Journal of Public Economics 94 (2010) 222–234

Contents lists available at ScienceDirect

Journal of Public Economics

journal homepage: www.elsevier.com/locate/jpube

# The geography of giving: The effect of corporate headquarters on local charities

David Card [a,*], Kevin F. Hallock [b], Enrico Moretti [a]

[a] Department of Economics, University of California at Berkeley, 549 Evans Hall, #3880, Berkeley, CA 94720, United States
[b] Departments of Labor Economics and HR Studies, Cornell University, 391 Ives Hall (East), Ithaca, NY 14853, United States

ARTICLE INFO

*Article history:*
Received 28 March 2008
Received in revised form 23 July 2009
Accepted 30 November 2009
Available online 16 December 2009

*Keywords:*
Non-profits
Corporate location
Donations

ABSTRACT

Does the presence of corporate headquarters in a city affect the incomes of local charities? To address this question we combine data on the head office locations of publicly traded U.S. firms with information on the receipts of local charitable organizations. Cities like Houston, San Jose, and San Francisco gained significant numbers of corporate headquarters over the past two decades, while cities like Chicago and Los Angeles lost. Our analysis suggests that attracting or retaining the headquarters of a publicly traded firm yields approximately $3–10 million per year in contributions to local non-profits. Likewise, each $1000 increase in the market value of the firms headquartered in a city yields $0.60–1.60 to local non-profits. Most of the increase in charitable contributions is attributable to an effect on the number of highly-compensated individuals in a city, rather than through direct donations by the corporations themselves. The increased private sector donations from the presence of corporate headquarters do not seem to crowd out government grants to local charities.



## 1. Introduction

Much of the vital infrastructure in American cities is provided by non-profit organizations.[1] Over one-half of all hospitals, one-third of colleges and universities, and the vast majority of cultural institutions are tax exempt non-profits that rely on charitable donations as a major source of income.[2] These organizations in turn contribute to the social capital of a city, helping to attract new residents and in many cases defining the package of amenities that people associate with a city.

Although the importance of local non-profit organizations is widely acknowledged, it is unclear whether local policy makers can actually influence the supply of charitable donations in a city, or otherwise affect the viability of local non-profits. One policy that has attracted considerable attention is the use of tax subsidies to attract corporate headquarters (Greenstone and Moretti, 2005). In a well-publicized recent example, Boeing was granted $50 million (about $100,000 per job) in tax abatements to relocate its corporate headquarters from Seattle to Chicago.[3] Like other place-based policies, subsidies to attract headquarters are difficult to justify.[4] Supporters of these policies often point to the impact on local non-profits as one of the important benefits of attracting or retaining company headquarters.[5]

There are two primary channels through which corporate headquarters could affect local non-profits. First, corporations themselves are large donors, and some fraction of their giving is channeled to local charities (McElroy and Siegfried, 1986). Second, highly-paid corporate executives are potentially important benefactors of local charities (Galaskiewicz, 1997; Werbel and Carter, 2002). In both cases the attraction (or retention) of a major corporate headquarters could influence the supply of local charitable contributions. Alternatively, corporations may be attracted to a city by the

* Corresponding author.
*E-mail addresses:* card@econ.berkeley.edu (D. Card), hallock@cornell.edu (K.F. Hallock), moretti@econ.berkeley.edu (E. Moretti).

[1] There is a large existing literature on the economics of charitable giving. See Bremmer (1988) and Friedman and McGarvie (2002) for historical overviews of American philanthropy, Himmelstein (1997) for a broad discussion of corporate giving, Andreoni (1990, 1998), Bergstrom et al. (1986), Roberts (1984) and Rose-Ackerman (1996) for theoretical analyses of individual incentives to give and the economic role of non-profits, and Andreoni and Payne (2003) for a recent analysis of the problem of "crowding out" of charitable giving by government funding.

[2] In 2005, 2958 of 5756 hospitals in the U.S. were non-profit organizations (U.S. Bureau of the Census, 2008, Table 163). In the school year 2007–2008, 1624 of 4352 colleges and universities were non-profits (U.S. Department of Education 2009, Table 265). Non-profit organizations employed about 6% of all U.S. workers in 2007 (Butler, 2009).

[3] The move involved around 500 top managers but no major production facilities. See McGuire and Garcia-Mila (2002) for further details and discussion.

[4] The standard model of local economies based on Roback (1982) assumes that individuals and firms are indifferent between alternative locations. In this framework the only economic justifications for location-based subsidies are the existence of agglomeration externalities, or the possibility of increasing donations to local charities. Hornbeck et al. (2007), Greenstone and Moretti (2005), and Davis and Henderson (2004) discuss the possibility of agglomeration externalities from the presence of local manufacturing plants. Dye et al. (2007) discuss the potential productivity spillovers from headquarters.

[5] See e.g., Smith Hopkins (2004) for a discussion of the case of Baltimore.

0047-2727/$ – see front matter © 2009 Elsevier B.V. All rights reserved.
doi:10.1016/j.jpubeco.2009.11.010

same underlying factors that affect charitable giving, generating a spurious correlation between charitable giving and the presence of corporate headquarters. Even if newly headquartered firms (or their top managers) donate significantly to local charities, it is still possible that the net effect on local non-profits is small if these new donations crowd out other sources of funds — in particular, government-provided grants.

In this paper we focus on three related questions. First, we study the relationship between the presence of corporate headquarters and the level of charitable giving in a city, focusing on the key question of whether corporate headquarters actually exert a causal effect on local giving. Having found a significant increase in charitable giving, we then investigate the channels through which corporate headquarters might affect local charities. Specifically, we investigate whether this increase is attributable to an increase in the number of highly-compensated individuals in a city or an increase in direct donations by the corporations themselves. Finally, we estimate how much of the increased private sector donations generated by the presence of corporate headquarters crowds out government grants to local charities.

We use a newly assembled data base that includes the locations of the headquarters of all publicly traded corporations in the US from 1989 to 2002, combined with data on the contributions received by public charities in 147 larger cities. During this period there was substantial turnover in headquarters locations, driven by the growth of new firms, mergers and acquisitions, and the decisions by some companies to relocate (Klier and Testa, 2002). Our data allow us to measure the impact of corporate headquarters on charitable contribution flows, while controlling for observable time-varying factors like population growth and permanent unobserved city factors.

Our empirical analysis uses variation in both the *number* of headquarters in a city and the *market capitalization* of the firms headquartered there. We find that the presence of a corporate headquarters has a significant effect on local charities. Our estimates suggest that an additional corporate headquarters is associated with about $3 to 10 million per year in additional public contributions to local non-profits. Likewise, each $1000 in combined market value for the firms headquartered in a city yields $0.60–1.60 to local non-profits. Comparing different types of charitable organizations, we find that increases in the market value of locally-based firms lead to higher contributions for both nationally-oriented charities (such as education and research institutions) and those with a more local orientation (such as health care and human service providers).

The main econometric issue confronting our analysis is the possibility that unobserved city-specific shocks affect both charitable contribution rates and the presence or market value of locally-headquartered firms. To address this concern, we present estimates from two alternative instrumental variables (IV) strategies that identify responses to different sources of variation in the market value of firms headquartered in a city. First, we use the market value of firms that are continuously located in a given city to instrument for the overall value of firms in a city. This strategy abstracts from potentially endogenous entry and exit behavior. Second, we use the market value of firms that primarily produce for the national or international market. This strategy reduces or eliminates the influence of local income shocks that increase the demand for locally-produced goods and services and simultaneously increase contributions to local charities. Estimates from both strategies are close to the estimates from our baseline OLS models.

To further probe the possibility of reverse causality, we estimate dynamic models that include both current and future measures of the presence of corporate headquarters in models for current giving. Reassuringly, we find generally small and statistically insignificant effects of the future variables. We also present models that include city-specific trends. These absorb the influence of any long-run factors – like technology or consumer preferences – that have a differential impact on different cities. Again, we find robust evidence that the presence of corporate headquarters matter to local charity contributions. While we cannot completely rule out the possibility of omitted variable biases, we believe that the weight of the evidence points toward a causal interpretation of the correlation between the presence of headquarters and charitable donations.

We go on to investigate the channels through which corporate headquarters might affect local charities. We find that most of the increase in charitable contributions arises from an effect on the number of highly-compensated individuals in a city, rather than through direct donations by the corporations. We conclude by testing whether the gains to local charities associated with the presence of corporate headquarters lead to any offsetting reduction in the grants provided by government funding sources.[6] Simple OLS models show that government funding appears to be "crowded in" by private sector donations. Arguably, however, OLS models are biased by the presence of unobserved characteristics of local charitable organizations that increase the willingness of private sector and government agencies to provide funding. When we use the presence of corporate headquarters as instrumental variables for private sector donations, and control for the revenues of local government agencies, we find that government funding is essentially unaffected by fluctuations in private donations.

The remainder of this paper is organized as follows. Section 2 reviews the existing literature and presents a benchmark calibration of the potential effect of corporate headquarters on local charitable contributions. Section 3 describes our econometric specifications. Section 4 describes our data sources and presents some descriptive statistics. Our main empirical results are in Section 5. Section 6 concludes.

## 2. Background on corporate giving and local charities

The existing literature on corporate giving has largely focused on the question of why corporations donate to charity.[7] The leading hypothesis is that corporate charity arises from an agency problem: managers divert shareholder wealth to satisfy their own interests (Boatsman and Gupta, 1996; Helland et al., 2006; Bartkus et al., 2002; Werbel and Carter, 2002; Trost, 2006). An alternative hypothesis is that corporate giving is driven by profit-maximizing concerns (Navarro, 1988; Fry et al., 1982). Both views suggest that corporations will tend to focus much of their overall giving on local charities. Under the agency hypothesis, CEO's (and other top managers) presumably receive personal benefits from locally-directed contributions, including community recognition and perquisites like access to cultural events.[8] Under the profit-maximizing hypothesis, local contributions can lead to improved community relations (e.g. better treatment by local regulatory agencies), and can also directly affect the corporation's workforce (e.g., through improved local education or health care services). For firms that sell a sizeable fraction of their production locally, contributions to local charities can also work as a form of advertising (as is the case with contributions to public television and

[6] Most existing studies of the interaction between non-profits and the government (e.g., Roberts, 1984; Bergstrom et al., 1986; Andreoni and Payne, 2003, 2009) focus on the crowding out of non-profit activity by an exogenous increase in the government supply of services. Becker and Lindsay (1994) present an interesting analysis of "reverse crowd-out": the impact of private donations on government spending.

