

The Determinants of Poverty in Informal Settlement Areas of Mashhad (Case Study: Shahid Ghorbani Quarter)

Sahar Soltani¹, Javad Baraty*², Farzaneh Razaghian³, Simin Foroughzadeh⁴

Received: 2017, November 14

Accepted: 2018, January 5

Abstract

Urban poverty has long been a concern of urban and development debates, and has been an important focus in social science research. Informal settlement in Mashhad city is highlighted because of its wide spreading and severity. This study aimed to determine the causes of urban poverty in informal settlement regions. The data were collected from household level questionnaire in 2016 and the Logistic Regression Model was performed to identify the determinants of urban poverty. The data were obtained from 220 households who settled in Shahid Ghorbani quarter using the questionnaire through the Systematic Random technique. Nearly 87% of households of the studied area were below absolute poverty line and 20% of them were below extreme poverty line. Given that all household heads in the sample were married men, significant relationships were observed between poverty and characteristics like “age of household head”, “being self-employed”, “household size”, “the ratio of worker in household”, “ownership of house” and “having social security”, while factors like “Access to services and infrastructures” and “education” had no significant impact on the likelihood of moving out of poverty. The results also revealed that if the household head is older and self-employed, the likelihood of being poor is gradually diminished. Also if the family members had some kind of social security or owned their houses, household welfare would improve; however, increasing in household size and ratio of worker in household would decrease household welfare. Eventually, the marginal effects of variables were interpreted.

Keywords: Urban Poverty, Informal Settlement, Logistic Regression Model, Mashhad.

JEL Classification: I32, O17, O53.

1. Introduction

Poverty is defined in a variety of different ways. World Bank (2000) defines poverty as pronounced deprivation in individual or households

1. Iranian Academic Center for Education, Culture and Research, Khorasan Razavi, Iran (s.soltani@jdm.ac.ir).

2. Iranian Academic Center for Education, Culture and Research, Khorasan Razavi, Iran (Corresponding author: j_baraty@jdm.ac.ir).

3. Iranian Academic Center for Education, Culture and Research, Khorasan Razavi, Iran (Razaghian@jdm.ac.ir).

4. Iranian Academic Center for Education, Culture and Research, Khorasan Razavi, Iran (s.foroughzade@jdm.ac.ir).

30/ The Determinants of Poverty in Informal Settlement ...

well-being, where well-being can be measured by possession of income, health, education, assets, and certain rights in a society, such as freedom of speech. Asian Development Bank (2001) defines poverty as “whether individuals or households have enough resources or abilities to meet their needs”. Thus, poverty is a multidimensional phenomenon which requires multi-dimensional interventions to improve the well-being of individuals (Hulme and Shepherd, 2003).

According to United Nations Projections, the number of people living in urban areas of less developed countries will be doubled from 1.9 billion to 3.9 billion during the period 2000-2030 (UN, 2002). Very often, the effects of environmental pollution, poor water availability and poor health services, and the resulting losses in health and quality of living are unequally distributed among the urban population, with the poor often suffering the most (MEA, 2005). Segregation and inequality in cities is of all times and all regions (Nightingale, 2012), but in many cities – especially in developing countries – slum dwellers number comprised more than 50% of the population and have little or no access to shelter, water and sanitation (UN-Habitat, 2005).

The majority of the world’s countries, especially least developed countries, struggle with bitter poverty. There are lots of reasons for studying poverty include: Targeting interventions and Designing programs and policies to reduce poverty (Ravallion, 1998). Reducing inequality and poverty in cities on the path towards 2050 may well be one of the major challenges of the future (Ligtvoet et al., 2014). Indeed, poverty reduction is one of the most important goals of development and of development policy.

Poverty is also a widespread phenomenon in Khorasan Razavi province. During 2004 and 2014, this province experienced the largest increase in poverty line (following south Khorasan and Yazd provinces) among the other eastern provinces. Mashhad as a metropolitan area accommodating more than half of the province’s population with a wide spread of informal settlement, encounter with poverty as well. About one third of the population of Mashhad are settled in informal settlements. So this issue is highly noticed among local and national policymakers. Another reason for the highlighted importance of informal settlement and poverty in Mashhad is its

tourism function as a holy city. Considering informal settlements as insecure places, it could be a potential threat to Mashhad tourism.

