, supporting various community needs (2016 Report).