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RESEARCH NOTES #3

Determinants of Economic Dependency on Garbage: The Case of Payatas, Philippines

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Poverty remains at the forefront of worldwide concern. Poor communities continue to emerge in marginal places like dumpsites. This study determined economic dependency and assessed the determinants of dependency on garbage in the Payatas Dumpsite, Philippines. About 841 householders in the "with dumpsite" and "without dumpsite" communities of the Payatas estate were systematically sampled and interviewed. Unobtrusive and participant observations were conducted to supplement survey findings. Regression analysis disclosed the determinants of dependency. About 38.90% of respondents were economically dependent on the Payatas Dumpsite, where they work either as scavengers, vendors, or junkshop operators. Significant determinants of dependency were gender, distance to the dumpsite, and education ($P < 0.05$). All economically dependent activities (scavenging, vending, and operating junkshop) at the Payatas Dumpsite are lucrative in terms of the earned net income, and this dependency is greatly influenced by their distance to the dumpsite, gender, and education.

KEYWORDS: Economic dependency, Payatas Dumpsite, Poverty, dependency determinants

Poverty is a social predicament of many people. The difference in views regarding poverty, however, would pose difficulties in attempts to categorize people as "poor." Some view poverty as a situation of lack in resources; others broadly look at it as rooted in the uneven distribution of resources (Abad, 1991).

The presence of urban poor communities is a serious concern in the Philippines. Such poor areas exhibit exclusion and deprivation mainly due to the stigma attached to poverty or the indifference of surrounding neighborhoods. National and local government agencies have been unsuccessful thus far in preventing their emergence and their continuous encroachment in marginal places like the Payatas Dumpsite, an open dumpsite in the Payatas estate in the Northern District of Quezon City, Philippines.

Urban poor communities have continuously grown in size and are self-perpetuating due to the socioeconomic pressures of their local environment. And more poor people continue to encroach and become dependent on places like the Payatas Dumpsite because the perceived benefits are far greater than the health-related risks associated with dumpsite activities. Studies of Abad (1991), Abad et al., (1986), and Callanta (1988) argue that urban poor communities settle in open dumpsites because

they believe that they are victims caught in the double pressure of high land values and uneven economic development. Most poor people and their families are forced to stay and depend on dumpsites because they feel that they are left with only two options: to scavenge or to starve to death.

The limited prospects and opportunities available to poor people impel them to diversify their livelihood activities. Some would need to do extra work to gain adequate earnings, whereas others have regarded marginal and informal jobs, like scavenging of dumpsites, as their major coping mechanism for survival (Jocano, 1975). According to a World Bank study (July, 1999) in Vietnam, poor people engage in numerous coping strategies, like selling blood, selling women and children, child labor, scavenging, and borrowing money from family and friends, to economically sustain themselves. In a study done in Eastern Uganda, Woelcke (2002) found that poor people engage in ecologically-damaging activities like soil mining. Dove (1993) asserted that with economic hardship, poor people are also drawn to exploit the products of the tropical forest. The tropical forests are being cleared and exploited for immediate gains and the long-term harm to the environment and people is ignored.

Poor people continuously struggle by diversifying their activities in their search for food and income. This study contributes to our current knowledge about the prevailing conditions in the life of urban poor communities and the determinants behind their dependency on the Payatas Dumpsite. This is of great significance because it aims at understanding the underprivileged and ignored status of some people. This study aims to assess the economic dependency of people and to identify the factors affecting dependency on the garbage in the Payatas Dumpsite.

METHOD

Two urban poor communities in the Payatas estate were chosen as the study areas. Payatas represents the community with dumpsite, while Holy Spirit was chosen as control (without dumpsite; Figure 1).