[7] A 1936 IRS ruling allowed corporations to receive a tax deduction for charitable donations of up to 5% of pre-tax earnings. Until a 1953 court ruling in New Jersey, however, the legality of corporate charity was still in dispute, with some states outlawing donations that did not directly benefit the company. See Himmelstein (1997) for more detailed discussion.

[8] Galaskiewicz (1997) studies donation patterns in Minneapolis–St. Paul, using data from the late 1970s and late 1980s. He focuses on the membership of the CEO and board members of a company in social networks as predictors of the generosity of corporate giving.

radio, for example).[9] It is estimated that there is nearly $14 billion in corporate charitable giving in the United States each year (Muirhead, 2006).

There are few direct studies of how firms allocate their charitable contributions. Using interview data for a sample of 229 large companies in 14 cities, McElroy and Siegfried (1986) estimate that about 70% of corporate donations are targeted to headquarters' cities. Since most companies have a significant share of their overall workforce in the same city as their headquarters, and firms also tend to contribute to charities in cities where they have plant facilities, this 70% estimate presumably overstates the pure headquarters share.[10] Nevertheless, a plausible range of estimates from McElroy and Siegfried (1986)'s study is that corporations allocate about 50–65% of their charitable contributions to headquarters' cities.[11] This is similar to the 63% headquarters share estimated by Galaskiewicz (1997) for corporations located in Minneapolis–St. Paul. In our analysis, due to the constraints of the data, we focus on corporate headquarters only.

How big are the expected local impacts of a corporate headquarters? Annual tabulations by the Conference Board show average total charitable contributions on the order of $20 million dollars per year, with about one-third given as direct cash, and the remainder given as non-cash transfers or donations to corporate foundations (Muirhead, 2002). Taking only the corporate direct cash donations, and assuming a 60% local share, these numbers suggest that a headquarters of a larger corporation could be expected to contribute about $4 million in cash to local charities.[12]

In addition to the direct contributions made by the corporation, charities in a headquarters' city may benefit from the presence of highly-compensated managers. These people contribute directly to local charities, and also lend their support and expertise to local fundraising efforts. Assuming for example that the top managers in a large corporation have a combined income (including salary, bonuses, and incentives) of around $250 million and that their marginal contribution rate to non-religious charities is around 3%, the contributions of top managers would add an additional $7.5 million to the local impact of a large corporate headquarters. Again, the impact of a headquarters for a smaller company is presumably smaller. This sum will be augmented by any impact of the top managers on the efficacy of fund raising by local charities, or by positive "spillover" effects on other residents (or out-of-town contributors). Overall, these calculations suggest that the attraction or retention of corporate headquarters may have a significant effect on local charities.

## 3. Methods

To empirically evaluate the effects of corporate headquarters on local charities, we adopt a simple reduced form approach. Let $y_{ct}$ represent the public contributions received by charitable organizations in city $c$ in year $t$. We assume that

$$y_{ct} = \alpha_c + \delta_t + X_{ct}\beta + H_{ct}\gamma + \varepsilon_{ct}, \quad (1)$$

where $\alpha_c$ is a city-specific fixed effect, $\delta_t$ is a time effect, $X_{ct}$ is a set of control variables that reflect changes in the underlying characteristics of the city, and $H_{ct}$ is a measure of the presence of corporate headquarters in the city in year $t$. We consider two measures of $H$. The first is a simple count of the number of corporate headquarters, or the number of headquarters of large corporations. The second is the market value of the corporations with headquarters in city $c$ in year $t$. These alternatives capture somewhat different dimensions of the "corporate presence" in a city.[13] The market value measure "weighs" the headquarters of different firms in proportion to their relative market value.[14] It can also change over time even in the absence of any entry or exit, depending on the fortunes of local firms. To the extent that corporate contributions are proportional to firm size, and larger corporations employ proportionally more highly-paid managers at their headquarters, the market value measure may be a relatively good indicator of the corporate presence.[15] It is in principle possible that the increase in donations caused by the opening of new headquarters in a city results in a decline in donations by incumbent firms. In this case, the parameter $\gamma$ measures the effect of changes in corporate headquarters in a city, *net of any displacement effect*. From the point of view of local governments, this net effect is arguably the parameter of interest.

The main econometric issue confronting the estimation of Eq. (1) is the possibility that $H_{ct}$ is correlated with unobserved city-specific factors that affect charitable contribution rates. For example, the profitability of firms that sell goods and services to nearby customers will be affected by local income shocks that also affect overall charitable contributions, leading to an upward bias in the parameter $\gamma$. To investigate this source of bias, we present instrumental variables estimates of Eq. (1) that use the market value of firms that produce traded goods as an instrument for the market value of all locally-headquartered firms. Assuming that traded goods are sold on a national (or international) market, this procedure should yield estimates of $\gamma$ that are purged of the influence of local income shocks.

A second possibility is that corporations are attracted to (or emerge from) cities with particularly successful local charities. In recent decades, for example, high-tech businesses have grown up around many research universities.[16] Such "reverse causality" will lead to an upward bias in OLS estimates of $\gamma$. To address this concern, we present estimates of a simple dynamic version of Eq. (1):

$$y_{ct} = \alpha_c + \delta_t + X_{ct}\beta + H_{ct}\gamma + H_{ct-1}\gamma_{\text{Lag}} + H_{ct+1}\gamma_{\text{Lead}} + \varepsilon_{ct}. \quad (2)$$

The lagged values of the headquarters measure $H$ are included to reflect the possibility of a time lag between the arrival of new headquarters in a city (or the growth in the market value of firms headquartered there) and the flow of contributions to local charities. The lead terms are included to test for endogenous shifts in the corporate presence in a given city. A significantly positive estimate of the lead coefficient ($\gamma_{\text{Lead}}$) can be interpreted as evidence of reverse

[9] Recent commentators have identified "strategic philanthropy" as an emerging trend in corporate giving (see e.g. Zeltin, 1990; Saiia et al., 2003). This can be interpreted as charitable giving that contributes to profitability.

[10] Suppose that a firm allocates a fraction $\alpha_H$ of contributions to the headquarters city, and a fraction $\alpha_P$ to cities with plant facilities, and that $f_H$ of all plant facilities are in the headquarters city. Then the overall share of contributions targeted to headquarters cities is $\alpha_H + f_H\,\alpha_P$.

[11] McElroy and Siegfried (1986) estimate that 90% of all contributions are allocated to headquarters cities or cities where the firm has production facilities. Following the notation of the previous note, this implies that $\alpha_H + \alpha_P = 0.9$. Assuming that $f_H$ is between 0.2 and 0.5, the pure headquarters share ($\alpha_H$) is between 0.5 and 0.65.

[12] According to the Conference Board, non-cash contributions are particularly important for pharmaceutical, chemical, and computer and technology firms (Muirhead, 2002, page 10). It is unclear whether non-cash contributions are allocated in the same general way as other contributions. It is also unclear how these are recorded by the receiving charities.

[13] There are other potential measures of $H$. The number of employees in the firm is one possibility. This is available, for example, in CompuStat but the variable is not audited and is known to be measured with error.

[14] Our specification implicitly assumes that $1 in additional market value of a firm translates into $x in charitable contributions, where $x is the same irrespective of whether the firm is located in a large or small city. There is no particular reason for why an additional dollar in market value of a firm located in a large city should have a different effect on contributions than an additional dollar in market value of an identical firm located in a small city.

[15] Note that other measures of the firm size may be preferable to market value, such as total net revenues or total number of employees. This may be a particular issue during our sample period because some firms with very small net revenues (or even negative revenues) had very high market values at the end of the 1990s.

[16] The computer-related businesses in Silicon Valley are said to have started there because of the presence of Stanford University.

causality, whereas an estimate close to zero is consistent with the absence of such an effect.

To further address the potential endogeneity in the decision of large companies to locate their headquarters in a specific MSA, we also consider instrumental variables estimates of Eq. (1) that use the market value of firms that are continuously present in a city as an instrument for the market value of all locally-headquartered firms. This procedure removes the variation in the market value of locally-headquartered firms that is attributable to entry or exit, and will lead to lower (or higher) estimates of $\gamma$ to the extent that entry and exit decisions are more (or less) correlated with unobserved city-specific in charitable contributions.

A third possibility is that shocks to geographically concentrated industries lead to changes in the profitability of the firms in a city, and also to changes in the charitable contributions of workers who are affiliated with the industry but are not directly connected to the corporate headquarters. Trends in the profitability of the domestic automobile industry, for example, affect charitable donations in Detroit *not only* through the contributions of the automobile companies and their headquarters employees, but also through the contributions of the other auto sector employees who live and work in the area. To control for such sectoral shifts we present models similar to Eq. (2) that include unrestricted city-specific trends. These will absorb any longer-run trend factors – like technology or consumer taste – that would otherwise confound our OLS models.

**Table 1**
Number, market value, and headquarters locations of publicly traded firms.

| | Top firms (ever in top 1000) | | | All publicly traded firms | | |
|---|---|---|---|---|---|---|
| | 1990 | 1995 | 2000 | 1990 | 1995 | 2000 |
| Number of active firms | 1334 | 1585 | 1601 | 5402 | 6353 | 6506 |
| Mean market value (millions) | 1970 | 2907 | 9168 | 573 | 865 | 2518 |
| Location of headquarters: | | | | | | |
| New York | 107 | 104 | 118 | 380 | 364 | 365 |
| Chicago | 85 | 94 | 81 | 202 | 241 | 233 |
| Los Angeles | 61 | 53 | 45 | 249 | 258 | 226 |
| Boston | 44 | 58 | 62 | 186 | 251 | 278 |
| Philadelphia | 41 | 46 | 40 | 177 | 170 | 180 |
| Houston | 43 | 57 | 55 | 133 | 197 | 197 |
| Minneapolis | 36 | 38 | 37 | 141 | 201 | 174 |
| San Jose | 42 | 68 | 105 | 125 | 194 | 286 |
| Atlanta | 30 | 30 | 29 | 88 | 121 | 149 |
| Dallas | 33 | 39 | 43 | 142 | 181 | 185 |
| Stamford | 22 | 33 | 22 | 79 | 71 | 62 |
| Cleveland | 23 | 28 | 23 | 65 | 70 | 56 |
| St. Louis | 22 | 26 | 22 | 49 | 67 | 71 |
| San Francisco | 26 | 34 | 49 | 76 | 106 | 170 |
| Pittsburgh | 20 | 23 | 16 | 52 | 58 | 55 |
| Share of firms in 15 cities (%) | 48 | 46 | 47 | 40 | 40 | 41 |

Note: List of firms drawn from CompactDisclosure. Headquarters assigned to MSA based on zip code for corporate headquarters. Market value is in current dollars. Market values for 10% of all firms and 1% of top firms are missing. Top firms is a list of 2805 firms that were ever ranked in the top 1000 of all firms in a calendar year based on market capitalization in any year from 1989–2002. See text.

