The economics of street charity: theory and evidence

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Abstract

In this paper, I use propensity score matching (PSM) on survey data from urban India to investigate if charitable giving differs towards beggars and street vendors who also offer a product while soliciting money. The results from the restricted sample where the money giver had no potential use for the product and stated charity as a reason for their purchase suggest that transfers to vendors are substantially larger than transfers to beggars. Based on the findings from the survey, the I develop a signaling model of street charity, which considers the objectives of both the charity solicitor and giver, and shows that in a separating equilibrium, the act of vending separates the involuntary unemployed from the voluntary unemployed, predicting larger charitable transfers to vendors compared to beggars.

Keywords: Street-charity, propensity-score matching, deserving poor, signaling, material benefits, beggary

JEL Classification Codes: D90, H0, J65, Z10

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1 Introduction

'Helping a stranger' is the most common and rising form of giving behavior across the world. Nearly half of the world's adults or two and a half billion people helped a stranger over the past decade (Charities Aid Foundation, World Giving Index [2019]). Helping a stranger often takes the form of giving to a beggar, a needy person who solicits money in public places for nothing in return. Another kind of solicitors found on the urban streets is the small vendors who offer trivial products such as pens, stickers, and flowers in return for charity. They look and seem similar to the beggars and appeal to the giver's charitable preferences while asking for money and offering a small product in return. The product sold may attract more monetary charity by increasing the benefit from it (Buraschi and Cornelli [2002], Andreoni and Petrie [2004]), or it may crowd out the intrinsic motivation for charity and attract lesser donation (Zuckerman et al. [1979]). In this paper, I discuss the effect of material benefit on charitable behavior in the context of street charity. Specifically, I analyze if the passers-by differ in their charitable giving towards the beggars and the street vendors who also offer a product while soliciting charity.

When a street charity solicitor persuades the giver to donate while offering a trivial product in return, it may or may not lead to higher charity transfers. If the product changes the context from charity to a market exchange such that the giver starts evaluating the product for its worth while deciding whether and how much to pay, then the "charitable" transfer towards helping the poor will reduce (Gruber [2004]). The solicitor's ability to offer a product may also signal that they are less needy than the beggar leading to lower appeal to the giver's generosity and lower donation to vendor than beggar (Warren and Walker [1991], Wagner and Wheeler [1969]). However, suppose the solicitor *signals* higher deservingness for charity by exerting the effort to procure or make an article to offer. In that case, the givers might be more inclined to donate to a deserving vendor than a free-riding pure-beggar. Moreover, the presence of a poor and needy vendor who seems to be trying to earn even or especially if the product itself holds little to no value in the market, may make the passers-by more likely to blame the beggars for their misfortunes. Therefore, a giver who holds strong beliefs in a just world for others will be more inclined to help the vendor who is at least trying to earn honestly as opposed to the seemingly free-riding beggar (Kogut [2011]). I examine the workings of the market for street charity with beggars and vendors using a combination of survey evidence and theory. My data reveals that the charitable transfers towards the vendors are significantly higher than towards beggars and explain the higher charity towards vendors using a signaling model of street charity.

Few studies examine street charity despite helping a stranger being the most prevalent method of charitable giving. In fact, while characterizing the market for charity, the demand side for charity is characterized by organized charities where much of the literature's focus lies (Andreoni and Payne [2013]). However, the study of charitable behavior has

recently become directed towards the role of culture in explaining charitable behavior (Bekkers and Ottoni-Wilhelm [2016]), which is a crucial feature of individual-level giving to strangers on the streets. The lack of data on informal charitable behavior on the street makes it difficult to study. Ideally, one would randomly assign begging, and street vending to a street solicitor and compare her charitable receipts from an average giver with and without the product. It is not straightforward to implement such an experimental design as it is challenging to gather credible data on charitable giving on the street. It has been found that givers tend to over-report due to the social desirability bias (Grimm [2010], Lee and Woodliffe [2010]). On the other hand, receivers may under-report the amount received as it constitutes their income source, which is often under-reported (Hurst et al. [2014]).

In this paper, I solve the problem of lack of credible data by collecting real-time data of charitable exchanges followed by a detailed demographic and socio-economic survey of the givers and the receivers. The survey was conducted in three main urban clusters where most of the individual charitable exchanges occur, namely - religious places, commuting places, and markets in India. I collected the data on gender, age, appearance, cost of products offered. The data also includes in-depth information about solicitors' persuasion style, words that were used to seek charity and the time spent on the exchange, and whether solicitors went in groups. Since charity givers' behavior and motivation may differ when they deal with beggars and vendors, the amount of donation being made could be different. To account for differences in charity givers' preferences, I also recorded the givers' relevant characteristics, including age, gender, whether in group while giving, monthly family income, the exact reason for giving (or buying in the case of vending), and whether they took the product.

To focus only on the "charitable" transfers to vendors, I restrict my analysis to the observations where the giver had no potential use for the article and cited charity as the reason for purchase. I compare charitable receipts of the two types of solicitors: beggars who did not offer anything in return and street vendors who offered a low-value article. Solicitors may self-select into the two types of charity soliciting based on their expected ability to persuade the giver under both methods. Moreover, givers to vendors may differ in their prosocial preferences from the givers to beggars. The possibility of self-selection of givers and receivers into different types of street charity implies that a direct comparison of charitable transfers to beggars and vendors may give biased results. I use propensity score matching to estimate the average effect of material offering on charitable giving in the streets. Each vending observation was matched with a begging observation and vice-versa based on the givers' and receivers' characteristics and region of charity[1]

Using my data, I find that the charitable giving to vendors for products of no use is significantly higher (about three

[1]For example, suppose observations differ only based on charitable transfers, age, and gender of solicitors. Then, to find the effect of vending on transfers, I compare the charitable transfer to a female vendor of age 17 with a female beggar of age closest to 17.

times) than the charitable giving to beggars. Beggars and vendors are similar to each other in gender ratio, appearance, and even persuasion style, including the choice of phrases and whether they approached the givers in groups or not, but differ in average age. Givers to beggars and vendors have similar gender ratios and average family income but differ in average age and whether in a group while giving. Younger people and those in groups were more likely to engage in charity towards vendors. The difference in age and group status may be due to a stronger notion of helping a "deserving" poor among younger people and higher gains from doing the moral and righteous thing when others can observe the giver in groups (Iredale et al. [2008], List [2008]). The difference in charitable transfers to vendors and beggars remains large after ensuring that all the relevant characteristics of the agents involved in beggary and vending are balanced using propensity score matching. After deducting their self-reported product cost, the net transfers to vendors are also significantly higher than the transfers to beggars. Robustness check using regression estimates of the effect of vending on transfers after controlling for observable characteristics finds slightly larger effect size. Similar results after restricting the vending observations to the cases where the giver did not only have no use for the product but even refused to take it further supports the evidence of a positive effect of offering a product on street charity transfers.

