3-27-2008

The Geography of Giving: The Effect of Corporate Headquarters on Local Charities

David Card
University of California at Berkeley, card@econ.berkeley.edu

Kevin F. Hallock
Cornell University, kfh7@cornell.edu

Enrico Moretti
University of California at Berkeley, moretti@econ.berkeley.edu

The Geography of Giving: The Effect of Corporate Headquarters on Local Charities

Abstract
We use data on the locations of the head offices of publicly traded U.S. firms to study the impact of corporate headquarters 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 an average firm yields approximately $10 million per year in contributions to local non-profits, while the headquarters of a larger firm (one ranked among the top 1000 in total market value) yields about $25 million per year. Likewise, we find that each $1000 increase in the market value of the firms headquartered in a city yields 70 cents or more to local non-profits. 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 themselves.

Keywords
charity, donations, corporation, geography, contributions, non-profits

Comments
Card, D., Hallock, K. F., & Moretti, E. (2008). *The geography of giving: The effect of corporate headquarters on local charities* (CAHRS Working Paper #08-08). Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. http://digitalcommons.ilr.cornell.edu/cahrswp/488

Cornell University
School of Industrial and Labor Relations
Center for Advanced Human Resource Studies

WORKING PAPER SERIES

The Geography of Giving: The Effect of Corporate Headquarters on Local Charities

David Card
Kevin F. Hallock
Enrico Moretti

Working Paper 08 – 08

CAHRS at Cornell University
615B Ives Hall
Ithaca, NY 14853-3901 USA
Tel. 607 255-9358
www.ilr.cornell.edu/CAHRS

The Geography of Giving: The Effect of Corporate Headquarters on Local Charities

David Card
Department of Economics
University of California at Berkeley
549 Evans Hall, #3880
Berkeley, CA 94720
card@econ.berkeley.edu

Kevin F. Hallock
Departments of Labor Economics and HR Studies
Cornell University
391 Ives Hall (East)
Ithaca, NY 14853
kfh7@cornell.edu

Enrico Moretti
Department of Economics
University of California at Berkeley
549 Evans Hall, #3880
Berkeley, CA 94720
moretti@econ.berkeley.edu

March 27, 2008

http://www.ilr.cornell.edu/cahrs

Abstract

We use data on the locations of the head offices of publicly traded U.S. firms to study the impact of corporate headquarters 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 an average firm yields approximately $10 million per year in contributions to local non-profits, while the headquarters of a larger firm (one ranked among the top 1000 in total market value) yields about $25 million per year. Likewise, we find that each $1000 increase in the market value of the firms headquartered in a city yields 70 cents or more to local non-profits. 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 themselves.

* We thank John Straub and Abigail Payne for comments on a preliminary draft, and Kevin Stange, Richard Crump, David Walton, and Daniel Hartley for outstanding research assistance. We also thank seminar participants at Cornell, Illinois and Princeton for helpful suggestions. This research was funded in part by a grant from the National Bureau of Economic Research.

The Geography of Giving:
The Effect of Corporate Headquarters on Local Charities

Introduction

Much of the vital infrastructure in American cities is provided by charities.[1] Colleges and universities, cultural institutions, and hospitals all rely on charitable donations as a major source of income. 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.

In this paper we explore the effects of corporate headquarters on the level of charitable giving in a city. Corporate executives are often seen as a key resource for local charities, serving as benefactors and fundraisers and also channeling their companies' donations to local causes (Werbel and Carter, 2002). Beginning in the 1980s, however, analysts noted a shift toward so-called "strategic philanthropy," in which corporate charity is closely aligned with overall business objectives (see e.g., Zetlin, 1990, Saiia, Carroll and Buchholz, 2003). In addition, as more U.S. companies focus internationally, ties to any one "headquarters city" may have weakened. Whether these trends have lessened the impact of corporate headquarters on the incomes of local charities is unclear. Indeed, despite the routine attention of the popular press, there is surprisingly little systematic evidence on how corporate headquarters affect local non-profit organizations.[2]

The question of whether corporate headquarters matter to local charities has great practical significance. Over the past 30 years, state and local governments have assumed greater responsibility for economic development. They frequently offer substantial subsidies to

1 There is now a vast literature on the economics of charitable giving. See Bremer (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, Blume, and Varian (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" by government funding of charitable organizations.

2There are quite a bit of popular press on charities and corporate giving including some that focus on heaquarters moves. A recent example about Baltimore claims that the loss of corporate headquarters has resulted in lower donations to charities in the city (Smith Hopkins, 2004).

attract corporate headquarters to their jurisdictions (Greenstone and Moretti, 2005). In one well-publicized recent case, Boeing was granted $50 million (about $100,000 per job) in tax abatements to move its corporate headquarters to Chicago.[3] Subsidies to attract headquarters are difficult to rationalize based solely on the jobs created.[4] Supporters often point to the impact on local non-profits as a key justification for such packages.

We evaluate these spillover effects using information on the locations of 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). A newly assembled data base with the exact location of corporate headquarters allows 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 $10 million per year in additional public contributions to local non-profits, while the headquarters of top firms – those that are ranked in the top 1000 in market value at least once in the sample window – yield about $25 million per year. Likewise, each $1000 in combined market value for the firms headquartered in a city yields 70 cents or more 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).

[3] The move involved around 500 top level managers but no major production facilities. See McGuire and Garcia-Mila (2002).
[4] From a pure efficiency point of view, there are only two possible justifications for these subsidies: (1) agglomeration externalities of some form; and (2) donations to private charities. Hornbeck, Greenstone and Moretti (2007), Greenstone and Moretti (2005), and

When we investigate the dynamics of charitable giving, we find that the effects of lagged headquarters are larger than the effects of current counts. This is consistent with a lag between the flow of charitable donations and the establishment of new headquarters (or the closing of old ones). However, the same pattern does not emerge when corporate presence is measured by market value of the headquartered firms. Much 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.

The main econometric issue confronting the estimation of our models is the possibility of spurious correlation driven by unobserved time-varying, city-specific factors that affect charitable contribution rates and are correlated with headquarters or firms' market value. We suspect that these biases are more likely to affect the estimation of models based on market value than models based on the simple headquarters count. But even for the headquarters count, it is possible that shocks to geographically concentrated industries can lead to a rise or fall in the number of headquarters in a particular city, and also to changes in the incomes and charitable contributions of workers who are affiliated with the industry but are not directly connected to the corporate headquarters. To at least partially address these concerns, we estimate models that include both current and future counts of headquarters as determinants of current giving and find only small and statistically insignificant effects of the future variables. We also present estimates of simple dynamic models that allow us to test for the endogeneity of corporate location choices. While far from definitive tests, these results lend some support to a causal interpretation of the correlation between the presence of headquarters and charitable donations.