## 4. Data description

Our empirical analysis combines two different types of data. The first is information on the locations of corporate headquarters by year. We limit our attention to publicly traded firms, making it easy to develop estimates of the market value of the firms headquartered in a city. The second type of data is information on the contributions received by local charitable organizations.

### 4.1. Corporate locations and stock market valuation

We used the CompactDisclosure database to retrieve the corporate addresses from the 10-K and 10-Q filings for all active U.S. firms listed on the New York, American, and NASDAQ exchanges between 1989 and 2002.[17] Where possible, we used the May versions of the database, which typically record the 4th quarter SEC filings. Thus, our address information generally pertains to the end of the calendar year. We used a commercial zip code conversion program (available from zipinfo.com) supplemented with additional hand-coding to successfully map the 5 digit zip codes for each corporate address into a Metropolitan Statistical Area (MSA) or Primary Metropolitan Statistical Area (PMSA).[18] For convenience, in the remainder of this paper we refer to these as MSA's or simply as "cities".

We also retrieved for each corporation listed in the CompactDisclosure database the market value of the firm (i.e. the value of all outstanding shares) as of year end, and a CUSIP identifier which we use to uniquely identify firms. For each year, we ranked all active firms by their market value and identified the top 1000 firms in the year. We then identified "top firms" as the set of 2805 firms that were *ever* in the top 1000 list in any year between 1989 and 2002. Of these relatively large firms, 524 were continuously active over the entire period.[19]

Table 1 presents some simple descriptive information on number, market value, and headquarters locations of the firms in our sample. The first 3 columns pertain to the sample of "top firms" while the last 3 pertain to all firms listed on the three exchanges. As expected, mean market values of the top firms are substantially larger than the corresponding values for all firms. In fact, the top firms account for 90% or more of the total market value of all firms in our sample. The mean values of the firms in the sample rise substantially between 1990 and 2000, reflecting the run-up in U.S. stock market prices in the 1990s.

The bottom rows of Table 1 show the numbers of headquarters in selected cities in 1989, 1995, and 2002. These cities represent the 15 most important headquarters locations for the top firms in our sample as of 1989, and accounted for a steady 46% of all top firm headquarters over the sample period. Their share of all headquarters was smaller (40%) but also quite stable. Despite the overall stability of the group there is substantial variation between cities. Los Angeles, for example, experienced a relatively large decline in the number of headquarters, while San Jose and San Francisco experienced relatively large gains. Dallas and Houston also experienced notable gains in the number of top headquarters, while New York experienced losses. Many other cities saw a net gain or loss of only 1–3 headquarters. Some of these trends are illustrated in Fig. 1a and b, which show the relative numbers of large companies headquartered in 10 cities, including two (Washington DC and Seattle) that were not in the top 15 in 1989 but experienced rapid growth in headquarters over the 1990s.

Our empirical analysis focuses on cross-city comparisons of changes in the presence of corporate headquarters (measured by the number or value of headquartered firms). Appendix Table 1 shows the number and average size of firms headquartered in the 146 larger

[17] We include firms listed on the NASDAQ over-the-counter system (the "National Market System"). The 1989 data base includes 5642 firms (657 on the AMS, 1371 on NDQ, 2288 on NMS, and 1326 on NYS). The 2000 data base includes 6506 firms (551 on AMS, 897 on NDQ, 3390 on NMS, and 1668 on NYS).

[18] Note that large metro areas (like New York) may consist of many PMSAs, whereas smaller areas are assigned to a single MSA. We adopt the convention that PMSAs in the same large area are different "cities": thus, a corporation that moves its headquarters from Manhattan to Newark, NJ would be considered to have moved.

[19] The vast majority of the remaining firms fall into three classes: those that were active in 1989 and remained continuously active until a "death" sometime before 2002; those that were "born" sometime after 1989 and remained continuously active until 2002; and those that were "born" sometime after 1989 and were continuously active until a death prior to 2002.

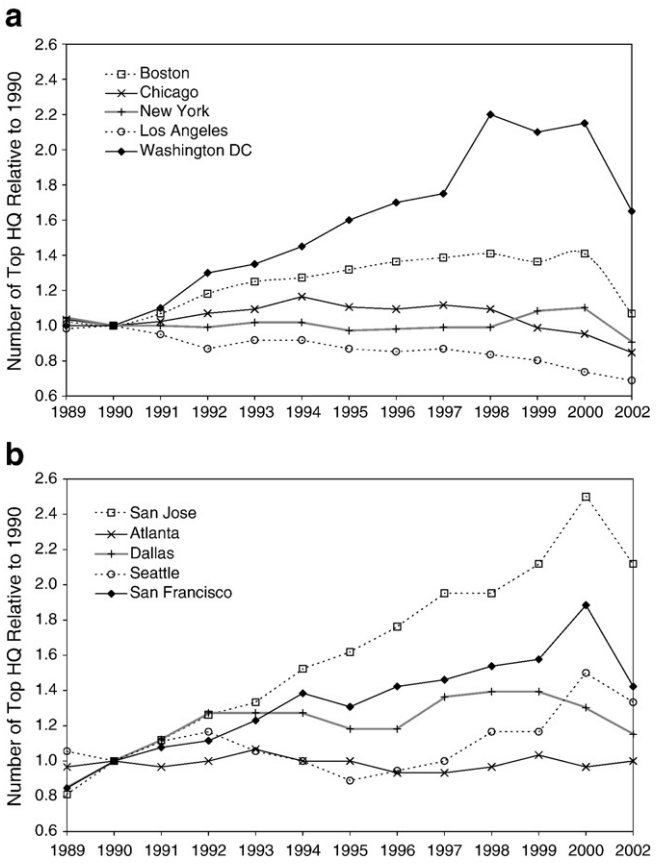


**Fig. 1.** Number of large corporate headquarters in different cities.

cities in our main estimation sample. We also show some statistics comparing firms that were continuously present in a given city, firms that exited from the set of 146 cities between 1990 and 2000, firms that entered over the same period, and those that relocated between cities. Roughly 85% of all US traded corporations were located in the 146 larger cities in 1990 and 2000. However, this stability masks substantial turnover in the composition of the population of active firms. Only 1310 firms (29%) of the firms present in one of the 146 cities in 1990 were still active and headquartered in the same city in 2000. The vast majority of the others were no longer traded: a small fraction (3%) relocated to another city in the 146-city sample, and a slightly larger fraction (8%) moved to a smaller city outside this sample. The continuously present firms are larger than other firms (mean market value in 1990 = $1414 million, versus an average of $753 million for all firms located in the 146 cities, and $573 for all firms in the U.S.), whereas those that exited were relatively smaller (mean market value in 1990 = $451 million). The exiters were replaced by over 4000 firms that were inactive in 1990 but present in one of the 146 cities in 2000. As expected, these "new entrants" were smaller than continuously present firms (mean market value in 2000 = $1627 million versus $2642 for all firms in the 146 cities, and $2518 for all firms in the U.S. as a whole).

### 4.2. Charitable contributions

Our data on charitable contributions are taken from information on 501(c)3 charities included in the annual samples of charitable organizations compiled by the Internal Revenue Service and released by the National Center for Charitable Statistics. Contributions to 501(c)3 organizations are tax deductible to the contributor. The samples, known as the "Statistics of Income" sample files, include information for 11,000 to 16,000 organizations per tax year[20] that filed a Form-990 tax return.[21] Non-profit organizations classified as 501(c)3 by the IRS include most non-profits in education, health and human services, and the arts, as well as private grant making organizations, but exclude trade unions, business organizations, social and recreational clubs, and beneficiary societies.

Each organization included in the sample file reports a variety of income information, including contributions received from the public, government grants, and other sources of revenue. Organizations also report a zip code, which we convert to an MSA using the same procedures we followed for identifying firm headquarters. Samples from 1990 and later include a sample weight variable which is meant to reflect the sampling probability for the observation.[22]

Some basic information on the number of charities in the sample and their charitable receipts is provided in Table 2. We present the actual (i.e., unweighted) numbers of charities and their reported public contributions in the 4 left hand columns, and the weighted analogues in the 4 right hand columns (all dollar amounts are in constant 2002 $). Note that the weighted number of organizations is about 10–11 times larger than the unweighted number, while the weighted sum of all public contributions is only about 1.5 times larger than the unweighted sum. The difference reflects the fact that small charities are sampled less frequently.

The entries in the top line of Table 2 show that the number of 501(c)3 non-profit organizations in U.S. metropolitan areas grew rapidly over the 1990s, as did public contributions to these organizations. The next line presents similar data for a subset of 146 larger cities that we use in our statistical analysis. Cities were included in this sample if they had a minimum of 9 charities reporting from that city in each year between 1990 and 2002, and if the coefficient of variation of (unweighted) total annual public contributions for organizations in the city over the same period was less than 0.62.[23] Note that charities in these cities account for 85–90% of charitable organizations in all 335 MSAs, and over 90% of public contributions to these organizations.

The lower rows of Table 2 present comparable data for the 20 cities with the highest levels of (unweighted) total public contributions in 1990. Most of these cities are among the top 15 headquarters cities shown in Table 1, although Washington, DC is an interesting exception. Washington was not a major headquarters city in 1989 (though it gained a number of headquarters over the 1990s) but was the number 2 city in terms of public contributions in 1990 and also in 2002. Presumably this reflects the fact that many large national organizations (such as the Red Cross) are based in Washington.