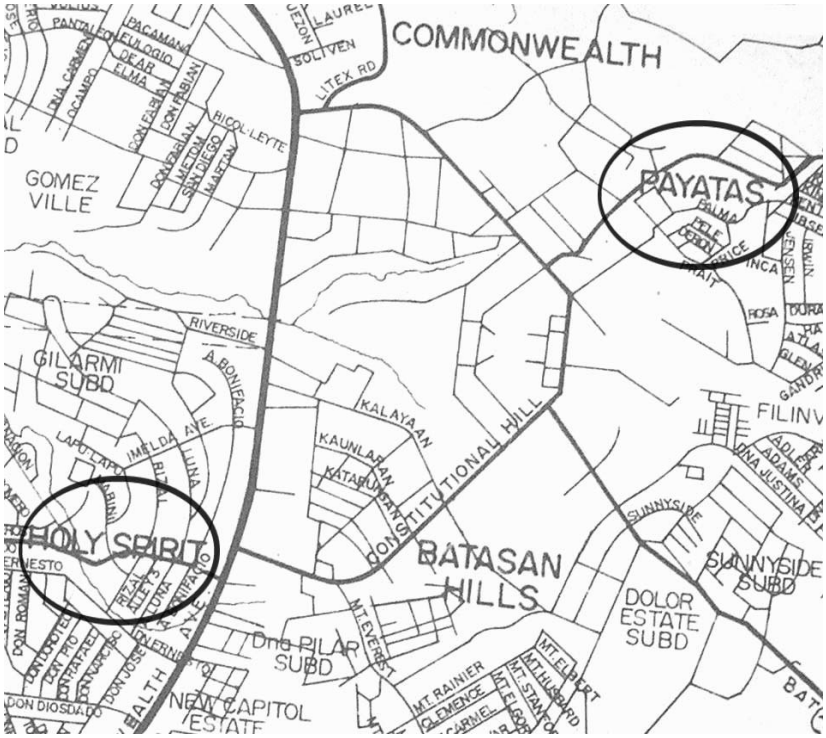

Figure 1. The Study Areas: Holy Spirit (without dumpsite) and Payatas (with dumpsite) indicated in circles.

Eight hundred forty-one households, from both the "with dumpsite" and "without dumpsite" areas, were randomly selected. A total of 494 households were randomly selected for the "with dumpsite" community, and 347 households were randomly selected for the "without dumpsite" community. The households in both communities were systematically selected. The sampling interval for this study is 5, and this was determined by drawing from numbers 1 to 10. Fourteen interviewers were instructed to select at random one household from the first five households and interview every fifth household thereafter. The duration of the actual interview lasted for 45 days. The interview schedule was structured to assess the sociodemographic and socioeconomic condition of the householders and the determinants of their dependency. The householders identified were either the household heads or the household representatives. The survey was followed by an unobtrusive observation study that lasted for 6 months and a participant-observation study that entailed immersion in the communities for a week to supplement the survey findings. In the participant-observation study, the investigator is involved in the everyday situations of the participants who are the scavengers, vendors and junkshop operators. The investigator looks at and listens to what is happening in the daily life of the participants in the communities. In the unobtrusive observation study, the investigator does not in any way become involved in the daily activities of the participants but observes the actual daily behavior of the participants in the community at a distance. The study was conducted in 2003 to 2004.

The Statistical Package for Social Sciences (SPSS) software was used to record and analyze the data and then build the model. The binomial logistic regression analysis was used to determine the factors of dependency among the local communities on the Payatas Dumpsite. The different factors affecting dependency were collapsed to form dichotomized categories in performing the regression analysis.