Davis and Henderson (2004) discuss the possibility of agglomeration externalities for manufacturing plants. Dye, Garcia-Mila and McGuire (2007) discuss the potential productivity spillovers from headquarters.

We go on to investigate the channels through which corporate headquarters might affect local charities. The presence of headquarters can raise local contributions because the companies themselves make donations, or because headquarters employ relatively high-income people who make personal contributions and enhance local fundraising capacity. 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 our empirical analysis by testing whether the gains to local charities associated with the presence of corporate headquarters lead to offsetting changes in local public expenditures.[5] In particular, we focus on the impacts of additional headquarters, or increased market capitalization of headquartered firms, on local government spending on social services, schools, and hospitals. We find imprecise negative impacts of a rise in the numbers of headquarters on spending on these three categories of spending. In contrast, increases in the market capitalization of companies headquartered in a metropolitan area are associated with significant *increases* in local government revenues and in most categories of spending. We suspect that changes in market capitalization of local firms are correlated with the strength of the local economy, making it difficult to disentangle a reverse crowd-out effect from the direct revenue effects of local demand shocks.

The paper is organized as follows. Section I reviews the existing literature. Section II describes our econometric specifications. Section III describes the data, and some preliminary evidence. The main empirical results are in Section IV. Section V concludes.

[5] Most existing studies of the interaction between non-profits and the government (e.g., Roberts, 1984; Bergstrom, Blume, and Varian, 1986) 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.

I. 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.[6] The leading hypothesis is that corporate charity is an activity pursued by utility-maximizing managers acting as imperfect agents for shareholders (Boatsman and Gupta, 1996; Helland and Smith, 2006; Bartkus, Morris and Seifert, 2002; Webel and Carter, 2002; Trost, 2004). The main alternative is that corporate giving is driven by profit-maximizing concerns (Navarro, 1988; Fry, Keim, and Meiners, 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.[7] 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 radio, for example).[8] It is estimated that there is nearly $14 billion in corporate charitable giving in the United States each year (Muirhead, 2006).

There are relatively 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

[6]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.

[7]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.

[8]Recent commentators have identified "strategic philanthropy" as an emerging trend in corporate giving (see e.g. Zetlin, 1990; Muirhead, 1999; Porter and Kramer, 2002; Saiia, Carroll and Buchholtz, 2003). This can be interpreted as charitable giving that contributes to profitability.

facilities, this 70% estimate presumably overstates the pure headquarters share.[9] 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.[10] 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 coporate headquarters only.

How big are the expected local impacts of a corporate headquarters? Annual tabulations by the Conference Board for larger companies 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.[11] 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] For smaller firms the averages are presumably smaller, though the headquarters' share may be larger.

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 fund-raising 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 percent, 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

[9]Suppose that a firm allocates a fraction α_H of contributions to the headquarters city, and a fraction α_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 $\alpha_H + f_H \alpha_p$.

[10]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 (α_H) is between 0.5 and 0.65.

[11]See Muirhead (2002).

[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

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.

II. 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

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

where α_c is a city-specific fixed effect, δ_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 types of 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. 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 a relatively good indicator of the corporate presence.[14]

The main econometric issue confronting the estimation of equation (1) is the possibility that H_{ct} is correlated with unobserved city-specific factors that affect charitable contribution

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]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.

rates. For example, trends in the health of the domestic automobile industry will affect charitable donations in the Detroit metropolitan area *not only* through the direct charitable contributions of General Motors and Ford, and their headquarters employees, but also through the contributions of the many production workers who also live in the area. We suspect that these biases are more likely to affect the estimation of the market value measure of H than the simple headquarters count. Even in the latter case, however, shocks to geographically concentrated industries can lead to a rise or fall in the number of headquarters in a particular city, and also to changes in the incomes and charitable contributions of workers who are affiliated with the industry but are not directly connected to the corporate headquarters.

It is also possible that corporations are attracted to (or emerge from) certain cities with particularly successful local charities. For example, over the past decades a number of high-tech businesses have grown up around major research universities.[15] These institutions are also major recipients of corporate and non-corporate donations. This "reverse causality" may lead to an upward bias in OLS estimates of the parameter γ in equation (1).

To partially address these concerns, we present estimates of a simple dynamic version of equation (1):

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

This specification adds city-specific linear trends to the basic model, as well as leads and lags of the headquarters measure. The city-specific trends θ_c will absorb any unobserved, smoothly trending factors that affect charitable donations in a city and may also be correlated with H. The lag term in H is 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. Finally, the lead term in H is included to test for endogenous shifts in the corporate presence in a given city. A significantly positive estimate of the lead coefficient (γ_{Lead}), for example, can be interpreted as evidence of a "reverse causality"

effect from charities to headquarters, whereas an estimate close to zero is consistent with no such effect.

III. 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.

a. Corporate Locations and Stock Market Valuation

We used the CompactDisclosure data base 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.[16] Where possible, we used the May versions of the data base, 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).[17] 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 data base 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 2,805 firms that were *ever* in the top 1000 list in any year between 1989 and 2002. Of

[15]The computer-related businesses in Silicon Valley are said to have started there because of the presence of Stanford University.
[16]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).
[17]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

these relatively large firms, 524 were continuously active over the entire period.[18]

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 85-90% of the total market value of all firms in our sample. The mean and median market values of the firms in the sample rise substantially over time, 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 a relatively large gain in the number of top headquarters, while New York and Chicago experienced relatively large losses. Most of the other cities saw a net gain or loss of only 1-3 headquarters. Some of these trends are illustrated in Figures 1a and 1b, which show the relative numbers of large companies headquartered in 10 cities, including two that were not in the top 15 in 1989 but experienced rapid growth in headquarters over the 1990s: Washington DC and Seattle.

from Manhattan to Newark NJ would be considered to have moved.

[18]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.

Table 1
Number, Market Value, and Headquarters Locations of Publicly Traded Firms

	Top Firms (Ever in Top 1000)			All Publicly Traded Firms		
	1989	**1995**	**2002**	**1989**	**1995**	**2002**
Number of Active Firms	1,328	1,595	1,413	5,642	6,353	5,418
Market Value of Firms: (millions, year end)						
Mean Value	1,805	2,906	8,257	491	864	2,419
Median Value	624	1,011	2,109	39	96	192
Location of Headquarters:						
New York	112	104	97	404	364	291
Chicago	88	94	72	210	241	187
Los Angeles	60	53	42	284	258	180
Boston	45	58	47	206	251	225
Philadelphia	44	46	43	180	170	158
Houston	35	57	48	126	197	157
Minneapolis	34	38	35	158	201	145
San Jose	34	68	89	128	194	260
Atlanta	29	30	30	97	121	125
Dallas	28	39	38	148	181	145
Stamford	25	33	17	75	71	52
Cleveland	22	28	21	70	70	53
St. Louis	22	26	19	50	67	56
San Francisco	22	34	37	71	106	125
Pittsburgh	20	23	16	49	58	51
Share of Firms in 15 Cities (%)	47	46	46	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 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.

b. 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 year that filed a Form-990 tax return.[19] 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.[20]

Some basic information on the number of charities in the sample and their public contributions 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 the 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 147 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

[19]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.
[20]The data contain the population of the largest nonprofits and a sample of smaller organizations that have associated sample

same period was less than 0.62. Note that charities in these cities account for 85-90 percent of charitable organizations in all 335 MSAs, and over 90 percent 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 Figures 2a and 2b, which show the trends in (unweighted) contributions received in 10 major cities relative to 1990. Looking at Figure 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 (Figure 1a).