Based on the empirical findings and the qualitative data on the motivation for giving, I model charitable behavior in the urban streets as a signaling phenomenon. A poor person soliciting charity on the street may be dependent on charity for two reasons. First, they may have a high cost of working to earn and hence choose not to work, i.e., be voluntarily unemployed. Second, they may have a bad-luck in the labor market and not find a formal job or market for their skills leading to involuntary unemployment despite the willingness and low cost of working to earn. There are two types of givers: (i) those who are indifferent between helping the voluntarily unemployed poor and the involuntarily unemployed poor, and (ii) those who have a preference for rewarding the involuntarily unemployed poor's willingness to exert effort and earn. The poor may choose to solicit charity either from begging or from street vending by incurring a cost to create or procure a product to offer. The poor solicitor's type is unobservable for the giver, who forms beliefs about the poor's intrinsic cost of working and willingness to earn based on their choice of beggary or relatively costly act of vending. The following is one of the main theoretical results. In the separating equilibrium, the act of vending separates the involuntarily unemployed from the voluntarily unemployed, predicting higher charitable transfers to vendors as compared to beggars.

This paper contributes to the literature on the effect of material benefit offerings on charitable giving. Prior evidence on the effect of material benefits on charitable giving is mixed. Some studies find an increase in the amount of money donated due to an additional incentive to donate from the material benefit. For example, fringe benefits (such as access to dress rehearsals) increase donations to the opera (Buraschi and Cornelli [2002]), and lottery benefits increase the number of donors to a fundraising campaign (Landry et al. [2006]). Many others also find none or even a negative

effect of material benefits on generosity. An influential study documented in Richard Titmuss' "The gift relationship [1970]"[2] argued that blood donation reduces when people are paid for it. Another example of self-interested incentives to donate leading to a decline in charitable giving is by Anik et al. [2009]. They find that while giving makes people happy, asking them to give in order to be happy reduces their donation amounts.

When the material benefit improves the social or self-image of the giver, it complements the reputation and psychological benefits motivations for charity (Andreoni and Petrie [2004], Wilhelm and Bekkers [2010], Bekkers and Wiepking [2011], Buraschi and Cornelli [2002]). Personal benefit reduces generosity when it takes away the joy-of-giving or warm-glow from an act of charity and reduces it to a material exchange, such as in the case of money for blood donation Andreoni [1989], Zuckerman et al. [1979]. Donation to a poor street-vendor who offers a material benefit is arguably motivated by more than one reason for doing charity (Bekkers and Wiepking [2011], Vesterlund [2006]). Motivations to create a just world when the beneficiary cannot be blamedKogut [2011], Todd and Lawson [1999], reputation gain Glazer and Konrad [1996] and warm-glow Andreoni [1990] from helping a justify giver's preference to give more in charity to a vendor perceived to be more hard-working and deserving than a beggar.

This paper is the first one to study the types and impact of material benefits in the context of street charity. Previous results may not guide us towards an understanding of its effect among street charity solicitors. This is because the receivers in the previous case studies are not directly soliciting the charity for themselves (Titmuss [2018], Anik et al. [2009], Buraschi and Cornelli [2002], Landry et al. [2006]). But, in the context of street charity, the needy solicitors ask for donations themselves, with or without the material benefit. Using the field-survey data on informal charity from India also enables me to contribute to the relatively sparse literature on the market for charity and prosocial behavior in middle-income countries. Finally, my theoretical model of signaling in street charity illustrates the role of cultural urges Andreoni and Payne [2013] and a new motivation for charity (especially applicable to informal charity) - rewarding a deserving poor and their willingness to exert effort to earn.

2 Context and Data

India is one of the most unequal countries in the world and ranks 6th in the number of homeless people[3]. According to the 2011 Census of India, about 1.8 million people are homeless. Five hundred thousand of the homeless people in India engage in beggary as per the National Human Rights Commission India statistics. This is a 25% increase as compared to the 1991 estimate of 400,000 beggars. Despite the laws against it in many parts of the country, beggary

[2]Refer to Titmuss [2018] for the latest edition of the book.
[3]United Nations Human Rights report on homelessness, 2005: E/CN.4/2005/48

has increased, especially the metropolitan cities such as Mumbai and Delhi. As per the Bombay Prevention of Begging Act, 1959 adopted in 20 states of India, beggary is defined as soliciting or receiving money, clothes, or other things ordinarily given to a beggar in a public place whether or not by singing, dancing, fortune-telling, performing or offering any article for sale. While the act does not differentiate between people who solicit charity by offering an article and those who offer nothing in return, the effect of material benefits in the form of offered articles is a topic of interest in the literature on the economics of charity, although understudied in the context of street charity.

In this project, I aim to answer if people give more or less in street charity when the solicitor also offers a product in return. To analyze the effect of offering a product while soliciting charity, I define the solicitors who offer a product as 'street vendors' and those who offer nothing in return as 'beggars.' I focus on charitable behavior in the streets of Delhi, the national capital of India. Delhi has an estimate of 60,000 beggars (Social Welfare Department, Delhi Government, 2010) and 4.5 million vendors on the streets (Census of India, 2011). Moreover, 40% of Delhi's population comprises of migrants from other Indian states making it more nationally representative than any other state in India. I designed my survey to span the three main urban clusters where most of the individual charitable exchanges occur, namely - religious places, commuting places (outside metro stations, traffic signals, and bus stops), and market places (local markets and outside malls). Within each cluster, I randomly picked specific locations across Delhi to conduct the survey. An equal amount of time was spent surveying in all the three categories of survey regions. 30% of the total charitable interactions are recorded in religious or picnic areas, 31.5% while commuting, and 38.5% in market places.

