Building Logistic Regression Model to Identify Key Determinants of Poverty in Palestine[*]

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Abstract: This paper aims to identify the key determinants of poverty which affect the poverty status of a household in Palestine since the implementation of the economic reform program. A logistic regression model will be used to identify the level of poverty faced by a household. We find that the chance of a household tripping to poverty increased due to large number of children less than 18 years, unemployed adults, and large dependency ratio. Moreover, refugee status, residential region, non-skilled or semi-skilled employee, and inadequate housing and sanitation facilities also play a significant role for increasing the likelihood of being a poor.

Keywords: Poverty, Household, Standard of living; Logistic regression; multicollinearity; classification accuracy rate.

بناء نموذج انحدار لوجستي لتحديد المحددات الرئيسة للفقر في فلسطين

ملخص: يهدف البحث إلى التعرف على المحددات الرئيسة للفقر والتي تؤثر في أوضاع العائلات الفلسطينية الفقيرة وذلك منذ تطبيق برنامج الإصلاح الاقتصادي. سيتم استخدام نموذج الانحدار اللوجستي لتحديد مستويات الفقر للعائلات الفلسطينية. لقد تبين لنا بأن احتمالية الفقر تتزايد عند العائلات التي لديها عدد كبير من الأفراد تحت سن ثمانية عشر عاماً ، ارتفاع معدلات البطالة عند البالغين، نسبة الإعالة الكبيرة. بالإضافة إلى ذلك، حالة المواطنة، المنطقة السكنية، العمالة شبه الماهرة وغير الماهرة، و ظروف وتسهيلات السكن غير الملائمة كلها تلعب دور رئيس في تزايد احتمالية أن تصبح العائلة فقيرة.

Introduction and Literature

The population of Palestine was put at 3.94 million in 2009, with 62% living in West Bank and 38% living in Gaza Strip, (UNCTAD, 2010). The population has been growing at approximate between 3% and 4% per year. The Palestinian economy is characterized by structural imbalances, and high external dependence, this owes much to the lengthy Israeli occupation, which blocked export market and deterred investment in production capacity. With high population growth rate and lack of business opportunities due to long occupation period and restriction policies, it's hardly for thousands of Palestinian labor force to find suitable work. During the first Intifada 1987-1994 and after Oslo peace accord in 1993, labor flow to Israel has fallen sharply, this represent a fifth of the total work force in 1998. The economy is thus highly dependent on the earning from this group, and also the income flows from the Palestinian factors of production abroad.

The limited capacity of the Palestinian economy and the continuous and long periods of border closures meant that the economy is highly dependent on import, and has chronic and increasing trade deficit (Cottier et al, 2000).

In 2009 the total imports of goods and services were equivalent to $ 4,541 million, on average 68.8% of GDP, exports, by contrast, were equivalent to $620 million, on average 9.4%, and the trade balance were equivalent to -59.4% of 2009 GDP (UNCTAD, 2010). Annex (1) represents that the economic performance of the occupied Palestinian territory continued to perform well below potential in 2009, per capita gross domestic product (GDP) remains more than 30 percent lower than its level 10 years ago. The estimated 6.8 per cent GDP growth – 1 per cent in Gaza and 8.5 per cent in the West Bank – and the smaller improvement in the West Bank per capita income should be cautiously viewed in the context of the low base of 2008 GDP, the continuing isolation of the Palestinian economy from regional and global markets, the 34 per cent decline in per capita GDP during the preceding eight years, eroded productive base, and shrinking access to land, and natural and economic resources. With Gaza under an almost complete blockade, growth in the West Bank was driven mainly by unprecedented aid inflows.

However, the restrictions on the movement of Palestinian goods and labor, and the destruction of much of the productive base, substantially reduced the economic benefits of this massive aid and limited it to the short term. The stifling of Palestinian productive activities implies that the potential multiplier

and second round effects of the large aid and government expenditure could not materialize, especially with resources leaking into the Israeli economy as reflected by the fact that the $2.9 billion trade deficit with Israel was more than 80 per cent of net current transfers in 2008,(UNCTAD 2010). This situation have plunged the Palestinian economy into deep crisis, causing dramatic decline in living standard, the unemployment rate reach 30.1% in 2009, and thus Poverty rate reached 46% in west Bank and 70% in Gaza Strip (Palestinian statistical book 2010).