There is considerable variation in the city-specific trends in charitable contributions over our sample period. Some of these differences are illustrated in Fig. 2a and b, which show the trends in (unweighted) contributions received in 10 major cities relative to 1990. Looking at Fig. 2a, for example, it appears that there was much more rapid growth in contributions in Boston and Washington than in New York or Los Angeles. Interestingly, the same is also true for the trends in the number of large companies headquartered in these towns (Fig. 1a).

We also constructed graphs similar to Fig. 2a and b using the sample weights to estimate total contributions in each city. Inspection of these graphs suggested that the weighted estimates are relatively noisy, reflecting the variation from year to year in the inclusion of mid-sized charities with relatively large sampling weights.

[20] We adjusted the market value data so that both corporate data and the charity data are based on calendar year.

[21] Sample files are also available for 501(c)3 organizations that file a short version of Form 990 (known as Form 990-EZ). We only use the full Form 990 in our analyses.

[22] The Statistics of Income samples include 100% of the largest non-profits and a sample of smaller organizations (with associated sample weights). More details on the sampling scheme can be found at the National Center for Charitable Statistics website.

[23] We also excluded one small city (Bangor Maine) because boundary changes make it hard to extract data from the 1990 and 2000 Census.

**Table 2**
Number of charitable organizations and public contributions.

| | Unweighted | | | | Weighted | | | |
|---|---|---|---|---|---|---|---|---|
| | Number of charities | | Public contributions | | Number of charities | | Public contributions | |
| | 1990 | 2002 | 1990 | 2002 | 1990 | 2002 | 1990 | 2002 |
| All cities | 9582 | 14,355 | 36,512 | 64,902 | 94,036 | 163,883 | 59,587 | 102,968 |
| 146 sample cities | 8275 | 12,320 | 34,250 | 59,040 | 79,019 | 136,839 | 54,236 | 91,688 |
| New York | 680 | 932 | 7265 | 8218 | 5239 | 8586 | 10,467 | 11,415 |
| Washington DC | 342 | 640 | 2520 | 5464 | 3237 | 6600 | 3654 | 7898 |
| Los Angeles | 362 | 497 | 2500 | 3056 | 4270 | 5697 | 3388 | 4388 |
| Chicago | 386 | 533 | 1629 | 3012 | 2827 | 5288 | 2440 | 4555 |
| Boston | 326 | 453 | 1686 | 5175 | 2796 | 4989 | 2222 | 6036 |
| Atlanta | 131 | 245 | 1186 | 2090 | 1293 | 2912 | 1534 | 2872 |
| Seattle | 97 | 155 | 258 | 1212 | 1376 | 1564 | 1445 | 1850 |
| Philadelphia | 329 | 465 | 924 | 1617 | 2428 | 3928 | 1419 | 2480 |
| Dallas | 110 | 149 | 802 | 986 | 1058 | 1389 | 1250 | 1617 |
| San Francisco | 140 | 247 | 597 | 1443 | 1544 | 3352 | 919 | 2169 |
| Minneapolis | 154 | 258 | 558 | 882 | 1657 | 3274 | 918 | 1511 |
| Providence | 67 | 111 | 460 | 606 | 517 | 1196 | 799 | 835 |
| Baltimore | 148 | 235 | 551 | 854 | 1146 | 2167 | 798 | 1255 |
| Cleveland | 157 | 205 | 539 | 809 | 1635 | 1711 | 788 | 1190 |
| Pittsburgh | 152 | 232 | 483 | 859 | 1081 | 1778 | 731 | 1816 |
| San Jose | 55 | 94 | 442 | 925 | 604 | 1234 | 616 | 1306 |
| Houston | 98 | 171 | 439 | 780 | 1098 | 2245 | 588 | 1313 |
| St Louis | 128 | 163 | 371 | 420 | 996 | 2037 | 522 | 685 |
| Detroit | 137 | 178 | 329 | 577 | 1206 | 2326 | 511 | 1068 |
| Raleigh–Durham | 63 | 105 | 342 | 1569 | 526 | 1031 | 454 | 1924 |
| Percent of all cities totals in: | | | | | | | | |
| 146 city sample | 86 | 86 | 94 | 91 | 84 | 83 | 91 | 89 |
| 20 main cities | 42 | 42 | 65 | 62 | 39 | 39 | 60 | 57 |

Note: Based on 501c(3) organizations filing long forms in the IRS Statistics of Income data files. Contributions are in real (2002) millions of dollars. Organizations are assigned to MSA based on zip code for tax filing. See text.

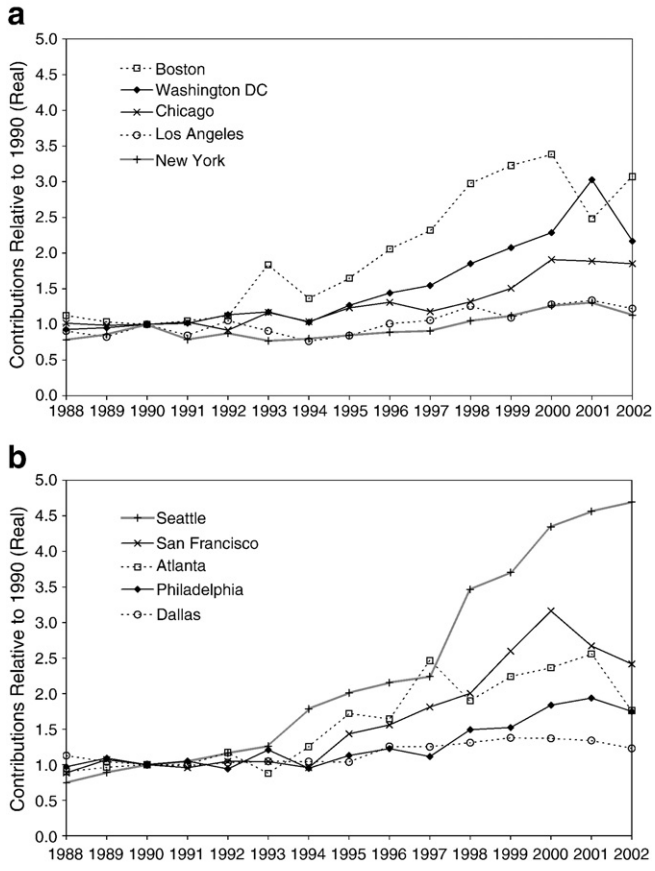


**Fig. 2.** Public charitable contributionsin different cities.

## 5. Estimation results

In this section we present the main empirical results of the paper. We begin in the first subsection presenting models that relate long-run changes in charitable giving to long-run changes in the presence of headquarters in an area. In the second subsection, we focus on year-to-year variation in charitable giving and in headquarters presence. In the third subsection, we seek to distinguish between two possible mechanisms that may generate a link between charitable giving and the presence of corporate headquarters in a city. Finally, in the fourth subsection, we ask whether the charitable giving attributable to the presence of corporate headquarters has any displacement (or crowd-out) effect on public expenditures.

### *5.1. Cross-sectional models for 2000 and first-differences models for 1990 and 2000*

Table 3 presents a series of regression models based on Eq. (1) in which the dependent variable is the weighted sum of charitable contributions to 501(c)3 organizations in the year 2000 for each of the 146 cities included in our estimation sample, or the change in contributions between 1990 and 2000. Use of data for these two years has the advantage that information on the characteristics of each city can be obtained from the Decennial Censuses. The specifications reported in the table use three different measures of corporate headquarters: the number of top firms headquartered in the city (columns 1 and 5); the number of *all* firms headquartered in the city (columns 2 and 6); and the market value of all firms headquartered in the city (columns 3 and 7).[24] We also present one specification that

[24] We also estimated models that include the market value of only the top firms headquartered in a city. On average, however, the market value of top firms represents 95% of the value of all firms in a city. Moreover, the market values of all firms and top firms are very highly correlated across cities (correlation >0.99). As a result, models that use only the market value of top firms are nearly identical to those that include the value of all firms. For simplicity, we therefore focus on market value models for all firms.

**Table 3**
Cross-sectional and first-differenced models of the effect of corporate headquarters on charitable contributions in a city.

| | Cross-sectional models for 2000 | | | | First-difference models: change from 1990 to 2000 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | OLS models | | | | IV models | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9)[a] | (10)[b] |
| Number of top firms in city | 36.50 | | | | 24.20 | | | | | |
| (coefficient in millions of $) | (23.10) | | | | (16.43) | | | | | |
| Number of traded firms in city | | 10.72 | | 1.79 | | 10.09 | | 8.46 | | |
| (coefficient in millions of $) | | (6.01) | | (8.58) | | (5.67) | | (6.37) | | |
| Market value of all firms in city | | | 1.74 | 1.58 | | | 0.67 | 0.27 | 0.69 | 0.59 |
| (coefficient in $ per $1000 of value) | | | (1.16) | (1.48) | | | (0.36) | (0.47) | (0.39) | (0.40) |
| *R*-squared | 0.70 | 0.69 | 0.72 | 0.72 | 0.40 | 0.43 | 0.39 | 0.44 | 0.37 | 0.37 |
| Controls for population, employment–population, and fraction of adults with college education | yes | yes | yes | yes | yes | yes | yes | yes | yes | yes |

Notes: Sample includes 146 cities. Dependent variable in columns 1–4 is the total public contributions received by charitable organizations in the city in 2000. Dependent variable in columns 5–10 is the change in total public contributions from 1990 to 2000.
All models include controls for adult population, employment–population rate, and fraction of adults with a college degree (estimated from the 1990 and 2000 censuses). Robust standard errors are in parentheses.
[a] Instrument for market value of all firms is the market value of stayers.
[b] Instrument for market value of all firms is the market value of producers of tradeable products.