Informal settlements quarters in Mashhad include 66 quarters which are distributed in 8 zones. Wide spread of informal settlement in Mashhad is rooted in lots of factors such as the incident of prolonged drought in neighborhood provinces, the presence of more than 300,000 immigrants in Mashhad, high cost of housing in urban areas and failure of the government to control and supervise informal settlement. Despite the importance of the studies of poverty in informal settlements in metropolitan areas like Mashhad, it was highly neglected by researchers. This study aimed to examine the factors generating poverty in Shahid Ghorbani quarter in Mashhad city using Logit regression model.

The rest of the paper is organized as follow. In Section 2, Literature review is presented. Section 3 includes two parts: part 3.1 which explained data used in this study and part 3.2 which introduced a model to identify the determinants of poverty at the household level. The Socio-demographic Characteristics of Households, Measuring the Model Fit and estimates of Logit Regression are presented in Section 4. Finally, concluding remarks are given in Section 5.

2. Literature Review

Selim (2016) investigated the determinants of relative poverty in Turkey with a special emphasis on gender by using a panel Logit regression model. Their findings suggested that factors like being man, being married, higher level of education, higher level of age, improvement in health status, being employer and self-employed, having social security will reduce the probability of poverty in Turkey.

Chen and Wang (2014) analyzed the determinants of poverty in Taiwan, including family-level and regional-level factors. They analyzed data of 13,640 households from 23 cities and counties (regions) by hierarchical generalized linear models. Their results indicated that among the family-level factors studied, education, socioeconomic status, age, family type, dependency ratio, marital status, and number of earners are connected to poverty status. There were observed also significant relationships between poverty and

32/ The Determinants of Poverty in Informal Settlement ...

structural characteristics, such as economic inequality, economic growth, structural transition, and labor market characteristics.

Khudri and Chowdhury (2013) identified the key determinants of poverty in Bangladesh using logistic regression model. Their findings suggest that a set of demographic variables such as division, type of place of residence, own land usable for agriculture, highest education level and employment status were the key determinants of poverty. Their results also revealed that ownership of agricultural land and having higher education would result in reduce the likelihood of being poor. Moreover, they found that the area of residence was statistically significant and a rural household had high probability of being poor than their urban counterparts.

Dartanto and Nurkholis (2013) used an ordered Logit model to examine the determinants of poverty dynamics in Indonesia by using the National Socio-Economic Survey balanced-panel data sets of 2005 and 2007. They found that 28% of poor households are classified as chronically poor while 7% of non-poor households are vulnerable to being transient poor. Their estimations also confirmed that the determinants of poverty dynamics in Indonesia are educational attainment, the number of household members, physical assets, employment status, health shocks, the microcredit program, access to electricity, and changes in employment sector and employment status. They also found that households in Java–Bali are more vulnerable to negative shocks than those outside Java–Bali.

Rupasingha and Gotez (2007) contributed to basic knowledge of the structural determinants of poverty in the US by analyzing an expanded set of determinants of poverty, namely factors related to economic, social, and political influence using spatial data analysis techniques. Social capital, ethnic and income inequality, local political competition, federal grants, foreign-born population, and spatial effects were found to be important determinants of poverty in US counties along with other conventional factors.

D' Ambrosio et al. (2011) examine the extent of poverty within five European countries, Belgium, France, Germany, Italy, and Spain. They use three different multidimensional approaches, with a variety of explanatory variables and Logit regression analysis to investigate the nature of poor households in the region. The study finds a U-shaped

relationship between poverty and the size of the household as well as between poverty and the age of the individual. Unemployed individuals have a much higher probability of being poor while the probability of being poor seems to be lower among self-employed than among salaried workers. Moreover, married individuals, whatever their gender, have a lower probability of being poor than singles.

3. Data and Methods

3.1 Data

The data set used in this study is obtained from a household survey conducted in Shahid Ghorbani quarter in spring 2016. This quarter is located in zone four of Mashhad city and is classified as an informal settlement quarter. The survey collected information at household level. The final sample comprises 220 observations on households with valid responses for all variables used in the analysis. Sampling method was simple random sampling.