Abuka et al., 2007 used logistic regressions to 'predict' poverty outcomes on the basis of a range of explanatory variables and found significant 'effects' of education.

Research Problem

To identify the key determinants of poverty which affect the poverty status of a household in Palestine.

Research Methodology

The researchers will use the descriptive and inferential analysis for the raw data which obtained from Ministry of Social Affairs in Palestine in 2008. The researchers would use a logistic regression model in order to identify the level of poverty faced by a household. The Data analysis will be made utilizing the Statistical Package for the Social Sciences (SPSS).

Research Importance:

The importance of the research is to determine the most important social economical variables that might be used to identify the poverty status of a household in Palestine. Which will help the government and NGO's to distribute the essential aids to the poor households. Consequently, the research results will help the decision makers to develop some future strategic planning to decrease the poverty rate in the Palestinian society.

Important Definitions

There are many definitions of poverty, depending on the context of the situation and the views of the person giving the definition.

Poverty has many faces, such as hunger, lack of shelter, being sick and not being able to see a doctor, not being able to go to school, not having a job, fear of the future, living one day at a time. Poverty is losing a child to illness brought about by unclean water. Poverty is powerlessness, lack of representation and freedom. Poverty has many features ; changing from place to place and cross time, and has been described in many ways. Poverty is'

inability to retain a minimal standard of living, measured in terms of basic consumption needs or some income required for satisfying them' (Imoisili, 2006).

Fundamentally, poverty is a denial of choices and opportunities, a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and clothe a family, not having a school or clinic to go to, not having the land on which to grow one's food or a job to earn one's living, not having access to credit. It means insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living in marginal or fragile environments, without access to clean water or sanitation, (Gordon**,** 2005).

Poverty is usually measured as either absolute or relative poverty (the latter being actually an index of income inequality). Absolute poverty refers to a set standard which is consistent over time and between countries. The World Bank defines extreme poverty as living on less than US $1.25 (PPP) per day, and moderate poverty as less than $2 a day (but note that a person or family with access to subsistence resources, e.g. subsistence farmers, may have a low cash income without a correspondingly low standard of living - they are not living "on" their cash income but using it as a top up). It estimates that "in 2001, 1.1 billion people had consumption levels below $1 a day and 2.7 billion lived on less than $2 a day.

Various definitions of poverty, corresponding to various poverty lines are used in West Bank and Gaza Strip. As emphasized by National Commission of Poverty Alleviation,(NCPA), any poverty line- weather relative or absolute- is ultimately 'arbitrary' because it's 'essentially a political decision'(Palestine poverty report,1998). An official poverty line was setup by the NCPA in 1997. Although initially derived from a relative concept of poverty, it was used in subsequent years as an absolute measure of poverty. The poverty line is based on the average consumption of essential goods, (food, clothing, housing, housekeeping supplies, utensils and bedding, personal and health care, education and transportation (PCBS and World Bank, 2004).

The official Palestinian poverty line is corresponded to New Israeli Shekel (NIS) 1,800 (approximately $410) per month for a family of two adults and four children's (PCBS, 2000). It's important to note here the exchange rate

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in the year 2000 was 1$ = NIS 4.39 today in 2011 the average exchange rate is 1$ = NIS 3.55 only, which means the poverty line increased from $410 to $507.

Research Methodology

Logistic regression is the most important model for categorical response data. It is used increasingly in a wide variety of applications. Early uses were in biomedical studies but the past 20 years have also seen much use in social science research and marketing.. Recently, logistic regression has become a popular tool in business applications. Some *credit-scoring* applications use logistic regression to model the probability that a subject is credit worthy, (Agresti, 2007).

Logistic regression is used to analyze relationships between a dichotomous dependent variable and metric or dichotomous independent variables. Logistic regression combines the independent variables to estimate the probability that a particular event will occur, i.e. a subject will be a member of one of the groups defined by the dichotomous dependent variable.