There are two types of solicitors, (1) beggars who persuade people on the streets to help them with money for basic sustenance and (2) vendors who seek charity but offer a product in return. Ideally, to compare charitable behavior towards beggars and vendors, I need random assignment of the act of beggary and vending to the pool of solicitors and record their interactions with givers (including rejections and donations in the case of actual donations received). In the absence of such data and experimental setting, I surveyed a sample of 204 givers (55% women) and 204 receivers of charity (59% women) on the streets of Delhi and documented their charitable exchanges in real-time[4]. Right after a giver donated to a solicitor, a pair of surveyors noted the details of the exchange. One of them then interviewed the solicitor, and the other filled in the detailed questionnaire for the giver. 112 out of 204 recorded interactions are of beggary. The remaining 92 interactions involve street-vending such that a street vendor offers a product and persuades the passers-by on the streets to pay them. Of the 92 givers to the street-vendors, 77 reported that their reason of purchase is charity. 63 of this 77 said that they have no potential use for the product itself.

As the solicitors who select into street vending may intrinsically differ in their ability to solicit charity as compared

[4]The original sample consisted of 212 observations of charitable exchanges (givers and receivers each), but eight observations were dropped due to inconsistent reporting or incomplete survey.

to the beggars who ask for money without offering anything in return, I document various observable characteristics of the beggars and the vendors that might affect the charity amount. I collect data on gender, age, appearance, cost of products offered, and detailed data on how the solicitors persuaded the giver, including persuasion style and words, time spent persuading, and whether solicitors went in groups. Moreover, the givers to beggars and vendors may also differ in their preferences and motivation for charity, affecting the amount donated. I also record relevant characteristics of the givers, including age, gender, whether in group while giving, monthly family income, detailed reason for giving (or buying in the case of vending), and whether they took the product. I exclude from my analysis the interactions where givers reported that they will or might use the product.

3 Empirical Findings

In what follows, I restrict the street-vending interactions to the 63 out of 92 interactions for which the givers to vendors reported no use for the bought product. Table 1 presents a summary of the main characteristics of the charitable exchanges by the type of receiver: beggar of street-vendor with no use of the product. Note that the average transfer made to the street-vendors (for products of no use) is more than triple the amount donated to beggars. The difference remains positive and significant even after deducting the cost of products offered by the street vendors. As all the givers in both types of interactions report charity as their reason for making the transfer, it is interesting to learn why charity is larger in the case of street-vending than pure beggary. An examination of the other characteristics of the receivers and givers by interaction type reveals the following. There is no significant difference in gender ratio and average family income of givers to beggars and vendors. However, the givers to beggars are five years older than the givers to vendors, on average. As the product is not relevant, this may suggest that the relatively new cultural ethic of hard-work is stronger among the younger population. Moreover, out of all those who donated to beggars, only 19% were in groups, while the corresponding percentage is 47 for those who gave to vendors. The finding of a difference in the proportion of givers in groups by type of charitable interaction further emphasizes that charity to vendors is considered a more virtuous act and a stronger signal of the righteousness of the giver due to which givers in groups are more inclined to donate to a vendor. The finding that 65% of the givers to vendors did not even take the product provides stronger evidence that the reason of paying the vendor is indeed charity.

The receivers of charity through beggary and street vending do not differ in gender ratio, proportion seeking charity in groups, and an appearance-based neediness index as noted in table 1. The neediness index is a simple indicator of the impoverishment and neediness of the poor. I construct it using indicators of hair, face, clothes, and health quality. Each of these is scored on a scale of 1 to 5, 1 being the worst quality. The sum of these indicators is subtracted from the maximum possible value of 20. The difference measures the sorrow state of the poor solicitor's

Table 1: Descriptive Statistics of charitable interactions by type of receiver (beggar and vendor)

Variable	Beggary (1)	Street vending (2)	p-value of test of difference (3)
Male givers	0.48	0.5	0.74
Age givers	35	31.4	0.057
	(1.18)	(1.39)	
Givers in groups	0.2	0.47	0.00
Giver's family income (monthly in INR)	36,400	35,000	0.4
	(984)	(1,542)	
Male receivers	0.47	0.54	0.4
Age receivers	17.5	23.3	0.005
	(1.16)	(1.82)	
Receivers in groups	0.11	0.12	0.83
Neediness Index	9.4	9.1	0.35
	(0.21)	(0.28)	
Giver-centric persuasion	0.23	0.3	0.31
Product-based persuasion		0.23	
Did not take product		0.65	
Is reason Charity	1	1	1
Transfer (in INR)	8.9	26.5	0.00
	(0.77)	(4.5)	
Transfer net of cost (in INR)	8.9	17	0.00
	(0.77)	(1.4)	
Observations	112	63	

Notes: All variables except age, family income, neediness index, and transfers are dummy variables. Male givers takes the value 1 if the giver is a man, 0 if woman (similarly "Male receivers"). Givers in groups takes the value 1 if the giver is in a group while giving, 0 otherwise (similarly, "Receivers in groups"). Neediness index is the difference of the sum of hair, clothes, face, and health quality (out of 5 each) from 20. Product-based persuasion takes the value 1 if the vendor's persuasion words mentioned anything related to the product, 0 otherwise. Intent to use product takes the value 1 if givers reported that they might use the product, 0 if not. Did not take product takes the value 1 if the givers did not take the product that they paid for, 0 if they took it. At religious place or picnic takes the value 1 if the exchange happens at a religious place or picnic, 0 otherwise. (Similarly, "While commuting" and "At market place"). The summary statistics of the dummy variables represent the proportion with value 1 out of all the beggary interactions in column (1) and street vending interactions in column (2). Mean is the summary statistic for age, family income, neediness and transfers. Standard errors are reported in parentheses where applicable.

looks which could trigger sympathy and attract charity. I also recorded the exact phrases said by the solicitors to persuade the passers-by to donate. The phrases are categorized as giver-centric type of persuasion and poor-centric type of persuasion. Persuasion is giver-centric when phrases such as “God will bless you if you donate”, “May you live long” and “May your relationship blossom" to couples. On the other hand, poor-centric persuasion involves phrases such as “Please help! I have not eaten in two days", “Please give some money" and “Please help, I want to feed my child”. A simple comparison of the style of persuasion reveals no significant difference by the type of interaction. For street vending, only 23% of the vendors mentioned anything about the product, while the rest clearly solicited charity.