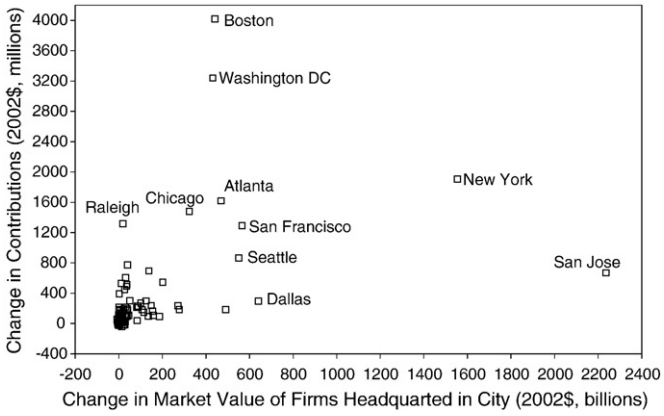


**Fig. 3.** Changes in market value of local firms and changes in contributions.

includes both the number of headquarters (for all firms) and the market value of all firms (columns 4 and 8). All the models include 3 key control variables: the adult population of the city; the employment–population rate (for 16–59 year olds) in the city; and the fraction of adults with a college degree or higher (coefficients of these variables are not reported but are available on request). The standard errors reported in Table 3 and throughout this paper are calculated using the Huber–White "sandwich" method and are robust to heteroskedasticity.

The estimates in Table 3 point to a number of conclusions. First, the estimated headquarters effects are uniformly positive, but relatively imprecisely estimated.[25] Second, as would be expected if there are unobserved differences across cities that affect both charitable contributions and the number of locally-headquartered firms, the headquarters effects tend to be larger in the cross-sectional models than in the first-differenced models. Third, the estimated impact of an additional headquartered firm is estimated to be about $10 million in annual deductions — substantially above our benchmark for the likely size of the local donations from a larger corporation ($4 million). The impact based on market value is smaller in magnitude and somewhat below the benchmark. Assuming an average market value of $2 billion (approximately the average value of traded firms present in the 146 cities in the middle years of our sample) the 0.67 estimate in column (7) implies an additional $1.3 million in contributions. A fourth observation is that we cannot separately identify the relative importance of the *number* of locally-headquartered firms and the *size* of these firms.

The basic correlations underlying the estimates in Table 3 are illustrated in Fig. 3, which plots the change in the value of public contributions received in a city between 1990 and 2000 against the change in the market value of locally-headquartered firms. Consistent with the estimate in column 7 of Table 3, the graph suggests a positive relationship. But a few cities – including Boston, Washington, and San Jose – are clearly important leverage points, if not outliers. We evaluated the robustness of the estimates in Table 3 in two ways. First, we estimated the models by median regression (see Appendix Table 2). Like the OLS estimates, the median regression estimates are uniformly positive but relatively imprecise. Interestingly, the median regression estimates suggest a somewhat smaller effect of the number of local headquarters and a larger effect of their market value. In particular, in the first differences specification each additional headquarters is estimated to raise charitable contributions by $4 million, whereas an additional firm with market value of $2 billion is estimated to raise contributions by $2 million. We also estimated the models by OLS, excluding the data for Boston, Washington, and San Jose. This yielded estimates quite similar to the estimates from the median regression. For example, in first-differenced models the estimated effect of each local headquarters is $4.3 billion (standard error 4.6), whereas the estimated effect of the local value of headquartered firms is 1.12 dollars per thousand dollars of value (standard error 0.22).

As noted in Section 3, one concern with OLS estimates of Eq. (1) is the potential endogeneity of the entry and exit of headquarters. To address this concern we use changes in the stock market value of stayers as an instrumental variable for the stock market value of all firms in a locality. Estimates from this procedure are presented in column (9) of Table 3. Interestingly, the IV procedure leads to a point estimate that is very similar in magnitude to the corresponding OLS estimate (in column 7).[26]

We also investigated whether the entry and exit of corporate headquarters have symmetric effects on charitable contributions. Specifically, we re-estimated the models in columns 5 and 6 of Table 3, entering separate variables measuring increases in the number of locally-headquartered firms, and another measuring decreases. Focusing on the effect of the total number of firms in the city, the original estimate (column 6) is 10.09. When we include separate

[25] Conventional OLS standard errors are substantially (3–5 times) smaller.

[26] We also investigated other possibilities for instruments in this case. These included the mean log change of stock market price for stayers from 1990 to 2000 by MSA and the percentage change of stock market price for stayers from 1990 to 2000 by MSA.

**Table 4**
Effect of corporate headquarters on contributions to different classes of charitable organizations.

| | Contributions to all charitable organizations | | | Contributions to nationally-oriented organizations | | | Contributions to locally-oriented organizations | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Number of top firms in city (coefficient in millions of $) | 20.30 (13.10) | | | 14.82 (9.60) | | | 5.48 (4.17) | | |
| Number of traded firms in city (coefficient in millions of $) | | 8.13 (4.94) | | | 7.31 (4.00) | | | 0.82 (1.67) | |
| Market value of all firms in city (coefficient in $ per $1000 of value) | | | 0.61 (0.31) | | | 0.27 (0.19) | | | 0.35 (0.24) |
| *R*-squared | 0.36 | 0.40 | 0.37 | 0.25 | 0.35 | 0.20 | 0.37 | 0.35 | 0.46 |
| Controls for population, employment–population, and fraction of adults with college education | yes | yes | yes | yes | yes | yes | yes | yes | yes |

Note: Sample includes 146 cities. All models are in first differences, using data for 1990 and 2000. Dependent variable in columns 1–3 is change in total contributions for all organizations. Dependent variable in columns 4–6 is change in contributions for 'nationally-oriented' organizations. Dependent variable in columns 7–9 is change in contributions for 'locally-oriented' organizations. See text for classification. See notes to Table 3. In this table, contributions of sampled charities are not inflated by sampling weights. Robust standard errors are in parentheses.

variables measuring increases and decreases we obtain estimates of 13.08 and −18.00, respectively, with standard errors of approximately 7. These estimates are roughly equal and opposite, as implied by our baseline specification, though the point estimates are imprecise and the power to test for symmetry is relatively low.[27]

Another concern with OLS estimation of models based on Eq. (1) is that city-specific income shocks affect the value of firms that sell to local consumers, and also lead to increased charitable contributions. Column (10) of Table 3 presents an IV specification that uses the change in the market value of producers of tradable products to instrument the change in the market value of all locally-headquartered firms. Assuming that local income shocks are relatively unimportant for producers of traded goods, the IV estimate should be purged of the influence of such shocks. Again, the estimate is very close to the corresponding OLS estimate, suggesting that local income shocks are not a major source of bias in our analysis.

In the discussion of Table 2 we noted that the weighted charitable contribution totals for many cities appear to be relatively noisy. As a check on the robustness of our findings we therefore re-estimated the first-differenced model in columns 5–7 of Table 3 using unweighted contribution totals (see Table 4 columns 1–3). As expected the coefficient estimates obtained using the unweighted contributions are slightly smaller, but they are somewhat more precisely estimated, so the statistical significance is actually higher.[28]

An interesting question is whether all types of charities benefit equally from the presence of corporate headquarters in a city. To provide some simple evidence we divided charities into two groups, based on a rough distinction between organizations with a national orientation (including education, medical and science research, and grant making organizations) and those with a local orientation (including health and human service providers, and cultural organizations). We then re-estimated the first-differenced models using as alternative dependent variables total contributions to each of these two types of charities. The results, shown in columns 4–9 of Table 4, suggest that when corporate presence is measured by the market value measures, the two types of charities both benefit. On the other hand, when corporate presence is measured by the number of headquarters in a city, more of the benefit seems to flow to nationally-oriented organizations.

### 5.2. Dynamic models using annual data

Although the differences analysis in Tables 3 and 4 controls for any permanent heterogeneity, and for decadal trends in observed characteristics like population and educational attainment, an important concern is that there may be *time-varying* unobserved characteristics that affect the number or value of locally-headquartered firms and local donations. We therefore turn to the simple dynamic model described in Eq. (2), which uses annual (as opposed to decennial) data on charitable contributions and headquarters in each city. The results are presented in Table 5. For simplicity, we only show results for two measures of corporate presence: the number of firms headquartered in a city (columns 1–5); and the market value of all firms headquartered in a city (columns 6–10). The models in the upper panel of the table include national year effects but do not allow city-specific trends, while these are included in the models in bottom panel. The dependent variable for all models is the unweighted sum of public contributions to all charities in a city and given year.[29]

Consider first the models in the upper panel of Table 5 that include only the current value of the headquarters measure. The specification in column 1 yields a coefficient of 9.52, which should be compared to the estimate of 8.13 in column 2 of Table 4 (or 10.09 in column 6 of Table 3). When we use the count of firms with headquarters in a city as a measure of corporate presence, there is not much difference between the long-differences specification and the annual model. By comparison, when we use the market value of firms headquartered in a city as a measure of presence, the annual specification leads to a larger estimated impact (compare the 1.59 coefficient estimate in column 6 of Table 5 to the 0.61 estimate in column 3 of Table 4). Interestingly, the median estimator of the decadal model (and the OLS estimator from a sample that excluded the 3 "outlying" city observations) also suggested a somewhat larger effect from the value of local firms.

Comparisons of the other specifications in Table 5 to these benchmarks suggest several conclusions. First, adding city-specific linear trends does not have much effect on any of the market value models but does have some effect on some of the models based on number of headquarters. In fact, with city-specific trends the estimated impact of an additional headquarters is as low as $3 million (column 1 of panel B). This estimate is actually in line with the implied effect of adding a new

[27] We also tried including positive and negative changes in the value of firms headquartered in a city as separate regressors. Since market values increased so much over the 1990s there were very few cities with decreases in market value, and the estimated effect of the negative change variable was very imprecise. The coefficient on the positive change variable was very similar to the estimate reported in column 7 of Table 3.

[28] If the unweighted contributions represent about 65% of the total contributions, then one would expect the coefficients from the models' fit to the unweighted data to be about 65% as large as the coefficients for the models' fit to the weighted data. The coefficients in columns 1–3 of Table 4 are about 80% as large as the ones in columns 5–7 of Table 3.

[29] Because the dynamic models include city-specific trends, here we do not control for population, employment-population and fraction of college graduates as we did in the previous tables. Adding these additional controls has no material impact on the estimates reported in Table 5.