The Logistic regression model is often constructed to predict the group with higher numeric code. If responses are coded 0 for No and 1 for Yes, then the model will predict membership in the Yes category. Logistic regression analysis requires that the dependent variable be dichotomous (binary), and it requires that the independent variables be metric or dichotomous. Logistic regression does not make any assumptions of normality, linearity, and homogeneity of variance for the independent variables. Because it does not impose these requirements, it is preferred to discriminate analysis when the data does not satisfy these assumptions. Regarding the sample size, the minimum number of cases per independent variable is 10, using a guideline provided by (Hosmer et al. , 2008).

There are several methods available for including variables in the regression equation: the most common one is the stepwise method in which variables are selected in the order in which they maximize the statistically significant contribution to the model. For all methods, the contribution to the model is measured by Chi-Square model is a statistical measure of the fit between the dependent and independent variables. Logistic regression uses maximum-likelihood estimation to compute the coefficients for the logistic regression equation. A model that fits the data well will have a small likelihood value. A perfect model would have a likelihood value of zero.

The overall test of relationship among the independent variables and groups defined by the dependent is based on the reduction in the likelihood values for a model which does not contain any independent variables and the model that contains the independent variables. This difference in likelihood follows a chi-square distribution, and is referred to as the Chi-Square model. The significance test for the model chi-square is our statistical evidence of the presence of a relationship between the dependent variable and the combination of the independent variables.

Like ordinary regression, logistic regression extends to models with multiple explanatory variables. For instance, the model for $p(\mathbf{x}) = P(Y = 1)$ at values $\mathbf{x} = (x_1, x_2, \mathbf{K}, x_n)$ of p predictors is

$$p(\mathbf{x}) = \frac{\exp(a + b_1 x_1 + b_2 x_2 + \mathbf{L} + b_p x_p)}{1 + \exp(a + b_1 x_1 + b_2 x_2 + \mathbf{L} + b_p x_p)}.$$

The parameter b_i refer to the effect of x_i on the log odds that Y =1, controlling the other x_j.

Hashmi et al. (2008) showed that by analyzing the data by using binary logistic model, the chance of a household tripping to poverty increased due to increase in household size, dependency ratio, while, education, value of livestock, remittances and farming decreased the likelihood of being a poor. Moreover, the socio-economic opportunities as represented by the availability of infrastructure in the residential region also play a significant role in the level of poverty faced by a household.

Study variables:

The dependent variable: The poverty status

$$\text{Poverty Status} = \begin{cases} 1 \text{ Below Poverty Line} \\ 0 \text{ Above Poverty Line} \end{cases}$$

By using Stepwise regression method, 21 independent variables out of 32 variables remain for the analysis. The independent variables are classified into four categories are shown in Annex (2).

Data Descriptive

The household data set used in this analysis was 852 households in the West Bank and Gaza Strip. The raw data was received from Ministry of Social Affairs in Palestine in 2008. The sample data was geographically distributed

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between directorates (5 in Gaza Strip and 12 in West Bank). The directorates are *Gaza Strip*: Gaza, North Gaza, Deir Al Balah, Khan Younis, and Rafah, *West Bank*: Hebron, Beith Lehem ,Nablus, Jinin, TolKarem, Jericho, Ramallah, Qalqilia, Salfeet, Jerusalem, Yatta, and Tobas. 70% of sample was in Gaza Strip and the remaining 30% was in West Bank, due to high population density in the Gaza Strip and considering the poverty map of Palestine. The data was rearranged and modified before processing to ensure compatibility checkup and accuracy of analysis. The collected data was analyzed by using binary logistic regression.

The statistical analysis shows that 433 (53.3%) males households are below the poverty line and 11 (27.5%) females households are below the poverty line. Table (1) shows the relationship between number of children less than 18 years and the poverty status. For the households that are below the poverty line, the results show that 29.2%, 60.0%, and 85.6% of these households have 3 or less, 4-6 and 7 and above children with age less than 18 years old, respectively. Chi-square test result (Chi-square=134.05, P-value <0.001) indicates that there is a significant relationship between poverty status and number of children less than 18 years. We conclude that the chance of a household tripping to poverty increased due to increase in number of children less than 18 years. There was higher chance of being poor for a household if they had large number of children less than 18 years.