We also constructed graphs similar to Figures 2a and 2b 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.

weights. More details on the sampling scheme can be found at the National Center for Charitable Statistics web-site.

Table 2
Numbers of Charitable Organizations and Public Contributions

	Unweighted				Weighted			
	Number Charities		Public Contributions		Number Charities		Public Contributions	
	1990	2002	1990	2002	1990	2002	1990	2002
All Cities	9,582	14,355	36,512	64,902	94,036	163,883	59,587	102,968
147 Sample Cities	8,285	12,339	34,255	59,057	79,113	136,958	54,312	91,756
New York	680	932	7,265	8,218	5,239	8,586	10,467	11,415
Washington DC	342	640	2,520	5,464	3,237	6,600	3,654	7,898
Los Angeles	362	497	2,500	3,056	4,270	5,697	3,388	4,388
Chicago	386	533	1,629	3,012	2,827	5,288	2,440	4,555
Boston	326	453	1,686	5,175	2,796	4,989	2,222	6,036
Atlanta	131	245	1,186	2,090	1,293	2,912	1,534	2,872
Seattle	97	155	258	1,212	1,376	1,564	1,445	1,850
Philadelphia	329	465	924	1,617	2,428	3,928	1,419	2,480
Dallas	110	149	802	986	1,058	1,389	1,250	1,617
San Francisco	140	247	597	1,443	1,544	3,352	919	2,169
Minneapolis	154	258	558	882	1,657	3,274	918	1,511
Providence	67	111	460	606	517	1,196	799	835
Baltimore	148	235	551	854	1,146	2,167	798	1,255
Cleveland	157	205	539	809	1,635	1,711	788	1,190
Pittsburgh	152	232	483	859	1,081	1,778	731	1,816
San Jose	55	94	442	925	604	1,234	616	1,306
Houston	98	171	439	780	1,098	2,245	588	1,313
St Louis	128	163	371	420	996	2,037	522	685
Detroit	137	178	329	577	1,206	2,326	511	1,068
Raleigh-Durham	63	105	342	1,569	526	1,031	454	1,924
Percent of All Cities Totals in:								
147 City Sample	86	86	94	91	84	84	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.