**Table 5**
Effect of corporate headquarters on charitable contributions in a city.

| | Headquarters measure = number traded firms (coefficient in millions of $) | | | | | Headquarters measure = market value of firms (coefficient in $ per $1000 of value) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| *A. Models with city and year fixed effects* | | | | | | | | | | |
| Year $t$ | 9.52 | 2.74 | 1.63 | 9.33 | 1.15 | 1.59 | 1.25 | 1.15 | 1.68 | 1.31 |
| | (3.31) | (2.25) | (2.14) | (3.10) | (1.50) | (0.32) | (0.33) | (0.40) | (0.41) | (0.65) |
| Year $t-1$ | | 7.83 | 9.16 | | 8.10 | | 0.54 | 0.25 | | 0.51 |
| | | (2.13) | (2.85) | | (2.22) | | (0.66) | (0.83) | | (0.77) |
| Year $t-2$ | | | −0.11 | | | | | 1.01 | | |
| | | | (2.41) | | | | | (1.63) | | |
| Year $t+1$ | | | | 0.22 | 1.61 | | | | −0.07 | −0.03 |
| | | | | (1.62) | (1.71) | | | | (0.24) | (0.28) |
| $R$-squared | 0.96 | 0.97 | 0.97 | 0.96 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| *B. Models with city and year fixed effects, and city-specific trends* | | | | | | | | | | |
| Year $t$ | 2.67 | −1.02 | −1.14 | 4.44 | −0.92 | 1.57 | 1.68 | 1.08 | 1.44 | 1.50 |
| | (2.66) | (1.89) | (1.58) | (2.69) | (1.81) | (0.28) | (0.44) | (0.27) | (0.29) | (0.48) |
| Year $t-1$ | | 9.33 | 3.87 | | 9.27 | | −0.18 | −0.12 | | −0.08 |
| | | (1.96) | (1.87) | | (2.27) | | (0.42) | (0.42) | | (0.44) |
| Year $t-2$ | | | 3.88 | | | | | 0.57 | | |
| | | | (1.94) | | | | | (0.83) | | |
| Year $t+1$ | | | | −3.69 | −0.16 | | | | 0.14 | 0.13 |
| | | | | (1.42) | (1.60) | | | | (0.16) | (0.16) |
| $R$-squared | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |

Note: Sample includes 1470 observations on 147 cities in each year from 1990 to 1999, except in columns 3 and 8, which includes 1323 observations for 1991 to 1999. Dependent variable is the sum of all public contributions reported by charities in each year, not inflated by sampling weights. Models in panel A include fixed effects for each city and year. Models in panel B also include city-specific linear trends. Headquarters measure in columns 1–5 is number of traded firms located in each city. Headquarters measure in columns 6–10 is market value of all traded firms in each city. Standard errors in parentheses (clustered by MSA in upper panel; robust in lower panel).

headquarters with market value of $2 billion, assuming an effect of about 1.6 dollars in donations per $1000 of market value (column 6 of panel B).

Second, when a lagged value of the number of headquarters is included (column 2), the lagged value is large and positive whereas the current value is smaller. This is consistent with some time lag between the flow of charitable donations and the establishment of new headquarters (or the closing of old ones). When two lagged values of the number of headquarters are included (column 3), the sum of the first lag and the second lag is positive whereas the current value is even smaller. The same pattern does not emerge, however, when corporate presence is measured by market value of the headquartered firms. As suggested by the IV model in column 9 of Table 3, most of the year-to-year variation in this measure is driven by stock market fluctuations for firms that remain headquartered in a city, rather than by changes in the numbers of headquarters in a city. Thus, the data suggest a relatively direct connection between changes in company wealth and charitable contributions.

Third, and most importantly, when we include the lead values of the headquarters measures in the models in columns 4, 5, 9 and 10 we find coefficients on the leads are all relatively small and statistically insignificant (except for column 4, bottom panel, where the coefficient is *negative*). We also fit models with two leads (not reported in the table), and found that the two coefficients are never individually or jointly significant. While these are far from definitive tests, they do provide some evidence that the relationship between corporate presence and charitable contributions is not driven by serious reverse causality.

We also experimented with specifications that allow two separate city-specific linear trends, one before and one after 1993. Estimates from these models are reported in Appendix Table 2. The pattern of coefficients for the headquarters value models is largely unchanged, though the magnitude of the estimated headquarters value measure is somewhat smaller, and centered around 80 cents of contributions per $1000 of local value. The headquarters count models are less stable: allowing separate city-specific trends in the early and later 1990s we obtain no significant effect of the numbers of local headquarters on local contributions. Since we have only 10 observations per city, we suspect that these models (which use 3 degrees of freedom per city) are too demanding on the data.

### 5.3. Mechanisms

We have shown that the presence and market value of corporate headquarters are associated with a significant increase in donations to local charities. In theory, corporate headquarters could benefit local charities through two distinct channels (see Section 2). First, there are the direct contributions made by the corporation itself. Second, the presence of corporate headquarters increases the number of highly-compensated individuals in a city. These people are likely to contribute directly to local charities, and to lend their support to local fund-raising efforts, leading to an increase in local charitable giving.

In this subsection, we seek to shed some light on the relative importance of these two channels. We begin by quantifying the effect of headquarters on the share of high-income individuals (personal income above $100,000) in a city. To justify subsidies, municipalities often argue that by bringing managerial jobs to a city, corporate headquarters lead to an increase in the number of highly-paid individuals. To the best of our knowledge, however, there is no systematic evidence on the importance of this effect. We then re-estimate the relationship between headquarters and charitable contributions controlling for the number of high-income individuals. To the extent that this addition leads to a reduction in the coefficient on the corporate presence variable, we infer that a fraction of the measured presence effect in Tables 3–5 works through an effect on the number of high-income people in the city.

Table 6 presents models similar to the specifications in Table 3 but taking as the dependent variable the number of people in the city with income larger than $100,000 per year.[30] The entry for the first-differenced model in column 5 suggests that the addition of a new top headquarters in a city is associated with a roughly 800 person increase in the number of individuals with income over $100,000 per year. The corresponding figure for an average publicly traded firm in column 6 is 275. Both coefficients are highly significant.

[30] This variable was calculated from the 1990 and 2000 Census of Population. It refers to individuals 16 or older. The metropolitan areas with the largest number of individuals with personal income over $100,000 are Los Angeles and New York (about 280,000 in 2000, and 230,000 in 1990), followed by Chicago (260,000 in 2000 and 170,000 in 1990).

**Table 6**
Cross-sectional and first-differenced models of the effect of headquarters on the number of high-income people in a city.

| | Cross-sectional models for 2000 | | | | First-difference models: change from 1990 to 2000 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | OLS models | | | | IV models | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9)[a] | (10)[b] |
| Number of top firms in city | 501.1 | | | | 800.5 | | | | | |
| | (124.6) | | | | (204.0) | | | | | |
| Number of traded firms in city | | 214.5 | | 219.3 | | 275.2 | | 153.0 | | |
| | | (40.0) | | (70.8) | | (60.9) | | (72.0) | | |
| Market value of all firms in city | | | 18.5 | −8.5 | | | 27.5 | 20.3 | 28.2 | 24.6 |
| | | | (6.4) | (5.7) | | | (6.1) | (7.1) | (7.0) | (6.3) |
| *R*-squared | 0.95 | 0.95 | 0.95 | 0.95 | 0.71 | 0.71 | 0.73 | 0.75 | 0.72 | 0.72 |
| Controls for population, employment–population, and fraction of adults with college education | yes | yes | yes | yes | yes | yes | yes | yes | yes | yes |

Notes: Sample includes 146 cities. Dependent variable in columns 1–4 is number of people in MSA earning over $100,000 per year. Dependent variable in columns 5–10 is the change in the number of people in MSA earning over $100,000 per year from 1990 to 2000. All models also include controls for adult population, employment–population rate, and fraction of adults with a college degree (estimated from the 1990 and 2000 censuses). Robust standard errors are in parentheses.
[a] Instrument for market value of all firms is the market value of stayers.
[b] Instrument for market value of all firms is the market value of firms that produce tradeable products.

Inspection of the models in columns 7 and 8 shows that, in contrast to the models for charitable contributions, we can separately identify effects of the number and size of local firms on the number of high-income people in a city. In particular, both dimensions of headquarters seem to have a positive effect.[31] We also followed the same IV strategies used in Table 3 to isolate the variation in market value associated with firms that were continuously located in a city (column 9) and the variation associated with shifts in market value for producers of traded goods (column 10). The IV estimates from both strategies are very close to the OLS estimate.

Having found that the presence of a corporate headquarters significantly affects the number of high-income people in a city, we now turn to the question of how much of the impact of corporate headquarters on charitable giving can be attributed to this channel, versus a "direct" effect of corporate presence holding constant the number of high-income people in the city. The models in Table 7 expand on the specifications in Table 3 by including the number of people earning more than $100,000 per year as an added control. The contrast between the first-differenced models in Tables 3 and 7 is striking. The addition of just one variable results in a marked increase in the *R*-squared of the first-differenced models, and a dramatic fall in the estimated effect of corporate presence. In particular, the models in columns 5–8 of Table 7 indicate that after controlling for the share of workers who earn more than $100,000, increases in the number of headquarters or increases in their market value have virtually no effect on charitable contributions in a city. For example, the coefficient on the number of headquarters drops from 10.09 in Table 3 to 2.42 in Table 7. Similarly, the coefficient on the market value of top firms drops from 0.67 (with a *t*-ratio of 1.86) to a statistically insignificant −0.20.

In contrast, the estimated effect of the number of high-income individuals in a city is sizable and statistically significant. In the first-differenced models, it is around 30, indicating that the presence of one additional person who earns over $100,000 per year is associated with an extra $30,000 in charitable contributions.[32] According to IRS reports, in the year 2000, the average charitable contribution for individuals with income above $100,000 was $8700, or about 30% of the estimated impact of the presence of an additional person earning $100,000 or more on local giving.[33] It is important to realize, however, that our estimates are not directly comparable with the IRS statistics. On one hand, the IRS figure includes deductions for both local and national charities, while our estimates only reflect contributions to local charities. On the other hand, the IRS figure only includes personal contributions, while our estimates will incorporate the donations from other people in the city or from outside the city attributable to the fund-raising efforts of high-income people.