Table (1): Poverty status and No. of children less than 18 years

Poverty Status		No. of children less than 18 years			Total	Chi-Square	P-value
		0-3	4-6	7+			
Above Poverty Line	N	228	162	18	408		
	%	70.8%	40.0%	14.4%	47.9%		
Below Poverty Line	N	94	243	107	444		
	%	29.2%	60.0%	85.6%	52.1%		
Total	N	322	405	125	852		
	%	100.0%	100.0%	100.0%	100.0%	134.05	< 0.001*

* The relationship is statistically significant at 0.01 level

Table (2) shows the relationship between number of working adults (18 years and above) and the poverty status. For the households that are below the poverty line, the results show that 56.4%, 40.5%, 37.5% and 0.0% of these

households have 0, 1, 2, and 3 working adults, respectively. Chi-square test result (Chi-square=20.10, P-value <0.001) indicates that there is a significant relationship between poverty status and number of working adults (18 years and above). We conclude that the chance of a household tripping to poverty decreased due to increase in number of working adults. There was smaller chance of being poor for a household if they had large number of working adults (18 years and above).

Table (2): Poverty status and No. of working adults (18 years and above)

Poverty Status		No. of working adults (18 years +)				Total	Chi-Square	P-value
		0	1	2	3			
Above Poverty Line	N	276	119	10	3	408	20.10	< 0.001*
	%	43.6%	59.5%	62.5%	100.0%	47.9%		
Below Poverty Line	N	357	81	6	0	444		
	%	56.4%	40.5%	37.5%	0.0%	52.1%		
Total	N	633	200	16	3	852		
	%	100.0%	100.0%	100.0%	100.0%	100.0%		

* The relationship is statistically significant at 0.01 level

Estimation of Poverty Logistic Model
Sample size – ratio of cases to variables
The minimum ratio of valid cases to independent variables for logistic regression is 10 to 1, with a preferred ratio of 20 to 1. In this analysis, there are 852 valid cases and 33 independent variables. The ratio of cases to independent variables is 25.8 to 1, which satisfies the minimum requirement. In addition, the ratio of 25.8 to 1 satisfies the preferred ratio of 20 to 1.

Overall Relationship between Independent and Dependent Variables
The presence of a relationship between the dependent variable and combination of independent variables is based on the statistical significance of the model chi-square at step 1 after the independent variables have been added to the analysis.

The SPSS output for logistic regression begins with output for a model that contains no independent variables. It labels this output "Block 0: Beginning Block" and (if we request the optional iteration history) reports the initial -2 Log Likelihood, which we can think of as a measure of the error associated

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trying to predict the dependent variable without using any information from the independent variables. The initial -2 log likelihood is 1179.601. After the independent variables are entered in Block 1, the -2 log likelihood is again measured (277.592 in this analysis).

The difference between ending and beginning -2 log likelihood is the model chi-square that is used in the test of overall statistical significance.
In this analysis, the probability of the model chi-square 902.009 (1179.601 – 277.592) was <0.001, less than the level of significance of 0.01. The null hypothesis that there is no difference between the model with only a constant and the model with independent variables was rejected. The existence of a relationship between the independent variables and the dependent variable was supported.

Detection of Multicollinearity Problem
Multicollinearity in the logistic regression solution is detected by examining the standard errors for the b coefficients. A standard error larger than 2.0 indicates numerical problems, such as multicollinearity among the independent variables, zero cells for a dummy-coded independent variable because all of the subjects have the same value for the variable, and 'complete separation' whereby the two groups in the dependent event variable can be perfectly separated by scores on one of the independent variables. Analyses that indicate numerical problems should not be interpreted. None of the independent variables in this analysis had a standard error larger than 2.0.

Classification Using the Logistic Regression Model
The independent variables could be characterized as useful predictors distinguishing respondents who are below poverty line from respondents who are above poverty if the classification accuracy rate was substantially higher than the accuracy attainable by chance alone. Operationally, the classification accuracy rate should be 25% or more high than the proportional by chance accuracy rate

The proportional by chance accuracy rate was computed by first calculating the proportion of cases for each group based on the number of cases in each group in the classification table at Step 0 (before any independent variables are included). The proportion in the "below poverty line" group is 444/852 = 0.521. The proportion in the "No" group is 408/852 = 0.479. Then, we square and sum the proportion of cases in each group $(0.479^2 + 0.521^2 = 0.501)$. 0.501 is the proportional by chance accuracy rate.