Figure 1a
Number of Large Corporate Headquarters in Different Cities

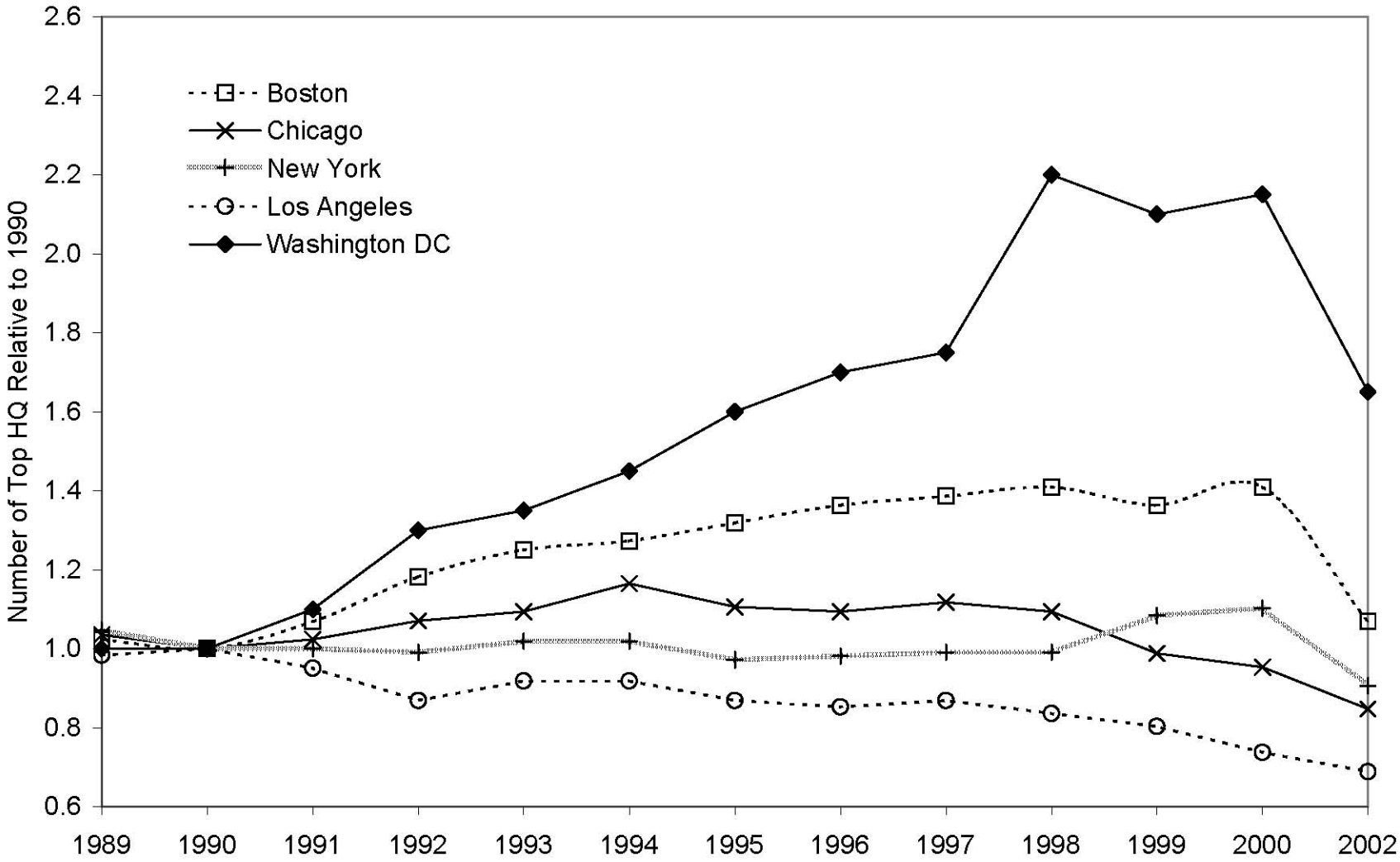


Figure 1b
Number of Large Corporate Headquarters in Different Cities

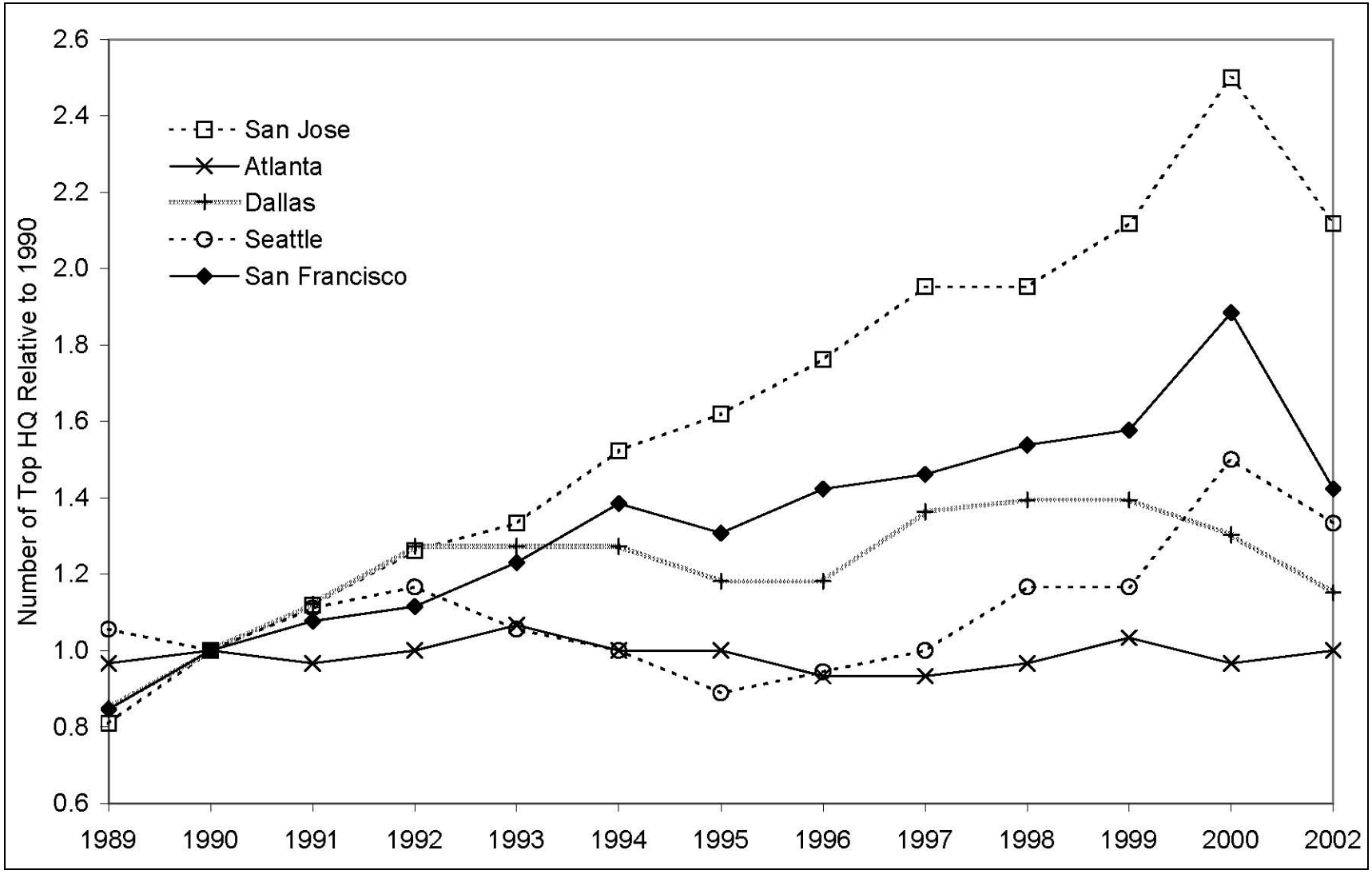


Figure 2a
Public Charitable Contributions in Different Cities

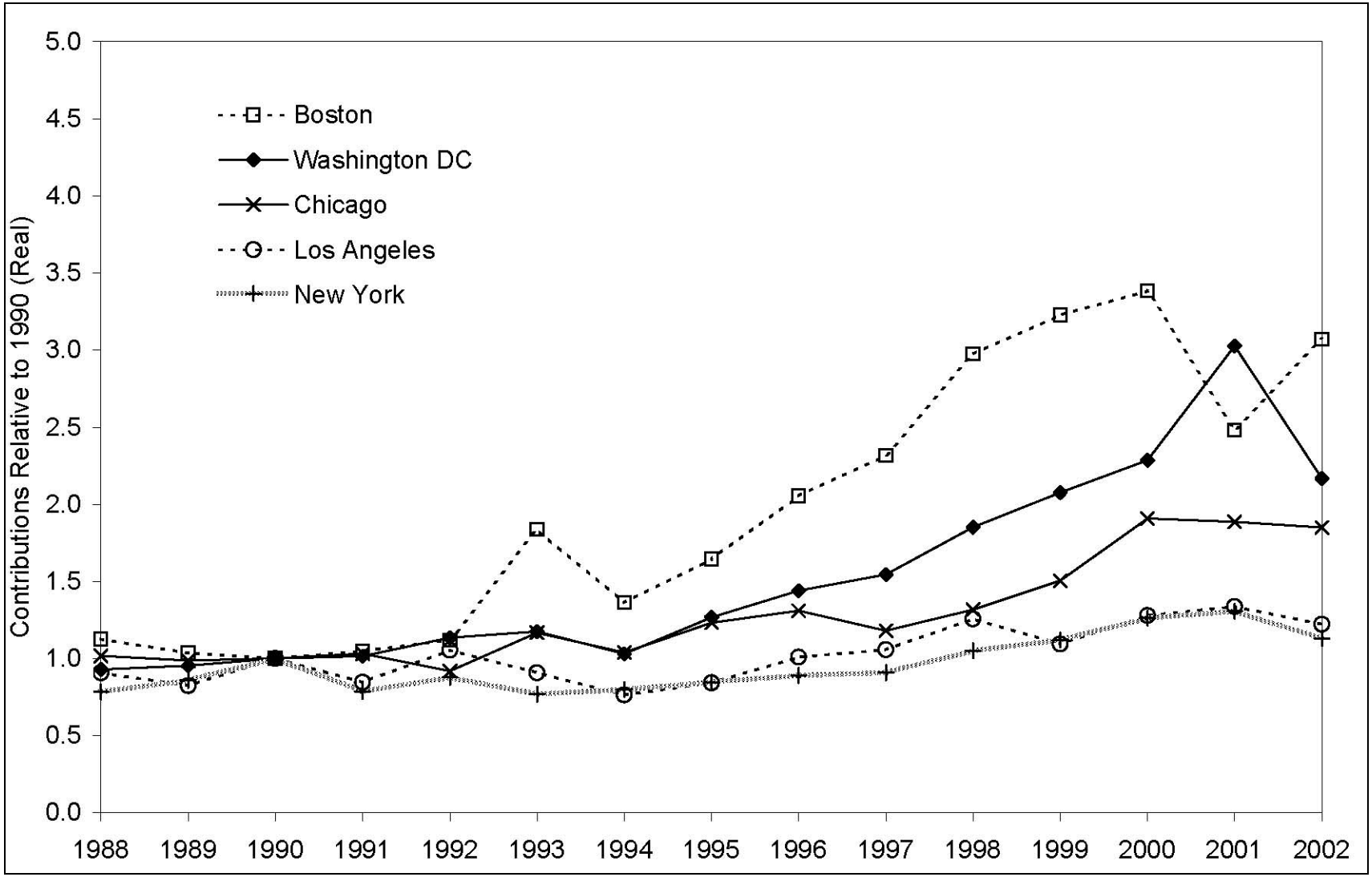
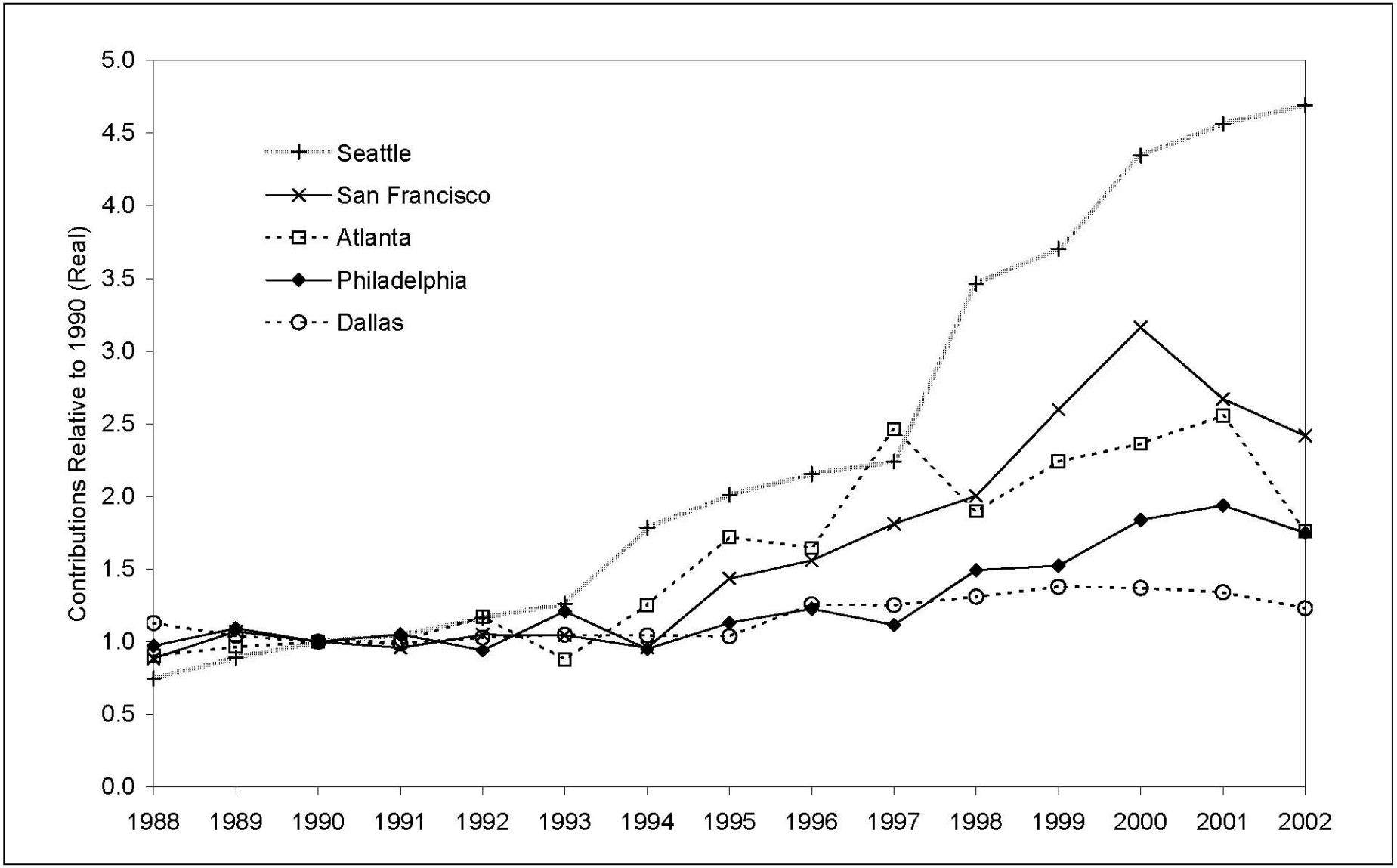


Figure 2b
Public Charitable Contributions in Different Cities



IV. 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 headquarter presence. In the third subsection, we seek to distinguish between two possible mechanisms that may generate a link between charitable giving and headquarter presence in a city. Finally, in the last subsection, we ask whether charitable giving related to headquarters displaces public expenditures.

a. Models for 1990 and 2000

Table 3 presents a series of regression models based on equation (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 147 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 different models use different measures of corporate headquarters: the number of top firms headquartered in the city (columns 1 and 6); the number of *all* firms headquartered in the city (columns 2 and 7); the market value of top firms in the city (columns 3 and 8); and the market value of all firms headquartered in the city (columns 4 and 9). We also present one specification with three of these four measures (columns 5 and 10). 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.

The estimates point to a number of interesting conclusions. First, the estimated headquarters effects are positive and highly statistically significant in all of the models that include only a single headquarters measure. Second, as might be expected if there are unobserved differences that affect both charitable contributions and the probability of being a headquarters city, the estimated headquarters effects tend to be larger in the cross-sectional

models than in the first-differenced models. Third, the impact of an additional headquarters for a top firm – $25 million in the first-differenced model in column 6 -- is about 2.5 times larger than the impact of an additional headquarters for any firm– $10 million in the first-differenced model in column 7. Interestingly, the $25 million impact is much larger than our rough calculation of the likely size of direct corporate donations by a large firm headquartered in a city ($4 million), and suggests an important effect from the employees of the company. Fourth, the impacts of the market value of top firms and all firms headquartered in a city are very similar. This comparison suggests that the local contributions arising from the presence of a corporate headquarters are roughly proportional to the market value of the company.[21] Finally, the specification in column 10 suggests that our sample lacks the power to separately identify the effects of the number of headquarters and the market value of firms headquartered in a city.