3.2 Methods

The analysis of poverty is mostly based on multivariate regression methods that attempt to identify the determinants of poverty at the household level, using reduced form models of various structural relationships that affect poverty (Glewwe, 1991). The main objective of this study is to use the survey data to look for structural determinants of poverty. The method of logistic regression model was performed to identify the factors which generate poverty in informal settlements of Mashhad.

In this section, we analyze the determinants of poverty using a logistic regression model with a binary dependent variable. The dependent variable is the poverty status of household i , which is 1 if the household is poor and zero otherwise. Dependent variable was defined as households who were below or beyond of Orshansky Poverty Thresholds in 2016 in the studied quarter of informal settlement in Mashhad. Orshansky Poverty Thresholds (or monthly absolute poverty line) was determined as 475,664 tomans per capita according to Barati et al. (2017) study which was conducted at the same region simultaneously. His results also showed that 86% of the

34/ The Determinants of Poverty in Informal Settlement ...

quarter's population lived in poverty in the studied year (Barati et al, (2017).

Let us consider the following levels regression of the form:

$$y_i = \beta x_i + \varepsilon_i \quad (1)$$

Where y_i is household expenditure per capita as an indicator of poverty, β denotes the vector of parameters, x_i is the vector of household characteristics, and ε_i is the error term.

The above equation can be estimated by least squares assuming normally distributed error term. The above specification can, however, be extended in the analysis of household welfare relative to some pre-determined poverty line as follows:

$$\begin{aligned} S_i &= 1 \text{ if } Y_i \leq z \\ S_i &= 0 \text{ otherwise} \end{aligned} \quad (2)$$

Where S_i is the categorical poverty indicator for household i and z is the poverty line. The binary specification can then be written as:

$$\pi_i = P(y_i = 1) = F(z - \beta x_i) \quad (3)$$

Where π_i is the probability that the household is poor and F is the cumulative probability function. The above model can then be estimated by probit or logit, assuming logistic distribution of the error term. Before proceeding on to the main analysis, it may be useful to substantiate on the dichotomous logistic regression model.

The logistic regression model can be written in terms of the log of the odds (odds are simply defined as the probability of a "success" outcome divided by the probability of a "failure" outcome), called the logit, as follows:

$$\log\left(\frac{\pi_i}{1-\pi_i}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k \quad (4)$$

with the above model, the logit is just the natural logarithm of the odds and the range of values in the left-hand side of equation (4) are between $-\infty$ and $+\infty$. An alternative way of writing the above model in terms of the odds is that:

$$\frac{\Pr(y=1)}{\Pr(y=0)} = \frac{\pi_i}{1-\pi_i} = \exp(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k) \quad (5)$$

The range of values is between 0 and ∞ that the right-hand side of (5) can assume. Rearranging (5), the underlying probability of a success outcome is given by

$$\pi_i = \frac{\exp(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k)}{1 + \exp(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k)} \quad (6)$$

Equations (4)–(6) are identical in interpretation. However, for practical purposes, equations (4) and (6) are usually computed, since it provides not only the logit estimates, but also the probability of success.

4. Discussion

4.1 Socio-demographic Characteristics of Households

-Gender of household head

All the household heads in this study were men. In other words female headed households were paid from some other sources except their work, so these households were excluded from the estimation.

-Marital Status

All the household heads in this study were married. So this variable was excluded from the estimation.

-Age of Household Head

The average age of household head was 42.1 with the oldest of 82 years old and the youngest of 21 years old.

Table 1: Age of Household Head

Age (years old)	Percentage (%)
20-30 year old	17.3
31-40	31.4
41-50	30.9
51-60	14.1
61-70	4.1
71-80	2.3

As this table shows, the age of more than 90 per cent of household heads was between 31-60 years old.

36/ The Determinants of Poverty in Informal Settlement ...

-Dependency Ratio

Dependency ratio is defined as the ratio of the number of children (under the age of 15) and individuals above 65 years of age to the number of people aged 15-64. As the ratio increases there may be an increased burden on the productive part of the population to maintain the upbringing and pensions of the economically dependent. This results in direct impacts on financial expenditures on things like social security, as well as many indirect consequences. Thus, a higher dependency ratio may be positively correlated with the level of household poverty. The average of Dependency ratio is 55 % among the studied households.