The accuracy rate computed by SPSS was 93.3% which was greater than the proportional by chance accuracy criteria of 62.6% (1.25 x 50.1% = 62.6%). Therefore, the criterion for classification accuracy is satisfied.

Determinants of Poverty

The complete result of the logistic regression model to identify the key determinants of poverty is shown in Annex (3). We discuss the relationships of some individual independent variables to dependent variable as follows.

Category 1: Variables of Household Facts

All the variables of household facts category are statistically positively correlated to the poverty status. For example, the variable "*Number of children less than 18 years*", the probability of the Wald statistic for the variable was less 0.001. This supports the relationship that "respondents who were below poverty line were more likely to have more children less than 18 years". The value of *Exp(B)* was 8.127 which implies that a one unit increase in number of children less than 18 years increased the odds that respondents who were below poverty line by approximately 8 times that the respondents who were above poverty line. The results revealed that likelihood event of being poor were more if a household had large number of children less than 18 years. For the other variables in household facts category, the respondents who were below poverty line were more likely to have more unemployed adults in the household, refugee, work in Gaza strip, cooking source of energy is cool or wood and there is no heating source of energy.

There are different reasons for that, first, children are less likely to earning an income than working age adults, due to that, poverty significantly are higher in large households than in small households. Second, the lower level of income received by household, because of the weakness performance of Palestinian economy, this could be as a result of lower levels of productive investment and infrastructure in Palestinian area in general and Gaza Strip in particular, because of that, the unemployment rate is higher in Gaza Strip, so, individuals living in Gaza Strip are far more likely to be poor than individual living in West Bank. It is also possible that part of the seemingly higher poverty rates in the Gaza Strip are actually overestimated because of the lower price levels found in Gaza Strip relative to the West Bank. Third, the poverty rate among refugee household is slightly higher than non- refugee household (PCBS and Word Bank, 2004).

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Category 2: Variables of Household Housing
The two variables of household housing category are statistically positively correlated to the poverty status. For example, the variable "Dependency *ratio* ", the probability of the Wald statistic for the variable was less 0.001. This supports the relationship that "respondents who were below poverty line were more likely to have more dependency ratio. The value of *Exp(B)* was 9.0 which implies that a one unit increase in dependency ratio increased the odds that respondents who were below poverty line by approximately 9 times that the respondents who were above poverty line. The results revealed that likelihood event of being poor were more if a household had large dependency ratio. For the other variables in household housing category, the respondents who were below poverty line were more likely to have dwelling is rented.

Category 3: Variables of Household Working Conditions
All the variables of household working conditions category are statistically negatively correlated to the poverty status. For example, the variable " *Number of working adults (18 years and above)*" the probability of the Wald statistic was 0.016. This supports the relationship that "respondents who were below poverty line were more likely to have less working adults". The value of *Exp(B)* was 0.419 which implies that a one unit increase in number of working adults decreased the odds that the respondents were below poverty line by 58.1%.

For the other variables in household working conditions category, the respondents who were below poverty line were more likely to be non-skilled or semi-skilled employee, working sector is not NGO's, and working status is part time employee.

The variables regarding household working present very important economic facts, such as, household with more working adults, skilled, high post in government and private sector and those working in NGO's are statically negatively correlated to the poverty status. While most of the non-skilled and some semi-skilled workers who lost their jobs due to Israel polices like closures, restriction of labor movement and decreasing the quantities of row materials requirement to the production sectors in West Bank and Gaza Strip in particular, tens of thousands lost their income, and rising the poverty rate among this group, results are very clear in Gaza Strip due to 2007 economic and political siege.

Category 4: Variables of Household Home Facilities

All the variables of Household Home Facilities category are statistically negatively correlated to the poverty status. For example, the variable "*Owns Telephone*", the probability of the Wald statistic was less 0.001. This supports the relationship that "respondents who were below poverty line were more likely to not own telephone. The value of *Exp(B)* was 0.019 which implies that a one unit increase in own telephone decreased the odds that the respondents were below poverty line by 98.1%.