Calculating the treatment effect of offering a product as the difference in the mean of transfer payments to the vendors and the beggars might yield biased results. Selection bias might emerge due to the difference in the age and group status of givers and age of receivers by the type of charity. To avoid such a selection bias, I use propensity score matching to arrive at the unbiased average effect of offering a product on behavior in street charity. This method compares the transfers made under vending with matched incidents of begging, where matches are chosen on the basis of similarity in age and group status of givers and age of receivers. This method of matching, due to Rubin [1977], adjusts for the observable differences in characteristics of the treatment group (vending) and the control group (beggary). As the observations in the treatment group are matched with similar observations in the control group, any remaining difference in the outcome variable, i.e., transfer payment is attributable to the treatment, i.e., the act of vending and not the agents involved in it[5]. Moreover, the propensity-score matching method allows me to work without making any parametric assumptions about the functional form of the relationship of age of givers, age of receivers, and group status of givers with the transfer payments under begging and vending.

3.1 Main results

A simple propensity score matching such that each of 112 observations of beggary is matched with the closest observation out of the 63 observations of vending, and vice-versa based on age of giver, age of receivers, and group status of givers created 350 matched observations. The difference between the standardized average age of givers to vendors and beggars is -0.3, while in the matched sample it is 0.08, i.e., the standardized average age of givers to vendors is 0.3 units less than the standardized average age of givers to beggars in the unmatched sample while the difference is reduced to 0.08 units in the matched sample. Corresponding figures of difference in the standardized proportion of givers to vendors in groups and givers to beggars in groups are 0.61 and -0.02. Similarly, the difference in the standardized average age of vendors and beggars in the unmatched sample is 0.43 units as opposed to 0.08 units in the matched

[5]While unobservable and unmeasured characteristics under vending and beggary could also be different leading to similar bias, I argue that the survey was designed to capture all the characteristics relevant to charitable behavior.

sample. The standardized differences and variance ratios in the matched and the unmatched samples are summarized in covariate balance summary (table 2).

Table 2: Covariate Balance Summary

	Standardized differences		Variance Ratio	
Variable	Unmatched	Matched	Unmatched	Matched
Age givers	-0.30	0.08	0.77	0.95
Giver in groups	0.61	-0.02	1.59	0.97
Age receivers	0.43	0.08	1.37	0.85
Observations	175	350	175	350

The raw difference in transfer payments to vendors and beggars is 17.6 INR (robust standard error = 4.6, p-value = 0.00). The average effect of offering a product estimated by the difference between the transfer payment to vendors and beggars in the matched sample is 17 INR (adjusted robust standard error = 3.7, p-value = 0.00). When propensity score matching is based on all the observable characteristics of the givers and receivers (summarized in table 1), and the region of charity, the average effect of offering a product is 14.8 INR (adjusted robust standard error = 2.8, p-value = 0.00). Therefore, I find compelling evidence that vending has a positive and significant effect on the charitable transfer payments on the street. The effect of vending on charitable transfers net of the cost of the product offered in the sample matched on the basis of all the observable characteristics is 7.7 INR (adjusted robust standard error = 1.8, p-value = 0.00). The estimated effect is 7.9 (adjusted robust standard error = 2.17, p-value = 0.00) based on the sample matched only on the basis of age of givers, age of receivers and givers' group status and 8.09 (adjusted robust standard error = 1.61, p-value = 0.00) based on the unmatched sample. The effect of offering a product on charitable transfers and transfers net of cost using propensity score matching is summarized in table 3.

Table 3: The effect of offering a product on charitable transfers based on propensity score matching

Independent Variable	(1)	(2)	(3)
Transfer payment	17.6	17	14.8
	(4.6)	(3.7)	(2.48)
Transfer payment (net of cost)	8.09	7.9	7.7
	(1.6)	(2.2)	(1.8)
Observations	175	350	350

Notes: Column (1) reports the raw difference in mean of the independent variable. Column (2) reports the adjusted mean difference based on matched sample where matching is done along the age of the givers, age of the receivers and the group status of the giver. Column (3) reports the adjusted mean difference based on matched sample where matching is done along all the observable characteristics of the givers and receivers. Robust standard errors are reported in paranthesis.

3.2 Robustness Checks

In this section, I conduct and present results from two robustness checks. First, I estimate the effect of offering a product on charitable transfers using the standard regression analysis. Next, I restrict the data from vending to the cases in which the giver not only had no use from the product but also did not even take the product. I estimate the following empirical model to find the effect of street vending on charitable transfers:

$$Transfers = \beta_0 + \beta_1 IsVendor + \beta_2 x + FE$$

, where x refers to the vector of control variables described in table 4 and FE refers to the age-group, group status and region fixed effects. As the givers and receivers only differ in age and whether they are found in a group, column (1) of table 4 shows the difference in charitable transfers to vendors and beggars with age-group and group status fixed effects of both receivers and givers. Regressing the charitable transfers on $IsVendor$ (which takes the value 1 for street vendors and 0 for beggars), with age and group status fixed effects, reveals that the transfers made to vendors are 22 INR higher than beggars on average. Controlling for gender, persuasion type, neediness index, and income level of giver with region fixed effects reveals an even higher effect of vending on charitable transfers received as depicted in column (2) of table 4. The finding of higher transfers to vendors among people who do not intend to use the product after controlling for all the giver and receiver characteristics suggests a signaling value of the product offered by the vendor. Columns (3) and (4) repeat the analysis for transfers net of the cost of product, i.e., the results from regressing net transfers (transfer-cost) on $IsVendor$ with corresponding fixed effects and controls. I find significantly higher net transfers to vendors, which implies that the returns to vending are higher than beggary. This suggests that a poor solicitor who can choose street vending will do so over beggary. Thus, the beggars either do not have access to any product to offer or have a considerable cost of procuring it. Note that, for all the model specifications, the difference in transfers is explained by vending only and not other characteristics of people involved in begging and vending interactions.