The regression equation, $Y = \acute{a} + \hat{a}X$, followed a logistic distribution. The probability of dependency was assessed between the dichotomous outcome of Y as either dependent or not on the Payatas Dumpsite and its factors, X (age, gender, civil status, position in the family household, education, income per day, distance to the dumpsite, years of stay in the community, attitude toward the Payatas Dumpsite, and willingness to reduce dependency on the Payatas Dumpsite). The factors (X) were dichotomously categorized as the reference group and the other group. For age, length of stay, and income per day, the groups' dichotomous categorization was arbitrarily set based on the distribution of data; for gender, on sex of the respondent; for education, on householders with no or elementary education and high school or higher educational attainment; for distance to the dumpsite, on the householders living community "with dumpsite" versus "without dumpsite"; for attitude towards the dumpsite, on affirmation versus indifference toward the Payatas Dumpsite; and for the willingness to reduce dependency factor, on eagerness versus reluctance of householders in reducing dependency on the dumpsite. In this case, dummy variables 1 and 0 were used to represent the reference group and the other group, respectively.

The likelihood ratio test P value was compared at each step to a likelihood ratio criterion. The selected variable was included in the model. The criterion used a fixed preset $\acute{a}$ levels of significance where $\acute{a}$ was set at 0.05 for "entering" of a variable and at 0.10 for "remove." The factors were entered into the model, and the forward stepwise regression procedure was used in building the model. The Hosmer-Lemeshow goodness-of-fit test was done to determine whether the built model was a good fit. The log of the odds was estimated using the regression function that the model developed. The significance of the estimated coefficients was evaluated using the Wald test statistic. Results yielding a significant P value were included in the model, and those not significant were excluded.

RESULTS

A total of 841 systematic randomly selected householders were interviewed in this study. However, only 98.1% of the randomly selected households were valid cases and were included in the regression analysis. Of the total householders, 494 householders were from the "with dumpsite" area and 347 householders were from the "without dumpsite" community. Only 327 householders (39.6%) were economically dependent on the dumpsite. These 327 householders are working at the dumpsite as scavengers (60.8%), vendors (35.6%), and junkshop operators (3.6%). About 498 householders (60.4%) were not economically dependent on the Payatas Dumpsite; most are working as laborers, salesmen, and drivers and some were even professionals, working as teachers, engineers, nurses, etc.

Most of the householders interviewed (69.2%) were females and married (84.3%), with ages ranging from 14 to 83 years. Most of the householders interviewed (45.0%) fall within the age group of 31 to 45 years, with a mean of 36 years for both sexes (see Table 1). Majority (46.8%) come from the Visayas, about 30.3% from Luzon, and 7.5% from Mindanao. Cities of the National Capital Region (NCR) contributed to 15.3% of the respondents. About 29.6% of the respondents stated that they have lived in their respective areas for the past 1 to 5 years. The average length of residence of householders in both the "with dumpsite" and "without dumpsite" areas was 8 years. Some of the respondents (26.2%) were high school graduates, and only 0.8% of the total respondents had no formal education. Respondents stated that education was important; however, only 3.7% of the total respondents finished college (see Table 2). Most of respondents' children (41.3%) are in elementary grades, 16.9% in high school, 3.6% in college, and 0.3% in vocational schools; the remaining 37.9% of children with ages of less than 3 years are not studying.

Each household member works to provide for the family's daily subsistence; that is why in a five-member household, two members are working. The mean daily gross income per household in the "with dumpsite" and "without dumpsite" communities was PHP143.42 (US$2.87) and PHP221.72 (US$4.43), respectively (at exchange rate of US$ 1 = PHP50). Among those economically dependent on the Payatas Dumpsite, the gross daily income of a typical scavenger is PHP131.00 (US$2.62); of a vendor, PHP196.28 (US$3.93); and of a junkshop operator, PHP421.14 (US$8.42). Estimation of income revealed that on a daily basis, a scavenger earns a net income of PHP131.00 (US$2.62), a vendor earns PHP114.25 (US$2.29), and a junkshop operator earns PHP323.30 (US$6.47) (see Table 3). These estimated net earnings could meet their daily household's expenses for food, water and basic utilities like electricity. Results also empirically confirm that all the economically dependent activities (scavenging, vending, and operating junkshop) on the Payatas Dumpsite are lucrative in terms of the net income earned. Among these economically dependent activities, junkshop operation is superior in terms of profitability.