Similarly, for the other variables in household home facilities category, the respondents who were below poverty line were more likely do not own bathroom access, own refrigerator, washing machine, cloth drier, home library, TV, telephone, mobile phone, or satellite.

These results prove that the lack performance of Palestinian economy and different restriction policies adopted by Israel has increased the unemployment rate and losing income, thousands of household lost the ability to own different necessary home facilities.

Conclusion

This study has attempted to look into determinants of poverty in Palestine by using the data from Ministry of Social Affairs in Palestine in 2008. The main purpose of this study was to explore the factors which determine the poverty status. A logistic regression model was estimated with a wide range of household's characteristics (explanatory variables) to explain the determinants of poverty status.

The results showed that the chance of a household being poor increased due to its household size, dependency ratio, and residential region (West bank and Gaza Strip). The probability of being poor increased with a greater number of unemployed adults of households and large number of children less than 18 years. Moreover, refugee status, non-skilled or semi-skilled employee, and inadequate housing and sanitation facilities also play a significant role for increasing the likelihood of being a poor.

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Annex (1) : Palestinian Economy (West Bank and Gaza Strip)[a] Key indicators, selected years

	1995	1999	2002	2004	2006	2007	2008	2009
Macroeconomic performance								
Real GDP growth (%)	6.0	8.8	-13.3	12.0	-5.2	5.4	5.9	6.8
GDP ($ mil)	3,220	4,179	3,433	4,198	4,594	5,147	6,108	6,600
Gross national income (GNI) ($ mil)	3,699	4,932	3,656	4,430	5,286	5,913	7,019	7,326
Gross national disp. Income (GNDI) ($ mil)	4,099	5,306	4,708	5,151	6,777	8,281	10,437	10,527
GDP per capita ($)	1,400	1,493	1,125	1,317	1,363	1,337	1,698	1,782
GNI per capita ($)	1,608	1,763	1,199	1,390	1,489	1,494	1,952	1,978
Real GNI per capita growth (%)	0.7	4.1	-16.7	9.1	-5.9	2.0	2.9	0.2
Population and labour								
Population (mil)[a]	2.34	2.96	3.23	3.41	3.61	3.72	3.83	3.94
Unemployment (%)[b]	32.6	21.7	41.3	32.5	29.6	27.9	31.7	30.1
Total employment (thousands)	41.7	588	477	578	665	667	648	717
In public sector	51	103	125	131	152	146	160	181
In Israel and settlements	68	135	49	50	64	63	75	73
Fiscal balance (% of GDP)								
Revenue net of arrears/clearance withheld	13.2	23.9	8.5	25.0	25.0	24.7	25.7	24.2
Current expenditure	15.3	22.6	29.0	36.4	49.6	48.6	47.2	48.2
Total expenditure	25.6	29.9	35.4	37.1	55.3	50.5	56.8	51.0
Overall balance-cash basis	-12.3	-6.1	-27.0	-12.1	-30.3	-25.8	-31.2	-26.8
External trade								
Net current transfers ($ mil.)	400	399	1,096	734	1,491	2,368	3,418	3,201
Exports of goods and services ($ mil)	499	1,039	522	644	533	535	599	620
Imports of goods and services ($ mil)	2,176	3,567	2,876	3,479	4,478	3,541	4,105	4,541

Trade balance (% of GDP)	-52.1	-60.5	-68.6	-67.5	-64.1	-58.4	-57.4	-59.4
Trade balance with Israel ($ mil)	-922	-1,598	-886	-1,500	-1,887	-2,259	-2,888	-2,558
Trade balance with Israel (% of GDP)	-28.6	-38.2	-25.8	-35.7	-41.1	-43.9	-47.3	-38.8
PA trade with Israel/Total PA trade (%)[c]	92.3	62.6	48.9	60.6	72.0	91.7	95.5	76.3
PA trade with Israel/Total Israeli trade (%)[c]	4.3	3.9	2.1	2.4	2.4	2.7	2.9	3.1

Sources: Palestinian Central Bureau of Statistics (PCBS), World Bank, International Monetary Fund (IMF), ILO and Israel Central Bureau of Statistics.