In sum, a comparison of Tables 3 and 7 suggests that the main channel through which corporate headquarters benefit local charities is by raising the number of high-income people in a city, rather than by increasing the amount of direct corporate contributions that are channeled to local charities.

### 5.4. Do private sector donations crowd out government donations?

In light of the apparent impact of corporate headquarters on charitable donations, an interesting question is whether there is any offsetting reaction of *government* support for local charities. As noted by Becker and Lindsay (1994), it is possible that an increase in charitable contributions from private sector donors leads to "reverse crowd out" — a reduction in government support to local charities. The magnitude of this effect has important theoretical and policy implications for the overall impact of charitable organizations.

Consider the following simplified model of the amount that government agencies are willing to contribute to a particular non-profit agency:

$$G = \alpha + \beta Y + \gamma X + \lambda P + \varepsilon, \tag{3}$$

where $Y$ is a measure of the funds available to the government agencies, $X$ is a set of covariates that affect the willingness of government decision-makers to support the non-profit, $P$ is the dollar value of donations received from non-governmental sources, and $\varepsilon$ is a residual reflecting any unmeasured influences on $G$. In Eq. (3), the parameter $\lambda$ summarizes the behavioral impact of higher private sector donations on the willingness of governments to provide grants.[34] A negative value of

[31] Firms clearly have many other characteristics in addition to market value that determine the number of highly-paid employees who work at the corporate headquarters. We suspect the combination of number and value is only a crude proxy for these more fundamental characteristics.
[32] We doubt that people would instantaneously shift their contributions. On the other hand, we feel that some contributions could move very quickly. For example, consider contributions to a local food bank. It is not unreasonable to think that someone who has recently moved from Seattle to Chicago would switch her support for a local food bank to Chicago — even very soon after her arrival in the new city. We also note that it is not implausible that charitable contributions accelerate quickly when an existing firm goes public. While the value of the firm is not liquid before the IPO, and is highly uncertain, at the time of the IPO, the firm top employees often experience a substantial increase in wealth.
[33] This number was obtained by summing entries for incomes above $100,000 in column 79 and dividing the sum by the sum of entries in column 78 in Table 2.1 of IRS Publication 1304.
[34] Most of the existing empirical studies on crowd-out start with a model like Eq. (3) but reverse the roles of $P$ and $G$: e.g., Andreoni and Payne (2009) Eq. (1).

**Table 7**
Cross-sectional and first-differenced models of the effect of corporate headquarters on charitable contributions in a city, controlling for presence of high-income people.

| | Cross-sectional models for 2000 | | | | First-difference models: change from 1990 to 2000 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | OLS models | | | | IV models | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9)[a] | (10)[b] |
| Number of top firms in city (coefficient in millions of $) | 30.15 | | | | 0.48 | | | | | |
| | (27.41) | | | | (10.87) | | | | | |
| Number of traded firms in city (coefficient in millions of $) | | 7.85 | | −1.22 | | 2.42 | | 3.85 | | |
| | | (8.27) | | (9.84) | | (4.46) | | (4.58) | | |
| Market value of all firms in city (coefficient in $ per $1000 of value) | | | 1.50 | 1.59 | | | −0.20 | −0.33 | −0.21 | −0.21 |
| | | | (1.31) | (1.54) | | | (0.28) | (0.40) | (0.38) | (0.36) |
| Population with >100k in income | 12.67 | 13.39 | 12.90 | 13.69 | 29.64 | 27.90 | 31.73 | 30.12 | 31.78 | 32.18 |
| | (16.15) | (18.09) | (15.24) | (16.86) | (6.56) | (5.93) | (8.72) | (7.54) | (9.65) | (9.49) |
| *R*-squared | 0.72 | 0.70 | 0.72 | 0.73 | 0.62 | 0.63 | 0.63 | 0.64 | 0.63 | 0.62 |
| Controls for population, employment–population, and fraction of adults with college education | yes | yes | yes | yes | yes | yes | yes | yes | yes | yes |

Note: Sample includes 146 cities. Models and sample are similar to specifications in Table 3, but include control for the fraction of the population with income above $100,000. Dependent variable in columns 1–4 is the total public contributions received by charitable organizations in 2000. Dependent variable in columns 5–10 is the change in total public contributions from 1990 to 2000. All models include controls for adult population, employment–population rate, and fraction of adults with a college degree (estimated from the 1990 and 2000 censuses). Robust standard errors in parentheses.
[a] Instrument for market value of all firms is the market value of stayers.
[b] Instrument for market value of all firms in the market value of firms that produce tradeable products.

**Table 8**
Estimated crowd-out effect of public contributions on government contributions to local charities.

| | | Instrumental variables models | | |
|---|---|---|---|---|
| | OLS | Instrument = number of firms[a] | Instrument = value of firms[b] | Instruments = Number and value of firms[c] |
| | (1) | (2) | (3) | (4) |
| Change in value of public donations | 0.28 | 0.13 | 0.05 | 0.14 |
| | (0.11) | (0.09) | (0.16) | (0.10) |
| Change in total revenues of local government agencies | 0.03 | 0.04 | 0.04 | 0.04 |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| *R*-squared | 0.67 | 0.61 | 0.53 | 0.62 |
| Controls for population, employment–population, and fraction of adults with college education | yes | yes | yes | yes |
| *F*-test for instrument(s) in first stage | | 32.51 | 3.24 | 17.81 |

Notes: Sample includes 143 cities. Dependent variable in all models is the change in total government contributions received by charitable organizations in the city from 1990 to 2000. All models include controls for adult population, employment–population rate, and fraction of adults with a college degree (estimated from the 1990 and 2000 censuses). Robust standard errors in parentheses.
[a] Instrument for change in value of public contributions is change in number of traded firms headquartered in city.
[b] Instrument for change in value of public contributions is change in market value of traded firms headquartered in city.
[c] Instruments for change in value of public contributions are changes in number and value of traded firms headquartered in city.

λ implies that government reduces support for the organization when donations from private donors go up — a "crowding out" effect. A positive value, on the other hand, means that governments are more willing to provide support when there is more support from private donors — a "crowding in" effect.

We suspect that OLS estimates of λ in Eq. (3) are likely to be biased by unobserved factors in $\varepsilon$ that lead to more government aid and are positively correlated with the support from non-governmental donors. Changes in the number or market value of locally-headquartered firms can provide potential instrumental variables for the amount of donations received from non-governmental sources, offering a strategy for obtaining causal estimates of λ. Such estimates are particularly plausible if we can control for the resources available to local government agencies. We use data from the Annual Survey of Governments and the Census of Governments to construct an estimate of the total revenues collected by all government agencies in a city as a proxy for resource availability.

Table 8 presents first-differenced models based on a version of Eq. (3) that is aggregated to the city level. The dependent variable in these models is the change in total government aid provided to local charities in a city (between 1990 and 2000). The key independent variables are the change in total non-governmental donations received by local charities in the city, and the total revenues of all local government agencies.[35] We present simple OLS models in column 1, and instrumental variables (IV) estimates in columns 2–4, using changes in the number of locally-headquartered firms, the market value of these firms, or both headquarters measures as instruments for the non-governmental income of local charities.

The simple OLS model in column 1 shows significant "crowding in": each dollar of non-governmental income is estimated to raise government grants by 28 cents. Arguably, however, this estimate is upward-biased by unobserved heterogeneity in the "quality" of local charities. The IV models based on the presence of local corporate headquarters confirm this suspicion. Using the number of local headquarters, their market value, or both the estimates of λ range from 0.05 to 0.14, and are insignificantly different from 0. These estimates suggest that controlling for available local government revenues (which exert a strong positive effect on government funding of local charities) there is no behavioral reaction of government funding to private sector donations. An interesting question for further research is whether donations from

[35] Specifically, we use data from the Annual Surveys of Government (ASG, available for the larger government entities in most larger cities) and data from the Censuses of Government (available every 5 years for all government entities), interpolated between the census years to obtain values for 1990 and 2000. We aggregate the ASG and interpolated Census data across all entities in each MSA/PMSA, using 2000 MSA definitions.

locally-headquartered firms and their employees crowd in or crowd out other private sector donations. Unfortunately, the Statistics of Income files do not allow us to distinguish the sources of private sector donations, so we cannot address that question here.

## 6. Conclusions

The past twenty years have been characterized by marked differences in the ability of different cities to attract and retain corporate headquarters. Cities like Houston, San Jose, and San Francisco have gained a significant number of corporate headquarters, while cities like New York, Chicago and Los Angeles have lost. Local leaders and politicians work hard to attract and retain corporate headquarters in their communities, often providing tax incentives to sweeten the deal. These incentives are sometimes justified by the claim that locally-headed corporations are a significant source of money and fund-raising talent for local non-profits. These claims are difficult to verify, since the existing empirical evidence is limited.

In this paper we seek to empirically assess the influence of corporate headquarters in a city on non-profit organizations there. Our analysis suggests that attracting or retaining the headquarters of an average firm yields approximately $3–10 million per year in public contributions to local non-profits. Changes in the market capitalization of firms headquartered in a city are also important determinants of charitable donations. We find that each 1000 dollar increase in the market value of the firms headquartered in a city yields $0.60–1.60 to local non-profits.

Most of these increases in charitable contributions seem to be due to the fact that the presence of corporate headquarters raises the number of rich individuals in an area. The addition of a new headquarters in a city is associated with an increase in the number of individuals with income larger than $100,000 equal to 275. By contrast, we find limited support for the notion that the presence of corporate headquarters benefits charities directly, through corporate donations. Given that the vast majority of firms in our sample produce nationally traded goods, this finding may be not too surprising. Profit-maximizing firms with customers all over the country should have limited incentives to contribute only to local charities.

Finally, we examine the possibility that increased private sector donations crowd out government-provided revenues for local charities. While an OLS model suggests that government funding is increased by higher private sector donations (a "crowding in" effect), we conjecture that the observed effect is biased by the unobserved characteristics of local charitable organizations that increase their attractiveness to private sector and government funders. When we use the presence of corporate headquarters as instrumental variables for private sector donations, and control for the revenues of local government agencies, we find that government funding is essentially unaffected by fluctuations in private donations. Increases in donations from the presence of local headquarters do not appear to be offset by reductions in government aid.