-Household Size

The average household size in the studied sample was 3.95 persons with the maximum of 6 and minimum of two persons which stands over the average of household size of Iran and Khorasan (3.3 persons in household).

-Access to Services and Utilities at the Household Level

Mean travel time (in hours) to the nearest health center, bus station, bank, and school captures overall access of the household to this infrastructure services and does not measure the unique effects of access to each facility type. The average travel time to infrastructures was 15.4 minutes.

-Educational Status

Across most parts of the globe, education is inversely associated with unemployment and poverty and positively associated with income, job success, civic participation, access to power and physical, social and mental well-being (UNDP, 2014). Educational Status of the head of household was defined as different levels of education including illiterate, elementary education, Secondary education, diploma, Undergraduate degree, Bachelor's degree and Master's degree, which distributed as below:

Table 2: Levels of Education among the Head of the Households

Levels of education	Percent	Cumulative Percent
Not answered	1.4	1.4
illiterate	9.5	10.9
elementary education	32.7	43.6
Middle school	35.0	78.6
diploma	16.8	95.5
Undergraduate degree	2.7	98.2
Bachelor's degree	1.8	100.0

-Ratio of Worker in Household

This variable indicates the number of sources of income in a household. Considering state subsidies which provides monthly cash payments to individuals over their life time as a source of income, the average ratio of sources of income in a household was 58 per cent which means that in the studied sample about 60 percent of family members work and earn revenues.

-Ownership of House

The average contribution of housing cost of total expenditure for Residents in urban areas of Iran was 32 percent in 2015. So, housing cost is one of the most important part of household's expenditure. In the studied sample, the average homeownership rate was 55 per cent.

-Having Social Security

68 per cent of households have some kind of social security.

-Being Self - employed

62 per cent of household heads were self -employed.

-Empirical Results

Two issues including goodness of fit and interpreting the fitted model are reported in logistic regression estimation.

4.2 Measuring Model Fit

A classification table was prepared to assess how well the model (with two or more independent variables) fits the data. This is a simple tool that indicates how good the model is at predicting the outcome variable (namely poor and non-poor). Ordinary least squares (OLS)

38/ The Determinants of Poverty in Informal Settlement ...

regression equations are usually used to predict the score of every case, which can then be compared to the observed value to see how accurate the prediction is. The logistic regression procedure, on the other hand, uses the estimated equation to decide if the expected probability is <0.5 , then the predicted score is 0. On the other hand, if the expected probability is ≥ 0.5 , then the predicted value is 1. The percentages of correctly predicted cases are then calculated and displayed in a classification table. If the equation “completely explains” the variation of the dependent variable, all cases would fall on the main diagonal and the overall percentage correct would be 100%. In other words, cases predicted to be equal to 0 would be observed 0s and predicted 1s would be the observed 1s. It seems that our model indicate an impressively high level of correct predictions (85.6 overall).

4.3 Goodness of Fit

For testing the goodness of fit of a logistic regression model, the Hosmer –Lemeshow test is presented. This test is overall used to assess goodness of fit in logistic regression with individual binary data.

In our model the p value is 0.323 and thus we do not reject the null hypothesis that there is no difference between the observed and predicted values. Hence, we conclude that the model appears to fit the data reasonably well. The value of this test-statistic with all the explanatory variables is 9.23 which is compared to the critical value from the chi-square distribution with 8 degrees of freedom.