All the respondents (100%) felt that they receive very little attention from the government. They also informed us that former governments relocated and provided them with housing, but little had been done to address their other basic needs, particularly work, education, food, and other basic services. They stated that access to water, roads and transport, and sanitation and health services is important for them to attain a better quality of life. All of them (100%) also stated that the programs and efforts of the government need to focus on areas that will reinforce and help them in sustaining their needs, like better livelihood opportunities, available means to market their produce, equipped infrastructure, healthy living conditions, support for family's subsistence, security of tenure, and education for their children.

Despite the existing condition of these people, the majority of the respondents (82.8%) from the Payatas Dumpsite expressed the sentiment that they are happy and contented, as the dumpsite provides them with their immediate needs.

However, 78.4% of the respondents indicated that they are willing to reduce their dependency on the Payatas Dumpsite if other prospects and opportunities are provided.

In the Payatas Dumpsite, the women are seen doing domestic chores, while the men go out to work. Children are oftentimes seen at home, doing errands, cleaning the house, and tending to their younger siblings. In some households, the men do the domestic chores while the women work outside the home to provide food for their families. In most households, both couples work outside.

Scavenging is largely a daily activity and does not require specialized skills. Scavengers need only to withstand the smell and unsanitary conditions of their work and to be willing to spot and collect scraps from the dumpsite. Scavengers use sticks to gather, select, and collect marketable scrap materials. Scavenging activities are usually done as early as 4:00 AM. And on the average, scavengers rake the dumpsite for 4 hours. Scavengers have a poor quality of life. A typical scavenger's household has an average of five members and lives in a shanty built out of temporary or salvaged materials obtained from the Payatas Dumpsite. About 75.4% of the respondents felt that house improvement is not as important as having a house to live in, and having a place to live in is enough for them. They stated that it was not a question of being able to afford home improvements, but that they would rather use their savings to buy appliances. Most scavengers need additional income to meet their daily subsistence needs. Some scavengers in the Payatas Dumpsite augment their income by buying scrap materials from their co-scavengers, while others take on other jobs such as plumbing and carpentry. Generally, tin cans, plastic, glass, and paper are the preferred items collected by scavengers. The collected materials are cleaned and sorted prior to being sold to junkshops.

Vending is another daily activity of those economically dependent on the Payatas Dumpsite. About 600 vendors depend on the dumpsite. These vendors are either mobile-itinerant or sidewalk vendors. Vendors conduct their daily business by peddling food and drinks to hungry scavengers working in the Payatas Dumpsite. Most vending activities in the Payatas Dumpsite are small, and vendors are frequently apprehended by local authorities for lack of licenses or permits to vend.

Operating junkshops is another activity that is economically dependent on the Payatas Dumpsite. During the course of the study in 2004, there were 200 junkshops found within and along the Payatas Dumpsite. Junkshops commence their dealings with the scavengers when they buy sorted and cleaned scrap materials. Most junkshops buy the collected scrap on a cash-on-delivery basis. The junkshop owners within and along the Payatas Dumpsite are middlemen who resell the scrap materials to big factories or recyclers. Junkshops offer varied prices to scavengers, depending on their distance from the Payatas Dumpsite. Higher prices are offered by junkshops situated far from the Payatas Dumpsite as compared to those situated nearer. Individuals and families of scavengers sometimes tap junkshop operators as informal lending sources.

People economically dependent on the Payatas Dumpsite said that living close to the dumpsite gives them the opportunity and the means to easily earn an income. Despite the hardships of working in the Payatas Dumpsite, more people choose to work here because of perceived greater income. More people point to the negative externalities or risks posed by dumpsites as just secondary to their immediate and tangible needs. In the survey, the most important motive that influences the choice of economically dependent people to live and work on the Payatas Dumpsite is primarily to meet their socioeconomic needs. The desire to have a steady source of income to support their families and the desire to get out of their misery and poverty impel these people to continually struggle even in places like the Payatas Dumpsite.