Given the apparent noisiness of the weighted contribution totals for different cities, we re-estimated the first differenced models using unweighted contribution totals. The results are reported in the first four columns of Table 4. As would be expected, the coefficient estimates obtained using the unweighted contributions are smaller, but their general patterns are very similar to those obtained from the weighted data.[22]

The relationship between the change in the number of large corporations headquartered in a city and the change in public contributions received by the charities in those cities is illustrated in Figure 3. Each of the 147 cities in our estimation sample is shown by an open square. For reference, we have labeled some of the most interesting cities. Consistent with the regression results in Tables 3 and 4, the graph suggests a relatively strong positive relationship between changes in the number of headquarters and growth in charitable contributions. The city of San Jose is an interesting "outlier". This city experienced a very rapid growth in the concentration of large headquarters, but not particularly strong growth in charitable

[21] This finding also reflects the fact that top firms account for 85-90% of the value of all firms.
[22] If the unweighted contributions represent about 65 percent of the total contributions, then one would expect the coefficients from the models fit to the unweighted data to be about 65 percent as large as the coefficients for the models fit to the weighted data. The

contributions. One possibility is that the count of top headquarters in San Jose is inflated by the "tech bubble" that created large market values for many Silicon Valley firms with small (or even negative) operating profits. Arguably, these firms (and their employees) would not be expected to contribute to charities at the same rate as more traditional firms with similar market values. When we re-estimate the models in columns 6 to 9 of Table 3 excluding San Jose, our estimates increase substantially. In fact all coefficient estimates are on the order of 1.5 to 2 times higher compared to the ones shown in Table 3. For example, the coefficients (and standard errors) for the specifications in columns 6, 7, 8 and 9 are 53.95 (10.19), 15.24 (2.60), 1.40 (0.30), and 1.48 (0.29) respectively.

Table 3
Cross-Sectional and First-Differenced Models of
the Effect of Corporate Headquarters on Charitable Contributions in a City

	Cross-Sectional Models: Data for 2000					**First-Difference: Change from 1990 to 2000**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Number of Top Firms in City (coefficient in millions of $)	36.59 (6.63)				7.17 (18.96)	24.20 (6.79)				-16.08 (13.65)
Number of Traded Firms in City (coefficient in millions of $)		10.72 (2.37)			0.43 (4.82)		10.09 (2.12)			11.43 (3.55)
Market Value of Top Firms in City (coefficient in $ per $1000 of value)			1.77 (0.29)					0.65 (0.20)		
Market Value of All Firms in City (coefficient in $ per $1000 of value)				1.74 (0.28)	1.43 (0.56)				0.67 (0.19)	0.47 (0.28)
R-squared	0.70	0.68	0.71	0.71	0.71	0.38	0.42	0.37	0.37	0.42
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. Dependent variable in columns 1-5 is the total public contributions received by charitable organizations in the city in 2000. Dependent variable in columns 6-10 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). Standard errors are in parentheses.

coefficients in columns 1-4 of Table 4 are about 80% as large as the ones in columns 6-9 of Table 3.

Table 4
Effect of Corporate Headquarters on Contributions to Two Classes of Charitable Organizations (Unweighted Estimates of Contributions)

	Contributions to All Charitable Organizations				Contributions to Nationally-Oriented Organizations				Contributions to Locally-Oriented Organizations			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Number of Top Firms in City (coefficient in millions of $)	20.30 (5.37)				14.82 (3.88)				5.48 (2.48)			
Number of Traded Firms in City (coefficient in millions of $)		8.13 (1.69)				7.31 (1.17)				0.82 (0.81)		
Market Value of Top Firms in City (coefficient in $ per $1000 of value)			0.61 (0.16)				0.25 (0.12)				0.35 (0.07)	
Market Value of All Firms in City (coefficient in $ per $1000 of value)				0.61 (0.16)				0.27 (0.11)				0.35 (0.07)
R-squared	0.36	0.40	0.37	0.37	0.25	0.35	0.20	0.20	0.37	0.35	0.46	0.46
Controls for population, employment-population, and fraction of adults with college education	yes	yes	yes	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 1-4 is change in total contributions for all organizations. Dependent variable in columns 5-8 is change in contributions for 'nationally oriented' organizations. Dependent variable in columns 9-12 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. Standard errors are in parentheses.

Figure 3
Decadal Changes in Top Headquarters and Public Contributions

An interesting question is whether all types of charities benefit equally from the presence of corporate headquarters in a city. To provide some initial indication, we divided charities into two groups, based on an 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 5-12 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.

b. Dynamic Models Using Annual Data

Following the discussion in section III, we now present estimates of the simple dynamic model outlined in equation (2). To do so, we fit a series of models using *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 1-3); and the market value of all firms headquartered in a city (columns 4-6). The models in the upper panel of the table exclude 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.[23]

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 9.51, which should be compared to the estimate of 8.13 in column 2 of Table 4. When we use the

[23] 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 impact on the estimates reported in Table 5.

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 4 of Table 5 to the 0.61 estimate in column 4 of Table 4).

Table 5
Effect of Corporate Headquarters on Charitable Contributions in a City

	Headquarters Measure = Number of Traded Firms (coefficient in millions of $)			**Headquarters Measure = Market Value of All Firms (coefficient in $ per $1000 of value)**		
	(1)	(2)	(3)	(4)	(5)	(6)
A. Models with City and Year Fixed Effects						
Year t	9.51 (0.43)	2.74 (0.82)	1.15 (1.16)	1.59 (0.06)	1.25 (0.20)	1.31 (0.26)
Year t-1		7.83 (0.81)	8.10 (0.82)		0.54 (0.29)	0.51 (0.30)
Year t+1			1.61 (0.84)			-0.03 (0.10)
R-squared	0.96	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 (0.64)	-1.02 (0.63)	-0.92 (0.74)	1.57 (0.07)	1.68 (0.14)	1.49 (0.16)
Year t-1		9.33 (0.59)	9.27 (0.64)		-0.18 (0.18)	-0.08 (0.18)
Year t+1			-0.16 (0.64)			0.13 (0.07)
R-squared	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. Dependent variable is the sum of all public contributions reported by charities in each city/year, not inflated by sampling weights. Models in upper panel include fixed effects for city and year. Models in lower panel include fixed effects for city and year, and city-specific linear trends. Headquarters measure used in models in columns 1-3 is the number of publicly traded firms located in the city. Headquarters measure used in models in columns 4-6 is the market value of all publicly traded firms located in the city. Standard errors are in parentheses.

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 models *except* the model with only a current value of the number of headquarters in the city.