4.4 The Results of the Logit Regression

The logistic regression model can be written on three different scales, namely Logit, odds, or probability. We will report the results on the Logit scale and also marginal effects. The following exogenous variables have been taken into account in the regressions: the household size, the age of household head, being Self – employed (dummy variable), Educational Status, Access to services and infrastructures, Ratio of worker in household, ownership of house (dummy variable), having social security (dummy variable). In each Logit regression, the dependent variable is the probability that a

family is considered as poor (the variable is equal to 1 if he/she is poor, to 0 otherwise). Using equation (4), the Logit model can be written as follows:

$$\log\left(\frac{\pi_i}{1-\pi_i}\right) = -0.041 \text{ age} - 0.92 \text{ self} - \text{employed} + 0.16 \text{ household size} \\ + 5.32 \text{ ratio of worker} - 0.55 \text{ Ownership of house} \\ - 0.88 \text{ having social security}$$

Table 3: Logistic Regression Estimates of Poverty Determinants in Shahid Ghorbani Quarter

Variable	coefficient	Std. Err.	z	P> z	[95% Conf. Interval]	[95% Conf. Interval]
Intercept	-0.196	1.68	-0.12	0.90	-3.5	3.1
Age of household head	-0.041	.016	-2.57	0.01	-0.073	-0.001
Self – employed						
Yes						
No	-0.923	0.35	-2.66	0.008	-1.60	-0.242
Educational Status						
No education						
Educated	-0.045	0.11	-0.4	0.70	-0.27	0.18
Household size	0.165	0.04	3.73	0.00	0.07	0.25
Access to services and infrastructures	-0.004	0.02	-0.17	0.868	-0.05	0.043
Ratio of worker in household	5.326	1.76	3.02	0.003	1.87	8.78
Ownership of house						
Yes						
No	-0.551	0.34	-1.60	0.111	-1.23	0.127
Having social security						
Yes						
No	-0.886	0.4	-2.23	0.026	-1.66	-0.106

As evident from Table (3), household characteristics such as education status of the household head, had no significant effect on poverty. Access to services and infrastructures had also no significant impact on the likelihood of moving out of poverty.

The study also found that the propensity to move out of poverty consistently increased as the age of household heads increased. The higher vulnerability to poverty of younger household heads may be

40/ The Determinants of Poverty in Informal Settlement ...

partly related to conclusions by previous studies about the accumulated survival advantages and resilience of older heads over the life course in a generally debilitating and challenging economic environment (Mberu, 2006; Mberu et al., 2014).

It was also found that the probability of being poor is lower among self-employed than among salaried workers. This finding is consistent with D' Ambrosio et al. (2011) states which was conducted in five European countries. They found a U-shaped relationship between being self - employed and the probability that he will be considered as poor.

The effect of household size on household welfare can be either positive or negative and depends in part on the degree of rivalry in consumption among household members. If all consumption is public, every marginal increase in consumption benefits all household members. An example of such consumption could be increased security within the community or provision of a tap providing clean drinking water. In contrast, where all consumption is private (with only one person benefiting from any consumption activity), only one member's welfare increases and not the entire household. An example might be nutrition. In such a case, household welfare decreases with household size. Moreover, there may be synergies from larger household size, both in production and consumption activities. Working in groups can be more productive through pooling tools and experience, or through higher motivation. Returns to scale can have an impact on household welfare via household size for a given degree of rivalry in production and consumption. Thus, this variable will be included in determining whether rivalry or scale effect dominates in affecting household welfare (Babu et al., 2014). In the present study, a greater household size would result in an increased likelihood of being poor, which possibly indicates that the scale effect is dominating over the rivalry effect.

The probability of being poor is also higher when the ratio of workers in household increased. Even though this finding is not expected, it must be considered that working in that special part of informal settlements - with characteristics like informal, temporary and low income works—would result in uneven and low earnings. It appears that the amount of total earning maybe were not satisfied their needs. This finding contradict with Leu (1995) which found that families with more earners are less likely to be poor.

It was expected that owning house would improve household welfare. We found evidence that increase in owned house can reduce the likelihood that the household is poor. This is the asset effect on household welfare. Our finding is in line with some studies like Suresh et al. (2014) which find that Land owned (as a measure of asset) can be directly linked to household welfare.

The government has social insurance programs that are provided universally to all those who meet relatively minor employment thresholds. The programs insure against risks of unemployment, disability, and old age. As noted by Ben-Shalom et al. (2011), these programs have a strong impact on poverty, purely because of the size of the benefits and the number of recipients. In this study it was found that having social security would decrease the probability of being poor in studied area.