[a] Due to PCBS inability to access East Jerusalem, data exclude East Jerusalem, with the exception of population figures.

[b] According to the ILO "relaxed definition", unemployment rates include "discouraged workers".

[c] Palestinian and Israeli trade data refer to goods, and non-factor an factor services.

Annex (2): The Independent Variables

Category	Variable	Description	Code
Household Facts	Child	No. of children less than 18 years	Continuous variable
	Unemployed	No. of unemployed adults in the household	3-6=1, else=0
	Hhrefug	Refugee status of house holds head	Refugee=1, No=0
	WorkP	Work place in the west bank or Gaza strip	West Bank=1 Gaza Strip =0
	Cocking	Cocking Source of Energy	Cool/wood=1, else=0
	Heating	Heating Source of Energy	Available =1, No=0
Household Housing	Drent	Dwelling is rented	Rented=1, else=0
	Dependency	No. of family members /No. of bed room.	Continuous variable
Household Working	WorkAdult	No. of working adults (18 years +)	1-3=1, else=0

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Conditions	Occup	Occupation of household head	Skilled=1, else=0
	WorkS	Work sector for household head	NGOs=1, else=0
	W.Status	Head of household working status	Employee=1, else=0
Household Home Facilities	Bath	Bathroom access	Available=1, No=0
	Refrigerator	Owns refrigerator	Yes=1,No=0
	Washing	Owns washing machine	Yes=1, No=0
	Cloth	Owns Cloth drier	Yes=1, No=0
	library	Owns home library	Yes=1, No=0
	TV	Owns TV	Yes=1, No=0
	Telephone	Owns Telephone	Yes=1, No=0
	Mobile	Owns Mobile phone	Yes=1, No=0
	Satellite	Owns satellite	Yes=1, No=0

Annex (3): Results of Logistic Regression for Determinants of Poverty Status

Variables in the Equation.	B	S.E.	Wald	Sig.	Exp(B) or odd ratios	Type of Relationship
No. of children less than 18 years	2.095	0.208	101.613	< 0.001*	8.127	Positive
No of unemployed adults in the household	1.884	0.278	45.879	< 0.001*	6.578	Positive
Refugee status of house holds head	2.142	0.396	29.274	< 0.001*	8.512	Positive
Work place in the west bank or Gaza strip	2.668	0.453	34.653	< 0.001*	14.418	Positive

Cocking Source of Energy	5.515	0.606	82.891	< 0.001*	248.307	Positive
Heating Source of Energy	2.966	0.426	48.540	< 0.001*	19.414	Positive
Dwelling is rented	3.664	0.759	23.286	< 0.001*	39.000	Positive
Dependency	2.198	0.241	83.497	< 0.001*	9.007	Positive
No. of working adults (18 years +)	-0.870	0.361	5.809	0.016*	0.419	Negative
Occupation of household head	-5.489	1.026	28.608	< 0.001*	0.004	Negative
Work sector for household head	-3.099	0.595	27.148	< 0.001*	0.045	Negative
Head of household working status	-3.092	1.114	7.708	0.005*	0.045	Negative
Bathroom access	-5.711	1.510	14.305	< 0.001*	0.003	Negative
Owns refrigerator	-5.031	0.728	47.728	< 0.001*	0.007	Negative
Owns washing machine	-2.859	0.529	29.242	< 0.001*	0.057	Negative
Owns Cloth drier	-10.059	1.866	29.052	< 0.001*	0.000	Negative
Owns home library	-3.802	1.680	5.123	0.024*	0.022	Negative

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Owns TV	-2.049	0.594	11.880	0.001*	0.129	Negative
Owns Telephone	-3.981	0.558	50.909	< 0.001*	0.019	Negative
Owns Mobile phone	-5.022	0.586	73.441	< 0.001*	0.007	Negative
Owns satellite	-2.827	0.440	41.274	< 0.001*	0.059	Negative
Constant	-1.936	1.433	1.824	0.177	0.144	

* The variable is statistically significant at 0.05 probability level

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