## Acknowledgments

We are grateful to John Straub, Abigail Payne, Felice Klein and seminar participants at Cornell, Illinois, and Princeton for comments on earlier versions of this paper, and to the editor and two referees for very helpful comments. We also thank Kevin Stange, Richard Crump, David Walton, and Daniel Hartley for outstanding research assistance. This research was funded in part by a grant from the National Bureau of Economic Research.

## Appendix A

**Appendix Table 1**
Means of key variables and characteristics of headquartered firms by entry and exit status.

| | Values in: | |
|---|---|---|
| | 1990 | 2000 |
| *A. Means of city-level data set (146 cities)* | | |
| (i) Corporate headquarters measures | | |
| Number of top firms present in city | 8.1 | 9.8 |
| Number of all traded firms present in city | 31.1 | 38.1 |
| Total market value of top firms present in city (millions) | 22,266 | 95,382 |
| Total market value of all firms present in city (millions) | 23,449 | 100,744 |
| (ii) Charitable contributions | | |
| Total contributions (weighted, millions) | 371 | 665 |
| Total contributions (unweighted, millions) | 235 | 447 |
| (iii) Census-based characteristics (age 16 or older) | | |
| Total population | 774,282 | 893,953 |
| Income per capita | 25,354 | 28,787 |
| Employment–population rate | 71.6 | 70.6 |
| Percent with college degree | 19.3 | 22.7 |
| Number with over $100,000 in annual income | 21,934 | 36,802 |
| *B. Characteristics of firms present in 146 larger cities* | | |
| Number present | 4547 | 5568 |
| Mean market value | 753 | 2642 |
| Continuously present 1990 to 2000 | | |
| Number of firms | 1310 | 1310 |
| Market value | 1414 | 5721 |
| Present in 1990, inactive in 2000 | | |
| Number of firms | 3102 | |
| Market value | 451 | |
| Present in 2000, inactive in 1990 | | |
| Number of firms | | 4123 |
| Market value | | 1627 |
| Present in 1990, relocated to different city in 2000 | | |
| Number of firms | 135 | 135 |
| Market value | 1280 | 3762 |

Notes: See notes to Tables 1 and 2 for sources of firm-level and charitable contributions data.
Financial data are presented in constant 2002 dollars.

**Appendix Table 2**
Cross-sectional and first-differenced models estimated by median regression.

| | Cross-sectional models for 2000 | | | | First difference models: changes from 1990 to 2000 | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Number of top firms in city (coefficient in millions of $) | 30.84 | | | | 9.68 | | | |
| | (18.19) | | | | (3.42) | | | |
| Number of traded firms in city (coefficient in millions of $) | | 5.33 | | 2.70 | | 4.21 | | 1.24 |
| | | (4.96) | | (8.57) | | (4.11) | | (2.82) |
| Market value of all firms in city (coefficient in $ per $1000 of value) | | | 1.46 | 1.19 | | | 1.03 | 1.14 |
| | | | (1.75) | (2.32) | | | (0.37) | (0.56) |
| Pseudo *R*-squared | 0.42 | 0.40 | 0.41 | 0.41 | 0.14 | 0.15 | 0.19 | 0.19 |
| Controls for population, employment–population, and fraction of adults with college education | yes | yes | yes | yes | yes | yes | yes | yes |

Notes: See notes to Table 3. Sample includes 146 cities. All models are fit by minimizing the sum of absolute deviations (i.e., median regression). Standard errors estimated by boostrap in parentheses.

**Appendix Table 3**
Charitable contributions models with city-specific trends and trend breaks.

| | Headquarters measure = number traded firms (coefficient in millions of $) | | | | | Headquarters measure = market value of firms (coefficient in $ per $1000 of value) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Year *t* | −1.76 | −2.09 | −3.06 | −1.15 | −1.58 | 0.84 | 1.00 | 0.89 | 0.78 | 0.93 |
| | (1.43) | (0.14) | (1.86) | (1.50) | (1.55) | (0.18) | (0.31) | (0.31) | (0.22) | (0.40) |
| Year *t*−1 | | 2.12 | 2.34 | | 1.70 | | −0.26 | −0.24 | | −0.22 |
| | | (1.60) | (1.94) | | (1.59) | | (0.39) | (0.40) | | (0.42) |
| Year *t*−2 | | | −0.53 | | | | | 0.59 | | |
| | | | (2.40) | | | | | (0.89) | | |
| Year *t*+1 | | | | −1.55 | −1.10 | | | | 0.08 | 0.06 |
| | | | | (1.41) | (1.42) | | | | (0.09) | (0.11) |
| *R*-squared | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |

Note: Sample includes 1470 observations on 147 cities in each year from 1990 to 1999, except in columns 3 and 8, which includes 1323 observations for 1991 to 1999. Dependent variable is sum of all public contributions reported by charities in each year, not inflated by sampling weights. All models include fixed effects for each year and city, as well as city-specific trends and trend breaks starting in 1994. Headquarter measure in columns 1–5 is number of traded firms located in each city. Headquarters measure in columns 6–10 is market value of all traded firms in each city. Robust standard errors in parentheses.

## References


Andreoni, James, 1990. Impure altruism and donations to public goods: a theory of warm-glow giving. Economic Journal 100 (401), 464–477.

Andreoni, James, 1998. Toward a theory of charitable fund-raising. Journal of Political Economy 106 (6), 1186–1213.

Andreoni, James, Payne, Abigail, 2003. Do government grants to private charities crowd out giving or fund-raising? American Economic Review 93 (3), 792–812.

Andreoni, James, Payne, Abigail, 2009. Is Crowding Out Due Entirely to Fundraising? Evidence from a Panel of Charities. Unpublished Working Paper, UC San Diego Department of Economics, February.

Bartkus, B., Morris, S., Siefert, B., 2002. Governance and corporate philanthropy: restraining robin hood? Business and Society 41 (3), 319–344.

Becker, Elizabeth, Lindsay, Cotton M., 1994. Does the government free ride? Journal of Law and Economics 37 (1), 277–296.

Bergstrom, Theodore, Bloom, Lawrence, Varian, Hal, 1986. On the private provision of public goods. Journal of Public Economics 29 (1), 25–50.

Boatsman, J.R., Gupta, S., 1996. Taxes and corporate charity: empirical evidence from micro-level panel data. National Tax Journal 49, 193–213.

Bremmer, Robert, 1988. American Philanthropy, Revised Second Edition. University of Chicago Press, Chicago.

Butler, Amy, 2009. Wages in the Nonprofit Sector: Management, Professional, and Administrative Support Occupations. U.S. Bureau of Labor Statistics, Compensation, and Working Conditions. http://www.bls.gov/opub/cwc/cm20090123ar01p1.htm.

Davis, James, Henderson, Vernon, 2004. The Agglomeration of Headquarters. Unpublished working paper, Brown University Department of Economics.

Dye, Richard, Garcia-Mila, Teresa, McGuire, Therese, 2007. Productivity Spillovers of Headquarters. Unpublished working paper, Northwestern University Kellogg School of Management.

Friedman, L.J., McGarvie, M.D., 2002. Charity, Philanthropy, and Civility in American History. Cambridge University Press, Cambridge.

Fry, Louis W., Keim, Gerald, Meiners, Roger E., 1982. Corporate contributions: altruistic or for profit. Academy of Management Journal 25, 94–106.

Galaskiewicz, Joseph, 1997. An urban grants economy revisited: corporate charitable contributions in the twin cities, 1979–81, 1987–89. Administrative Science Quarterly 42 (3), 445–471.

Greenstone, Michael, Moretti, Enrico, 2005. Bidding for industrial plants: does winning a 'million dollar plant' increase welfare? NBER Working Paper 9844 (revised).

Helland, Eric, Smith, Janet, Brown, William, 2006. Corporate philanthropic practices. Journal of Corporate Finance 12, 855–877.

Himmelstein, Jerome L., 1997. Looking Good and Doing Good: Corporate Philanthropy and Corporate Power. Indiana University Press, Bloomington Indiana.

Hornbeck, Richard, Greenstone, Michael, Moretti, Enrico, 2007. identifying agglomeration spillovers: evidence from million dollar plants. Unpublished working paper, MIT Department of Economics.

Klier, Thomas, Testa, William, 2002. Location trends of large company headquarters during the 1990s. Federal Reserve Bank of Chicago Economic Perspectives 26 (2), 12–26.

McElroy, Katherine M., Siegfried, John J., 1986. The community influence on corporate contributions. Public Finance Quarterly 14, 394–414.

McGuire, Therese, Garcia-Mila, Teresa, 2002. Tax Incentives and the City. Brookings–Wharton Papers on Urban Affairs 2002, pp. 95–114.

Muirhead, Sophia A., 2002. Corporate Contributions in 2002. The Conference Board, New York.

Muirhead, Sophia A., 2006. *The 2006 Corporate Contributions Report*, The Conference Board.

Navarro, Peter, 1988. "Why do corporations give to charity?". Journal of Business 61 (1), 65–93.

Roback, Jennifer, 1982. Wages, rents, and the quality of life. Journal of Political Economy 90 (4), 1257–1278.

Roberts, Russell, 1984. A positive theory of private charity and public transfers. Journal of Political Economy 92 (1), 136–148.

Rose-Ackerman, Susan, 1996. Altruism, nonprofits, and economic theory. Journal of Economic Literature 34 (2), 701–728.

Saiia, David H., Carroll, Archie B., Buchholtz, Ann K., 2003. Philanthropy as strategy: when corporate charity 'begins at home'. Business and Society 42 (2), 169–201.

Smith Hopkins, Jamie, 2004. Baltimore Loss: HQs Go Elsewhere. Baltimore Sun. August 29.

Trost, Steven, 2006. Crowding Out in Corporate Charitable Giving, Unpublished Working Paper, United States International Trade Commission.

United States Census Bureau, 2008. Statistical Abstract of the United States: 2008. USGPO, Washington.

United States Department of Education, 2009. Digest of Education Statistics: 2007. USGPO, Washington.

Werbel, James D., Carter, Suzanne M., 2002. The CEO's influence on corporate foundation giving. Journal of Business Ethics 40, 46–60.

Zeltin, Minda, 1990. Companies find profit in corporate giving. Management Review 79, 10–15.