In columns (4)-(8), I restrict the data to the givers to vendors who did not even take the product. This set of givers is even more comparable to the givers to beggars as they have no possibility of gaining utility from the product itself. Results show that the positive effect of vending on charitable transfers is still large and significant. The robust finding of higher net-transfers to vendors than sellers provides conclusive evidence of the signaling value of the product offered by the vendor. The presence of beggars and positive transfers to them suggests that some poor do not have access to products for vending or that some givers do not have a preference for rewarding the type signaled by the vendors (or punishing the type signaled by the beggars). The givers to vendors were also asked whether they give money to beggars and how much if yes. Only 40% of them reported that they also donate money to beggars. The average self-reported

donation to beggars is 4.5 INR compared to 20.5 INR paid to vendors (p-value=0.00) by those who reported that they pay to beggars and did not take the product from the vendor. This finding further supports the hypothesis that givers value the act of vending and reward it.

Table 4: Effect of street-vending on charitable transfers

Variable	Effect on transfer		Effect on net-transfer		Effect on transfer		Effect on net-transfer	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
IsVendor	31	28	12.76	12.53	14.15	13.7	9.3	9.08
	(6.75)	(7.02)	(2.37)	(2.5)	(3.16)	(3.3)	(2.88)	(3.07)
Is giver in a group	9.6	10.5	0.79		-1.15	-1.3	-0.83	-1.17
	(6.2)	(6.4)	(2.2)	(2.32)	(2.6)	(2.8)	(2.45)	(2.6)
Is receiver in a group		-1.5		-0.22	-2.89			
		(8.8)		(3.17)	(3.8)			
Male givers		-2.02		0.82		-0.8		
		(6)		(2.17)		(2.4)		
Male receivers		0.27		0.94		0.58		
		(5.3)		(1.9)		(2.3)		
Neediness Index		1.5		0.18		-0.6		
		(1.2)		(0.45)		(0.52)		
Giver's family income		0.00		0.00		0.00		
		(0.00)		(0.00)		(0.00)		
Fixed Effects:								
Region of interaction	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age giver	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age receiver	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Giver-centric persuasion	No	Yes	No	Yes	No	Yes	No	Yes
Observations	165	165	165	165	145	145	145	145

Notes: Is Vendor takes the value 1 when transfer is made to a vendor, 0 if transfer is made to a beggar. Male givers takes the value 1 if the giver is a man, 0 if woman (similarly "Male receivers"). Giver in a group takes the value 1 if the giver is in a group while giving, 0 otherwise (similarly, "Receiver in a group"). Neediness index is the difference of the sum of hair, clothes, face and health quality (out of 5 each) from 20. Giver-centric persuasion takes the value 1 if the persuasion words mention giver's benefit from giving, 0 if they mention poor's benefit from receiving. Region for interaction constitutes religious place, commuting place and market place. Columns (1)-(4) restrict vending interactions to those with no use of the product to the giver. Columns (5)-(8) restrict vending interactions to those in which the giver did not even take the product. Standard errors are reported in parentheses.

The main finding from my survey data is that, on average, people give more in charity to solicitors who offer a product than pure beggars. The difference is economically large and statistically significant as the charitable transfers to vendors are about three times the transfers to beggars. Higher charitable transfers to vendors despite no use for the product cannot be explained by any relevant observable characteristics of givers or receivers, which suggests that rewarding the act of vending itself is valuable to the givers. I use givers' detailed responses to the question of why

they bought the product and whether they give money to beggars. The givers to vendors (who did not intend to use the product) cited charity as their reason for buying the product. Many of them clearly mentioned that they think that the vendor is "at least putting an effort to earn honest money even though their product is not useful". Thus, although the givers do not care about the product of the vendor's effort, they associate the vendors with the type of people who try to work and earn honestly but could not get employed in the formal labor market. On the other hand, the response of givers to vendors to the question of whether they donate to beggars suggests that they think of beggars as those who do not even want to try in the labor market and just want to free-ride on others' money which must not be encouraged. The givers to beggars instead emphasized the need and poverty of the beggars and how they need to be helped.

I also find that the average age of givers to vendors is higher than the average age of givers to beggars. Coupled with the fact that I do not find a negative effect of age on charitable transfers, it implies that the preference to reward effort to work is possibly more prevalent among younger people. The culture of earning one's bread is a relatively modern concept relevant to the post-aristocracy young generation. The average age of vendors, however, is higher than the average age of beggars further suggesting that as adults can work and earn, their returns to begging are smaller, encouraging them to select into vending. The finding that givers to vendors were more likely to be in groups further suggests that supporting a vendor is considered a more moral act than giving to a beggar, thereby increasing the reputation gains from giving to vendor.

A yet another insight from my data comes from studying the difference in the distribution of the type of street charity across the various regions. Of the charitable interactions in religious or picnic places, 73% involved beggary. 55% and 64% of the charitable exchanges while commuting and in market places involved beggary respectively. The distribution of charitable interactions by type is interesting as it suggests differences in the preferences of givers that are found in these places. People in religious places may be unconditionally charitable as religiosity increases charitable giving (Brooks [2003]). Commuting is an everyday activity for most people, and their response to beggary or supporting street vendors may be based on their natural impulsive preferences towards one type of charity or another leading to a balanced distribution over type of charity while commuting. People in market places may be in a capitalist mindset and evaluate the street-vendors' products for their value, thereby reducing charity towards vendors (Zuckerman et al. [1979]) and leading to a higher proportion of them donating to beggars.