Second, when a lagged value of the number of headquarters is included, 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). Interestingly, however, the same pattern does not emerge when corporate presence is measured by market value of the headquartered firms. Much 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.

Finally, the lead values of the headquarters measures in the models in columns 3 and 6 are all relatively small and statistically insignificant. While this is far from a definitive test, it does provide some evidence that the relationship between corporate presence and charitable contributions is not driven by serious reverse causality.

c. 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 I). 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 sub-section, 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.[24] The entry for the first-differenced model in column 6 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 the average publicly traded firm in column 7 is 275. Both coefficients are precisely estimated.

The other specifications in Table 6 show that the number of high-income people in a city is also related to the total market capitalization of firms headquartered in the city. The models in columns 8 and 9 suggest that this effect is economically large and statistically significant. Moreover, the comparison of columns 8 and 9 indicates that a one dollar increase in market capitalization has roughly the same effect on the number of rich individuals, irrespective of the size of the firm.

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 Table 3 and Table 7 is striking. The addition of just one variable

[24] 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).

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 6 to 9 in 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 top headquarters drops from 24.20 in Table 3 to 0.48 in Table 7. Similarly, the coefficient on the market value of top firms drops from a statistically significant 0.65 to a statistically insignificant -0.21.

By contrast, the coefficient on the number of individuals with income larger than $100,000 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 a extra $30,000 in charitable contributions. According to IRS reports, in 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.[25] 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, the comparison of Table 3 and Table 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

[25] 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.

Table 6
Cross-Sectional and First-Differenced Models of
the Effect of Headquarters on the Number of High-Income People in a City

	Dependent Variable = number of people earning > $100,000 per year									
	Cross-Sectional Models: Data for 2000					First-Difference: Change from 1990 to 2000				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Number of Top Firms in City	501.11 (96.92)				-316.98 (268.12)	800.50 (141.31)				-426.71 (269.24)
Number of Traded Firms in City		214.47 (31.92			0.28 (0.07)		275.15 (44.89)			231.88 (70.03)
Market Value of Top Firms in City			18.50 (4.41)					27.20 (3.94)		
Market Value of All Firms in City				18.50 (4.31)	5.57 (7.85)				27.50 (3.82)	25.50 (5.45)
R-squared	0.95	0.95	0.95	0.95	0.95	0.69	0.70	0.72	0.72	0.74
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. 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). Standard errors are in parentheses.

Table 7
Cross-Sectional and First-Differenced Models of the Effect of Corporate Headquarters on Charitable Contributions in a City (controlling for income)

	Cross-Sectional Models: Data for 2000					First-Difference: Change from 1990 to 2000				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Number of Top Firms in City (coefficient in millions of $)	30.15 (7.13)				11.62 (18.74)	0.48 (5.94)				-3.28 (11.15)
Number of Traded Firms in City (coefficient in millions of $)		7.85 (2.69)			-3.50 (5.02)	2.42 (1.94)				4.48 (2.98)
Market Value of Top Firms in City (coefficient in $ per $1000 of value)			1.53 (0.30)					-0.21 (0.18)		
Market Value of All Firms in City (coefficient in $ per $1000 of value)				1.50 (0.29)	1.35 (0.55)				-0.20 (0.18)	-0.30 (0.24)
Population with > 100k in income	12.67 (5.68)	13.39 (6.17)	13.08 (5.39)	12.90 (5.40)	14.06 (5.90)	29.64 (3.19)	27.9 # (3.23)	31.68 (3.32)	31.73 (3.35)	29.99 (3.48)
R-squared	0.71	0.69	0.72	0.72	0.72	0.61	0.62	0.62	0.62	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 the one in Table 3, but we now control for the fraction of the population with income above $100,000. Dependent variable in columns 1-5 is the total public contributions received by charitable organizations in the city in 2000. Dependent variable in columns 6-10 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). Standard errors are in parentheses.

d. Public Expenditures

In light of the impact of corporate headquarters on local charities, an interesting question is what happens to local *public* spending on social services, schools, and hospitals. As noted in Becker and Lindsay (1994), it is possible that an increase in local charitable contributions leads to "reverse crowd out" – a reduction in local government spending. The magnitude of this effect has important theoretical and policy implications for the overall impact of charitable organizations.

Consider the following simplified model of local government spending (G) on a particular public service (e.g., welfare):

$$(2) \qquad G = F(Y, X) - \lambda P \ ,$$

where Y is total community income, X is a set of preference shifters, P is the dollar value of the service supplied by local non-profits, and λ is a "reverse crowd-out" parameter (with $0 \leq \lambda \leq 1$). The income of local non-profits is increased by the presence of corporate headquarters in a metropolitan area, suggesting that P will increase when there are more corporations (or corporations with larger market capitalization) in the area. If this was the only effect, it would be possible to estimate λ by instrumental variables, using local corporate headquarters as instruments for P. Changes in the number or market value of corporations in an area may also affect community income, however, invalidating the IV procedure. In light of this, we follow a simple reduced form approach and relate changes in the number or market value of local corporations to changes in local government spending, focusing in particular on education, health, and welfare – three areas where there is substantial overlap between the public and non-profit sectors. A reduced form analysis yields estimates of the combined derivative

$$(3) \qquad \partial F/\partial Y \times \partial Y/\partial Corp \ - \lambda \, \partial P/\partial Corp$$

where $\partial Y/\partial Corp$ represents the effect of the measure of corporate presence on local income, and $\partial P/\partial Corp$ represents the effect of corporate presence on service provision by local nonprofits.

Table 8 present first-differenced models similar to those in Table 3, where the dependent variable is total public spending, or spending on a specific category of services, and the key independent variable is a measure of local corporate presence. Data on public expenditures are from the Annual Survey of Governments and the Censuses of Governments, aggregated across all local government entities to the level of the metropolitan area. For example, the dependent variable in column 1 is the 1990-2000 change in total expenditures of all local governments that belong to the relevant metropolitan area.[26] The dependent variables in columns 2 are the changes in public expenditures for elementary and secondary schooling, health, police, and welfare, respectively. Column 6 shows estimates for total public revenues. In the bottom row, we report the 2000 level of the relevant dependent variable. Each entry in the Table is from a separate regression.

The estimates in Table 8 point to different conclusions about the effects of the number of headquarters in a metropolitan area and the market value of the firms headquartered there. The coefficients in rows 1 and 2, associated with the numbers of headquarters in an area, are all negative but relatively imprecisely estimated. As a point of comparison, note that our estimates in Table 3 suggest that the headquarters of a top firm leads to an increase in charitable donations of about 25 million, while the headquarters of any firm leads to an increase about one-half as large. The estimated impact of an additional top headquarters on combined local government spending on schooling, health, and welfare is -7.6 million, while the impact of additional headquarters for any firm is -4.5 million. Thus, the estimated effects of the number of headquarters are consistent with a value of $\lambda = -\frac{1}{3}$, assuming that changes in the numbers of headquarters have no effect on local income. However, the estimates are imprecise, and we cannot rule out a net effect of zero (or even of a modest positive value) from an increase in the number of corporations headquartered in a city.