4.5 Marginal Effects

Marginal effects are popular in some disciplines (e.g. Economics) because they often provide a good approximation to the amount of change in Y that will be produced by a 1-unit change in X_k . With binary dependent variables, they offer some of the same advantages that the Linear Probability Model (LPM) does – they give you a single number that expresses the effect of a variable on $P(Y=1)$.

42/ The Determinants of Poverty in Informal Settlement ...

Table 4: Marginal Effects Estimates of Poverty Determinants

variable	dy/dx	Std. Err	z	P> z	[95% C.I.]	x
Age of household head	-0.003	0.0014	-2.63	0.009	-0.0064 -0.001	41.6
Self – employed	-0.076	0.026	-2.9	0.004	-0.127 -0.024	0.61
Educational Status	-0.004	0.010	-0.4	0.7	-0.023 0.0157	3
Household size	0.014	0.003	4.5	0.000	0.008 0.02	16.45
Access to services and infrastructures	-0.0003	0.0021	-0.17	0.86	-0.004 0.003	15.44
Ratio of worker in household	0.470	0.14	3.36	0.001	0.19 0.745	0.6
Ownership of house	-0.047	0.029	-1.63	0.104	-0.105 0.01	0.55
Having social security	-0.07	-0.027	-2.55	0.011	-0.123 -0.016	0.68

Based on results, the probability of being poor will be reduced by 0.003 units as the age of household head increases by one year. Also the chance of being poor will be declined by 0.07 units as the status of employment of household head changes from being employed to self – employed.

Household size is positively related to being poor and if the household size increased by one unit, the likelihood of being poor will be increased by 0.014 units.

The study also found that the propensity to move out of poverty consistently increased by 0.47 units as the ratio of worker in household increased by one unit.

We also found evidence that if households owned their houses (against renting the house) the likelihood of being poor will be declined by 0.047 units.

Eventually, as family have any kind of social security (against do not have it), the probability of being poor will be reduced by 0.07 units.

5. Conclusion

As outlined in the literature, the determinants of poverty are derived from individual, family, and social structures. In this study, we use the cross section data to examine the determinants of household poverty in an informal settlement district in 2016. Our study covered 220 households who lived in Shahid Ghorbani quarter. Based on

Orshansky Poverty Thresholds, 86 per cent of these informal settlers live in poverty condition.

Significant relationships were observed between poverty and characteristics like the age of household head, being self-employed, household size, the ratio of worker in household, ownership of house and having social security, while Access to services and infrastructures had also no significant impact on the likelihood of moving out of poverty.

Precisely, the study finds a U-shaped relationship between poverty and the age of household head, as well as between poverty and being self-employed. It was also found a U-shaped relationship between poverty and home ownership and also between poverty and having social security.

But a greater household size – as a good proxy for economic dependency- would result in an increased likelihood of being poor. It was also observed that a greater number of ratio of worker in household would decrease household welfare.

Hence it can be concluded that, if the household head is older and self-employed, the likelihood of being poor is gradually diminished. Also if the family members have some kind of social security or they owned their house, household welfare would improve. But increasing in Household size and Ratio of worker in household would decrease household welfare.

References

Asian Development Bank. (2001). Participatory Poverty Assessment in Cambodia. Retrieved from <https://www.adb.org/>.

Azeem, M. M., Muger, A. W., & Schilizzi, S. (2016). Poverty and Vulnerability in the Punjab, Pakistan: A Multilevel Analysis. *Journal of Asian Economics*, 44, 57-72.

Babu, C. B., Gajanan, S. N., & Sanyal, P. (2014). Measurement and Determinants of Poverty -Application of Logistic Regression Models. *Food Security, Poverty and Nutrition Policy Analysis* (361-415). London, UK: Elsevier Publication.

44/ The Determinants of Poverty in Informal Settlement ...

Barati, J., Soltani, S., Foroogh-Zadeh, S., & Razaghian, F. (2017). The Role of Human Capital Factors on Poverty in Informal Settlement: Informal Settlement of Sheikh-Hasan, Mashhad City, Iran. *Journal of Sustainable Development*, 10(4), 21-30.

Ben-Shalom, Y., Moffitt, R. A., & Scholz, J. K. (2011). An Assessment of the Effectiveness of Anti-poverty Programs in the United States. *The Johns Hopkins University, NBER Working Paper*, Retrieved from <https://www.econstor.eu/bitstream/10419/49863/1/657590711.pdf>.