I also find that the average charitable transfers to beggars is 8.9 INR which is the same (statistically) for each type of region: 8.8 INR in the market, 8.6 INR in religious places, and 9.1 INR while commuting.[6] However, the average payment to vendors is the lowest in market areas (19.8 INR) followed by religious areas (27.8 INR) and highest in

[6]There is no difference in average payment to beggars by region after controlling for all the observable characteristics.

commuting areas (31.4 INR). Further, the cost of vending or the products offered also varies by region: lowest in market areas (4 INR), followed by religious areas (7 INR), and the highest in commuting places (16 INR). Therefore, inducing charitable reward for willingness to work is most costly in commuting areas.

In the next section, I present a formal model of signaling in street charity, explaining the findings in my data.

4 The signaling model of street charity

Now I describe a signaling model of charity. Givers have a preference over charity towards the poor who try in the labor market but fail and those who do not. However, they cannot observe the poor's attempts and efforts to join the labor market. The solicitors differ in their intrinsic cost of exerting effort and choose whether to beg, or procure or create an article to offer while soliciting charity, i.e., vending. As vending involves more effort than begging, givers update their belief about the solicitor's type (tried in the labor market but failed or did not even try) based on whether they beg or exert the effort to offer a product. In other words, vending serves as a tool to signal and separate the types who have a high cost of exerting effort and choose to solicit charity, i.e., voluntarily unemployed from those who try in the labor market but fail, forced to depend on charity, i.e., are involuntarily unemployed.

1. *Types of street charity solicitors*: An individual seeking charity from the passers-by on the street is unemployed in the formal labor market. A street charity solicitor i may have a high intrinsic cost of exerting effort to earn and hence be voluntarily unemployed, or have a low intrinsic cost of exerting effort to earn but have bad luck in the labor market and hence be involuntarily unemployed. Let θ denote the type of solicitor in terms of their intrinsic cost of exerting effort. Let the voluntarily unemployed type's high intrinsic marginal cost of exerting effort be denoted by θ_h and involuntarily unemployed type's low marginal cost of exerting effort be denoted by θ_l. Let the proportion of involuntarily unemployed street charity solicitors be $\pi \in (0, 1)$.

2. *Choice of charity soliciting method*: Each solicitor i knows their type θ and chooses whether to be a beggar or offer a product in return for the transfers that they receive. There is no cost of begging but offering a product is costly. A product of price p costs $\theta_h p$ to the high cost or voluntarily unemployed type but costs $\theta_l p$ to the low cost or involuntarily unemployed type where, $\theta_h > \theta_l$. Solicitors choose the product they want to sell given their type: $p(\theta)$ where $p = 0$ denotes begging. Solicitor receives charitable transfer x from the giver such that their total payoff = $x - \theta p$

3. *Giver's preferences*: Let there be two types of givers: the 'indifferent' type i and the 'just' type j. Both get utility $u(x)$ from donating x to the voluntarily unemployed where $u' > 0, u'' < 0$. Type i gets the same utility $u(x)$ from donating x to the involuntarily unemployed poor as well. Type j likes to reward the deserving poor who tried

in the labor market, and gets utility $\alpha u(x)$ from donating x to the involuntarily unemployed type where $\alpha > 1$. $\alpha > 1$ may be affected by a person's ethics and values, the environment they are in, such as a market or religious place, and their peer group. For example, α would be higher if one gains a positive reputation among peers from doing the "morally correct" deed of rewarding a deserving poor. Net payoff from donating x is $u(x) - x$ for type i. For type j, the net payoff is $u(x) - x$ if donated to the voluntarily unemployed solicitor and $\alpha u(x) - x$ if donated to the involuntarily unemployed type, where $\alpha > 1$. Therefore, under complete information of solicitor's type, type i giver will donate $x_i = u'^{-1}(1)$ and type j will donate $x_j^v = u'^{-1}(1)$ to the voluntarily unemployed type and $x_j^{iv} = u'^{-1}(\alpha^{-1})$ to the involuntarily unemployed type. Therefore, if the proportion of givers of type j is $\gamma \in (0, 1)$, then the average transfer to the voluntarily unemployed type is $x^v = u'^{-1}(1)$ and the average transfer to the involuntarily unemployed type is $x^{iv} = (1-\gamma)u'^{-1}(1) + \gamma u'^{-1}(\alpha^{-1})$. Therefore, an average giver donates more to an involuntarily unemployed type than a voluntarily unemployed type under complete information.

4. *Asymmetric Information about the solicitor's type*: The type j giver wants to reward the involuntarily unemployed solicitor's effort to join the labor market but cannot observe it. The street charity solicitor's products may work as a signal of involuntary unemployment and the willingness/effort to earn. The transfer under incomplete information is based on the expected θ, given the price of the product offered. Let $\mu(p)$ denote the type j giver's belief that the charity solicitor is involuntarily unemployed i.e., $\mu(p) = Pr[\theta = \theta_l | p]$. Thus, the type j giver's transfer x given p is $\mu(p)x_j^{iv} + (1 - \mu(p))x_j^v$ under incomplete information. The type i giver is indifferent between donating to either type of solicitor and hence donates the same x_i irrespective of the solicitor's type and beliefs about it.

A Perfect Bayesian equilibrium in this model consists of a strategy p for the street charity solicitor of each type $\theta \in \{\theta_l, \theta_h\}$ i.e., $p(\theta)$, a charitable transfer strategy x for each type of giver i, j given p i.e., $x_i(p)$ and $x_j(p)$, and the j type giver's belief $\mu(p)$.