[26] We combine data from the Annual Surveys of Government (ASG, available for the larger government entities in most larger cities) with data from the Censuses of Government (available every 5 years for all government entities). In cases where a certain entity only reports in the Census, we use linear interpolation to infer values for the inter-censal years. We then aggregate the interpolated Census data and the ASG data across all entities in each MSA/PMSA, using 2000 MSA definitions.

Table 8
First-Differenced Models of the Effect of Corporate Headquarters on Public Expenditures

Change from 1990 to 2000 in Local Government Spending/Revenues:	Total Expenditures					Total Revenues
	Schooling	Health	Police	Welfare		
	(1)	(2)	(3)	(4)	(5)	(6)
Measure of Headquarters:						
Number of Top Firms in City (coefficient in millions of $)	-19.98 (31.90)	-4.17 (9.53)	-1.84 (1.68)	-2.00 (1.94)	-1.62 (2.99)	-30.05 (36.57)
Number of Traded Firms in City (coefficient in millions of $)	-10.74 (10.39)	-0.3 (0.31)	-0.61 (0.54)	-1.27 (0.62)	-2.95 (0.94)	-18.67 (11.86)
Market Value of Top Firms in City (coefficient in $ per $1000 of value)	4.28 (0.85)	1.08 (0.26)	0.09 (0.05)	0.24 (0.05)	0.35 (0.08)	4.86 (0.96)
Market Value of All Firms in City (coefficient in $ per $1000 of value)	4.22 (0.83)	1.00 (0.25)	0.12 (0.05)	0.23 (0.05)	0.34 (0.08)	4.71 (0.96)
Mean of Dep. Var. in Levels in 2000 (in millions of $)	4954	1681	124	252	228	5087
Controls for population, employment-population, and fraction of adults with college education	yes	yes	yes	yes	yes	yes

Note: Sample includes 143 MSA/PMSA's. Each entry is from a separate regression.
Dependent variable is the change in the relevant expenditure or revenue amount for all local government entities in the MSA/PMSA (using 2000 MSA definitions). Data represent combination of information from Annual Survey of Governments and interpolated data from Censuses of Government -- see text.
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. Standard errors in parentheses.

In contrast the entries in rows 3 and 4 are positive and statistically significant. These estimates indicate that increases in the stock market value of companies headquartered in a city are associated with significant increases in the revenues of local governments, and in most categories of spending. Recall from Table 3 that each $1000 in additional market capitalization of firms headquartered in a city is associated with about 70 cents in increased charitable contributions. The gain in total revenues of local governments is about $4.80 (column 6) – 7 times larger than the effect on local charities, and indicative of a powerful link between the stock market value of local firms and the strength of the local economy that obviates any reverse crowd out effect. Interestingly, about 30% of the increased revenues associated with greater market capitalization of local firms are spent on education, health, and welfare.

V. 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 numbers 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 $10 million per year in public contributions to local non-profits, while the headquarters of a larger firm yields about $25 million per year.

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 70 cents or more 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.

References

Andreoni, James, 1990. "Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving," *Economic Journal*, 100 (401), pp. 464-477.

Andreoni, James, 1998. "Toward a Theory of Charitable Fund-Raising,"*Journal of Political Economy*, 106 (6), pp. 1186-1213.

Andreoni; James and Abigail Payne, 2003. "Do Government Grants to Private Charities Crowd out Giving or Fund-Raising?" *American Economic Review*, 93 (3), pp. 792-812.

Bartkus, B., S. Morris, and B. Siefert, 2002. "Governance and Corporate Philanthropy: Restraining Robin Hood?" *Business and Society*, 41(3), pp. 319-44.

Becker, Elizabeth and Cotton M. Lindsay, 1994. "Does the Government Free Ride?" *Journal of Law and Economics* 37 (1), pp. 277-296.

Bergstrom, Theodore, Lawrence Bloom and Hal Varian, 1986. "On the Private Provision of Public Goods," *Journal of Public Economics* 29 (1), pp. 25-50.

Boatsman, J.R. and S. Gupta, 1996. "Taxes and Corporate Charity: Empirical Evidence from Micro-Level Panel Data," *National Tax Journal,* 49, pp. 193–213

Bremmer, Robert, 1988. *American Philanthropy*, (Revised Second Edition), Chicago: University of Chicago Press.

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

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

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

Fry, Louis W, Gerald Keim, and Roger E. Meiners, 1982. "Corporate Contributions: Altruistic or For Profit," *Academy of Management Journal*, 25, pp. 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), pp. 445-71.

Greenstone, Michael, and Enrico Moretti, 2005. ""Bidding for Industrial Plants: Does Winning a 'Million Dollar Plant' Increase Welfare?" NBER Working Paper 9844 (revised).

Helland, Eric, Janet Smith, and William Brown, 2006. "Corporate Philanthropic Practices," *Journal of Corporate Finance*, 12, pp. 855-77.

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

Hornbeck, Richard., Michael Greenstone and Enrico Moretti 2007. "Identifying Agglomeration Spillovers: Evidence from Million Dollar Plants", Unpublished Working paper, MIT Department of Economics.

Klier, Thomas., and William Testa, 2002. "Location Trends of Large Company Headquarters During the 1990s," *Federal Reserve Bank of Chicago Economic Perspectives*, 26(2), pp. 12-26.

McClimon, Timothy J., 2004. "The Shape of Corporate Philanthropy Yesterday and Today," *Grantmakers in the Arts Reader*, 15 (3), pp. 1-7.

McElroy, Katherine M. and John J. Siegfried, 1986. "The Community Influence on Corporate Contributions," *Public Finance Quarterly*, 14, pp. 394-414.

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

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

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), pp. 65–93.

Roberts, Russell, 1984. "A Positive Theory of Private Charity and Public Transfers," *Journal of Political Economy* 92 (1), pp. 136-148.

Rose-Ackerman, Susan, 1996. "Altruism, Nonprofits, and Economic Theory," *Journal of Economic Literature*, 34 (2), pp. 701-728.

Saiia, David H., Archie B. Carroll and Ann K. Buchholtz, 2003. "Philanthropy as Strategy: When Corporate Charity 'Begins at Home'," *Business and Society* 42 (2), pp. 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.

Werbel, James D. and Suzanne M. Carter, 2002. "The CEO's Influence on Corporate Foundation Giving," *Journal of Business Ethics* 40, pp. 46-60.

Zeltin, Minda, 1990. "Companies Find Profit in Corporate Giving," *Management Review* 79, 10-15.