Results of regression analyses based on the Wald statistic showed that there was sufficient evidence to indicate that at 5% level of significance the probability of dependency toward the Payatas Dumpsite is affected by gender, level of education, and distance to the dumpsite ($P < 0.05$; see Table

4). Likewise, the results of the study do not negate the possibility that age, length of stay in the local community, attitude towards the dumpsite, willingness to reduce dependency, position in the family household, civil status, and income per day may have significant correlations with their dependency ($P > 0.05$).

DISCUSSION AND CONCLUSION

This study was cross-sectional, and its scope was limited to those householders living within the Payatas estate. The findings of the study showed that gender, education, and distance to the Payatas Dumpsite are significant factors affecting dependency on garbage ($P < 0.05$).

Gender is an important factor affecting one's dependency, as shown in the study by Gunatilake (1998). Such research supports the results of this study by confirming that women showed higher dependency than men. Narayan et al. (2000) asserts that a majority of women are working outside of their households for the reason that they want to augment their household income. Activities like scavenging, vending, and operating junkshops in the Payatas Dumpsite do not involve heavy work; hence, females may be more involved in such dumpsite-dependent activities. It is also likely that women show higher dependency since the study involved more females than male respondents.

The distance to the dumpsite was likewise found to significantly affect the dependency of people on the Payatas Dumpsite. There is widespread awareness that people and local communities having the closest physical contact with a resource tend to show dependency on the resource as it provides their immediate needs. Gunatilake et al. (1993) indicated that communities located peripherally to the resource tend to show heavy to moderate dependency. This research supports the findings of this study that peripheral communities close to the Payatas Dumpsite have a tendency to depend on the dumpsite for their immediate economic needs. The dependency on the dumpsite varies across households. Some households who live close may depend more on the dumpsite, whereas others that live far from the dumpsite may depend less. Illukpitiya (2005) states that the distance to the resource may influence households' dependency as greater distances to the resource may imply higher costs. Results of this study indicate that people who live closer to the dumpsite depend more on the garbage in the Payatas Dumpsite ($P < 0.05$).

Education is another significant factor ($P < 0.05$) that affects dependency on the garbage in the Payatas Dumpsite. Yang (1997) indicated that education is a major factor in determining one's dependency. This research supports that education opens up to better employment opportunities, hence diverting people to other subsistence activities. Results of the study showed that dependency on garbage in the Payatas Dumpsite is inversely related to the education level of the householders. This finding is likewise supported in a study conducted by Gunatilake (1998), wherein the author concluded that respondents having low educational attainments were more related to forest dependency. The low educational attainments of householders push them to limited prospects and opportunities; hence, they tend to depend more on the Payatas Dumpsite. The lack of any relationship of the total household income per day with dependency may be due to errors in measuring the householder's income variable. Respondents tend to underestimate the values for income due to reasons such as fear of theft.

People prefer to encroach on and rake the garbage in the Payatas Dumpsite because it is accessible to them and relatively easy to do, particularly at times when there is no food available. To some people, encroaching on and raking the Payatas Dumpsite give them the opportunity and means to easily gain income to meet their immediate needs. Results also indicate that the recognized negative externalities, like attendant health risks, are just secondary to the immediate and tangible need of survival for the economically dependent groups. The most important motive is primarily to provide for their socioeconomic needs. There is

likewise the desire to have a steady source of income and to get out of poverty. These people continously struggle, and even work and live in the Payatas Dumpsite for these reasons.

The derived model confirmed that gender, distance to the dumpsite, and education are the significant factors affecting people's dependency on the garbage in the Payatas Dumpsite. The study showed that the factors gender, distance to the dumpsite and education have a negative effect on the dependency in the Payatas Dumpsite. Females are more likely engaged in the dumpsite as compared to males. Households situated in the periphery of the dumpsite and people having low educational attainments were more likely to be dependent on the Payatas Dumpsite.