Separating Equilibria: Under a separating equilibrium, the involuntarily unemployed solicitor is able to successfully signal their type by offering a product of price p_{iv}. Thus, $\mu(p) = 1$ if $p = p_{iv}$ and $\mu(p) = 0$ if $p \neq p_{iv}$. The j type giver donates $x_j(p_{iv}) = x_j^{iv}$ and $x_j(p) = x^v \ \forall \ p \neq p_s$. In equilibrium, $p_v = 0$ as the additional payoff from offering a product = 0 when $p \neq p_{iv}$. The equilibrium p_{iv} consistent with a separating equilibrium will satisfy the incentive compatibility constraints of the two types of solicitors. The type i giver will donate $x^v \forall p$. The involuntarily unemployed type of solicitor will prefer $p = p_{iv}$ to 0 iff:

$$x^v \leq x^{iv} - \theta_l p_{iv} \iff p_{iv} \leq \frac{x^{iv} - x^v}{\theta_l} = \frac{(1-\gamma)u'^{-1}(1) + \gamma u'^{-1}(\alpha^{-1}) - u'^{-1}(1)}{\theta_l}$$

The voluntarily unemployed type will prefer $p = 0$ to p_{iv} iff:

$$x^v \geq x^{iv} - \theta_h p_{iv} \iff p_{iv} \geq \frac{x^{iv} - x^v}{\theta_h} = \frac{(1-\gamma)u'^{-1}(1) + \gamma u'^{-1}(\alpha^{-1}) - u'^{-1}(1)}{\theta_h}$$

where, α measures the j type giver's preference to reward the involuntarily unemployed type's attempt to work and earn, γ is the proportion of j type givers, θ_l is the marginal cost of procuring a product to sell for the involuntarily unemployed type and θ_h is the marginal cost of procuring a product to sell for the voluntarily unemployed type such that $\theta_l < \theta_h$. Let $(1-\gamma)u'^{-1}(1) + \gamma u'^{-1}(\alpha^{-1}) - u'^{-1}(1) = f(\gamma, \alpha)$.

Therefore, in Perfect Bayesian equilibrium $p_{iv} \in \left[\frac{f(\gamma,\alpha)}{\theta_h}, \frac{f(\gamma,\alpha)}{\theta_l}\right]$, $p_v = 0$. Applying the Intuitive criterion due to Cho and Kreps [1987] rules out any separating equilibrium with $p_i v > \frac{f(\gamma,\alpha)}{\theta_h}$ leading to the minimal cost separating equilibrium. Thus, in the minimal cost separating Perfect Bayesian equilibrium, solicitor's strategy: $p_{iv} = \frac{f(\gamma,\alpha)}{\theta_h}$, $p_v = 0$, type j giver's strategy: $x_j(p_{iv}) = u'^{-1}(\alpha^{-1})$, $x_j(p) = u'^{-1}(1) \forall p \neq p_{iv}$ and j type giver's belief: $\mu(p) = 1$ if $p = p_{iv}$ and $\mu(p) = 0$ if $p \neq p_{iv}$. Type i giver's strategy: $x_i(p) = u'^{-1}(1) \forall p$. Thus, each type's expected transfer received in equilibrium is given by: $x^v = u'^{-1}(1)$ and $x^{iv} = \gamma u'^{-1}(\alpha^{-1}) + (1-\gamma)u'^{-1}(1)$ Comparative statics of the separating equilibrium leads to the following proposition.

Proposition 1. *In the minimal cost separating Perfect Bayesian equilibrium of street charity, a voluntarily unemployed charity solicitor chooses to be a beggar and gets charitable transfer $u'^{-1}(1)$. In contrast, an involuntarily unemployed charity solicitor (with marginal cost of exerting effort θ_l) chooses to offer a product worth p_{iv} procured at cost $\theta_l p_{iv}$ where $p_{iv} = \frac{(1-\gamma)u'^{-1}(1) + \gamma u'^{-1}(\alpha^{-1}) - u'^{-1}(1)}{\theta_h}$. The involuntarily unemployed solicitor's cost incurred in selling a product increases in their marginal cost θ_l, giver's preference parameter for rewarding the involuntarily unemployed solicitor α, and the proportion of type j givers who prefer donating to the involuntarily unemployed solicitors over the voluntarily unemployed solicitors. The involuntarily unemployed solicitor's cost is decreasing in the voluntarily unemployed solicitor's marginal cost θ_h. The charitable transfer, as well as the net payoff of the vendor, is greater than the beggar's.*

The signaling model of street charity explains why people buy products on the street even when they do not intend to use them. It illustrates how the preference to reward effort and willingness to earn, akin to the ethic of earning one's own bread, affects the charitable behavior towards the poor. While people are altruistic and want to help the poor, they do not want to reward those who choose to be poor and live off others' earnings. Instead, people want to help the deserving poor who had prepared for the labor market but had an adverse outcome and forced to seek charity. The giver cannot observe whether the charity solicitors had tried in the labor market. Thus, the giver considers those solicitors deserving who exert effort into offering products because a voluntarily unemployed person would not have been able

to procure these products for sale, considering their higher intrinsic cost of joining the labor market and lack of willingness to earn. As predicted by the model, the data shows the presence of beggars as well as vendors on the urban streets. Moreover, data supports the prediction that the average transfer and net payoff of vendors is higher than beggars'.

The stronger is the ethic of earning one's bread among the givers, the higher is the cost an involuntarily unemployed poor has to incur to signal their type. In other words, when the reward for being the deserving poor (α) is higher, the undeserving type's incentive to mimic them also increases, due to which the signaling cost for the deserving type rises. Givers in market places may have a smaller α as they evaluate the product for its worth being in the market context and relatively capitalist frame of mind as compared to those commuting to school or work, leading to smaller cost and transfer from vending. Similarly, the larger is the proportion of the givers who like to reward the involuntarily unemployed type's willingness to work, the higher is the incentive for the voluntarily unemployed type to mimic them. Therefore, the cost of signaling in terms of the product offered increases in γ, the proportion of type j givers. Indeed, I find lower cost of vending in religious places where many people go with the intention of donating and are unlikely to judge the poor Will and Cochran [1995]. Consequently, the average transfer to vendors also increases in the proportion of type j givers and their preference to reward the deserving poor. The transfers to beggars are not affected by any preference or cost parameter. Arguably, the comparative static result explains the finding that the average transfer to beggars is the same by age and region type, but the average transfer to vendors is higher in commuting regions, and the average age of givers to vendors is lower than the average age of givers to beggars.