Benson, T., Chamberlin, J., & Rhinehart, I. (2005). An Investigation of the Spatial Determinants of the Local Prevalence of Poverty in Rural Malawi. *Food Policy*, 30(5–6), 532–550.

Chen, K. M., & Wang, T. M. (2015). Determinants of Poverty Status in Taiwan: A Multilevel Approach. *Social Indicators Research*, 123(2), 371–389.

D'Ambrosio, C., Deutsch, J., & Silber, J. (2011). Multidimensional Approaches to Poverty Measurement: an Empirical Analysis of Poverty in Belgium, France, Germany, Italy and Spain, Based on the European Panel. *Applied Economics*, 43(8), 951–961.

Dartanto, T., & Nurkholis. (2013). The Determinants of Poverty Dynamics in Indonesia: Evidence from Panel Data. *Bulletin of Indonesian Economic Studies*, 49(1), 61-84.

Glewwe, P. (1991). Investigating the Determinants of Household Welfare in Côte d'Ivoire. *Journal of Development Economics*, 35(2), 307-337.

Hulme, D., & Shepherd, A. (2003). Conceptualizing Chronic Poverty. *World Development*, 31(3), 403–423.

Khudri, M. M., & Chowdhury, F. (2013). Evaluation of Socio-economic Status of Households and Identifying Key Determinants of Poverty in Bangladesh. *European Journal of Social Sciences*, 37(3), 377-387.

Leu, C. H. (1995). Effects of Gender and Marital Status on Household Poverty in Taiwan. *Journal of Women and Gender Studies*, 6, 25–54.

Ligtvoet, W., Hilderink, H., Bouwman, A., Van Puijenbroek, P., Lucas, P., & Witmer, M. (2014). *Towards a World of Cities in 2050 – an Outlook on Water-related Challenges*. The Hague: PBL Netherlands Environmental Assessment Agency.

Millennium Ecosystem Assessment. (2005). *Millennium Ecosystem Assessment Synthesis Report*. Washington, DC: Island Press

Mberu, B. (2006). Internal Migration and Household Living Conditions in Ethiopia. *Demographic Research*, 14(21), 509–540.

Nightingale, CH. (2012). *Segregation: A Global History of Divided Cities*. Chicago: University of Chicago Press.

Ravallion, M. (1998). Poverty Lines in Theory and Practice. Retrieved from <http://documents.worldbank.org/curated/en/916871468766156239/Poverty-lines-in-theory-and-practice>.

Rupasingha, A., & Goetz, S. J. (2007). Social and Political Forces as Determinants of Poverty: A Spatial Analysis. *The Journal of Socio-Economics*, 36(4), 650–671.

Selim, S. (2016). Socio-Economic Determinants of Poverty in Turkey: Panel Logit Approach. *International Journal of Statistics & Economics*TM, 17(3), 71-84.

Uchenna, B. M., Ciera, J. M., Elungata, P., & Ezeh, A. C. (2014), Patterns and Determinants of Poverty Transitions among Poor Urban Households in Nairobi, Kenya. *African Development Review*, 26(1), 172–185.

UN-Habitat. (2005). *Responding to the Challenges of an Urbanizing World 2005*. Nairobi, Kenya. Retrieved from <https://unhabitat.org/>.

United Nations. (2002). *World Urbanization Prospects, the 2001 Revision Data Tables and Highlights*; Population Division. Retrieved from <http://www.un.org/esa/population/publications/wup2001/wup2001dh.pdf>.

46/ The Determinants of Poverty in Informal Settlement ...

United Nations Development Programme. (2014). Barriers and Opportunities at the Base of the Pyramid, the Role of the Private Sector in Inclusive Development. Retrieved from http://www.undp.org/content/undp/en/home/librarypage/poverty-reduction/private_sector/barriers-and-the-opportunities-at-the-base-of-the-pyramid---the-.html

World Bank. (2000). World Development Report (WDR) 2000/2001: Attacking Poverty. Retrieved from <https://www.openknowledge.worldbank.org/handle/10986/11856>.