The study has established that a high economic dependency on dumpsites exist among the groups of people (scavengers, vendors and junkshop operators). These groups of people who chose to work and live close to the Payatas dumpsite believed that the earned income far outweighs negative externalities including attendant health risks of working in such places. Still, conditions for these economically dependent groups living and working at the dumpsite can be improved considering that better opportunities like jobs, enough food and basic services can be provided by the local government. In view of these results, it is recommended that more in-depth studies on the dependency of people on garbage and on the effects of dumpsites on the well-being of communities be conducted in order to address their problems, enlighten the general public, and push national and local governments to set policies and programs that will safeguard the environment and public health.

Table 1. Demographic characteristics of householders

Variables	With dumpsite, *n* = 494 (%)	Without dumpsite, *n* = 347 (%)	Total, *N* = 841 (%)
Sex			
Male	73 (14.8)	185 (53.3)	258 (30.7)
Female	421 (85.2)	161 (46.4)	582 (69.2)
No reply	0 (0.0)	1 (0.3)	1 (0.1)
Civil status			
Single	54 (10.9)	18 (5.2)	72 (8.6)
Married	401 (81.2)	308 (88.8)	709 (84.3)
Separated	13 (2.6)	8 (2.3)	21 (2.5)
Widowed	26 (5.3)	13 (3.7)	39 (4.6)
Age			
<15 years	2 (0.4)	0 (0.0)	2 (0.2)
16-30 years	189 (38.3)	103 (29.7)	292 (35.9)
31-45 years	218 (44.1)	143 (41.2)	361 (43.1)
46-60 years	64 (13.0)	66 (19.0)	130 (14.8)
>61 years	15 (3.0)	13 (3.7)	28 (3.2)
No reply	6 (1.2)	19 (5.5)	25 (3.0)
Mean age (years)	36	37	36
Age range (years)	14-83	18-68	14-83

Table 2. Educational attainment of householders

Variables	With dumpsite, *n* = 494 (%)	Without dumpsite, *n* = 347 (%)	Total, *N* = 841 (%)
No formal education	6 (1.2)	1 (0.2)	7 (0.8)
Elementary level	108 (21.9)	48 (13.8)	156 (18.5)
Elementary graduate	126 (25.5)	41 (11.8)	167 (19.9)
High School level	78 (15.8)	86 (24.8)	154 (18.3)
High School graduate	127 (25.7)	93 (26.8)	220 (26.2)
College Level	32 (6.5)	56 (16.1)	88 (10.5)
College graduate	12 (2.4)	19 (5.5)	31 (3.7)
Vocational	5 (1.0)	3 (0.8)	8 (1.0)
No reply	0 (0.0)	1 (0.3)	1 (0.1)

Table 3. Financial profitability of economically dependent activities on the Payatas Dumpsite

Activity	Average gross daily income, PHP (US$)	Average daily operating cost, PHP (US$)	Average net daily income, PHP (US$)
Scavenging	131.00 (2.62)	0.00 (0.00)	131.00 (2.62)
Vending	196.28 (3.93)	82.03 (1.64)	114.25 (2.29)
Junkshops	421.14 (8.42)	97.84 (1.96)	323.30 (6.47)

Note: US$ 1 = PHP50.

Table 4. Factors affecting dependency on the Payatas Dumpsite, Philippines.

Variables	*â*-Coefficient	SE	Wald statistic	*df*	*P*	Odds ratio
Constant	2.075	0.267	60.478	1	0.000	7.966
Gender	-0.410	0.191	4.611	1	0.032	0.664
Education	-0.175	0.053	10.778	1	0.001	0.839
Location to the dumpsite	-1.381	0.181	58.184	1	0.000	0.251

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