Pooling Equilibria: Under a pooling equilibrium, each type of solicitor chooses the same strategy i.e., $p_v = p_{iv}$, say p^*. Thus, the j type giver's posterior belief upon observing $p*$ remains the same as the prior belief i.e., $\mu(p^*) = \pi$ and $\mu(p) = 0 \forall p \neq p^*$. Equilibrium transfer is $x_j(p^*) = \pi u'^{-1}(\alpha^{-1}) + (1-\pi)u'^{-1}(1)$, $x_j(p) = u'^{-1}(1) \forall p \neq p*$ and $x_i(p) = u'^{-1}(1) \forall p$. The equilibrium p^* consistent with a pooling equilibrium will satisfy the incentive compatibility constraints of the two types of solicitors. The involuntarily unemployed type will prefer $p = p^*$ to any $p \neq p^*$ iff:

$$u'^{-1}(1) - \theta_l p \leq \pi u'^{-1}(\alpha^{-1}) + (1-\pi)u'^{-1}(1) - \theta_l p^* \qquad \forall p \neq p^*$$

$$\iff p^* \leq \frac{\pi u'^{-1}((\alpha^{-1}) - u'^{-1}(1))}{\theta_l} + p$$

If the above equation is satisfied for $p = 0$, then it will be satisfied $\forall p > 0$. Thus, the involuntarily unemployed type's incentive compatibility constraint is satisfied if:

$$p^* \leq \frac{\pi u'^{-1}((\alpha^{-1}) - u'^{-1}(1))}{\theta_l}$$

The voluntarily unemployed type will prefer $p = p^*$ to any $p \neq p^*$ iff:

$$u'^{-1}(1) - \theta_h p \leq \pi u'^{-1}(\alpha^{-1}) + (1-\pi)u'^{-1}(1) - \theta_h p^* \qquad \forall p \neq p^*$$

$$\iff p^* \leq \frac{\pi u'^{-1}((\alpha^{-1}) - u'^{-1}(1))}{\theta_h}$$

The voluntarily unemployed type's incentive compatibility constraint is binding. Thus, in the pooling Perfect Bayesian equilibrium, solicitor's strategy: $p_v = p_{iv} = p* \in \left[0, \frac{\pi u'^{-1}((\alpha^{-1}) - u'^{-1}(1))}{\theta_h}\right]$, j type giver's strategy: $x_j(p^*) = \pi u'^{-1}(\alpha^{-1}) + (1-\pi)u'^{-1}(1)$, $x_j(p) = u'^{-1}(1) \forall p \neq p*$ and $x_i(p) = u'^{-1}(1) \forall p$. j type giver's belief: $\mu(p) = \pi$ if $p = p^*$ and $\mu(p) = 0$ if $p \neq p^*$. Expected transfer to both types of solicitor is given by, $x^{iv} = x^v = \gamma(\pi u'^{-1}(\alpha^{-1}) + (1-\pi)u'^{-1}(1)) + (1-\gamma)u'^{-1}(1)$. Comparative statics of this pooling equilibrium leads to the following proposition.

Proposition 2. *The maximum price of vendor's offered product p which satisfying the pooling equilibrium defined above is increasing in the proportion of involuntarily unemployed solicitors π, the reward for willingness to work or involuntary unemployment, i.e., α and decreasing in the voluntarily unemployed type's marginal cost of exerting effort. In the minimum cost pooling equilibrium, each type chooses only to beg and not offer any products to the giver.*

The pooling equilibrium explains street charity behavior in regions where all the street charity solicitors beg or offer low-priced products which are easy enough to procure even for the unwilling to work or high-cost voluntarily unemployed type of solicitors. Such products fail to change givers' beliefs, and the voluntarily unemployed like to pool with the involuntarily unemployed so as to share the benefit of reward for deservingness, i.e., α. The involuntarily unemployed pool with the voluntarily unemployed as they cannot successfully signal their type by choosing a different $p*$. For instance, signaling cannot happen if π is too high such that signaling adds to the cost of obtaining charity without commensurate gains from belief updating (as π is already close to 1). Similarly, if returns from signaling (γ and α) are too low. A comparison of the pooling and the separating equilibria leads to the following result.

Corollary 1. *In the Perfect Bayesian equilibrium of street charity, each type chooses to beg or offer a low valued product and gets a small donation, or the involuntarily unemployed type offers a high valued product and gets a high donation while the voluntarily unemployed type only begs and gets a small donation.*

Thus, the charitable behavior in religious places and market places is akin to pooling equilibrium with mostly beggars and vendors of low-cost products due to low γ and π, respectively. Commuting regions, on the other hand, exhibit the separating equilibrium more closely with high cost and returns to vending.

5 Conclusion

Behavior in street charity is missing from the list of canonical case studies in the economics of charitable giving literature (Vesterlund [2006], List [2011], Bekkers and Wiepking [2011]). Features of street charity defy conventional theories of charitable behavior as well as market economics, leading me to introduce a new motivation for giving and an alternative framework for modeling charitable soliciting. I believe that treating street vending as a signaling tool, which separates the involuntarily unemployed poor solicitors from the voluntarily unemployed beggars, provides a useful framework for understanding the buying and selling of low or no value articles on the streets of urban cities in many countries. Nevertheless, street charity is a highly complex phenomenon; and this paper only takes a first step in understanding the economic incentives in behavior under different types of charity solicitation on the streets. There may also be other motivations playing a role in charitable behavior towards beggars and street vendors. I have presented evidence from a primary survey and developed a formal model that studies one particular aspect of charitable behavior on the streets. In particular, I use propensity score matching to find that the charitable giving on the street is higher when a material benefit is offered in the form of street vending despite the givers having no use for the product. My model explains this as the givers' preference towards donating money to a deserving poor who is involuntarily unemployed but has a willingness to work. The act of street vending acts as a tool to signal vendors' lower intrinsic cost of working honestly and involuntary unemployment while begging suggests a lack of deservingness and voluntary unemployment. Signaling fails when the preference parameter to reward the involuntarily unemployed poor is too small or among too few givers and when the initial rate of involuntary unemployment is close enough to 0 or 1. I hope the analysis provides some guidance for future theoretical and empirical work on the economics of street charity, in terms of the types and motivations of street charity solicitors as well as the givers.

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