Palestinian Household Willingness and Ability to Pay for Public Utilities in The West Bank: The Case of Electricity and Water

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Abstract

In spite of the fact that demand for water and electricity in the West Bank (WB) had increased sharply over the past decade, local providers of those services are suffering from continuous fiscal deficits. However, the collection efficiency of bills paid for water and electricity consumption is still below international standards. The main objective of this study is to assess the main factors behind the willingness and ability of Palestinian households to pay the bills for the two public utilities: Water and Electricity in the WB.

To achieve this objective, the degree of willingness and ability model have both been developed and estimated in a two equation model.

The empirical results suggest that both providers and consumers should be adopt and implement several areas of cooperation to improve the collection efficiency of bills. Furthermore, certain types of support packages should be carried out by the providers of water and electricity services in order to increase the area of efficiency in running public utilities in the WB .

keywords: Palestine; Public utilities; Water; Electricity; Willingness to pay; Ability to pay.

1. Introduction

This study investigates the determinants behind the Palestinian household expenditure on the two major public utilities: Water and Electricity. Data, available from the Palestinian Central Bureau of Statistics (PCBS), indicate that while household consumption of those commodities tends to increase over time, household expenditure on those utilities shows a declining trend, particularly since 2002. Concurrently, data available from suppliers of those utilities indicate that they suffer from accumulated huge fiscal deficits (PCBS, Standard of Living Reports, Several, Issues; PCBS, Water and Energy Statistics, Several Issues).

Suppliers of public utilities, Water and Electricity attribute the acceleration of fiscal deficits to abstention of many customers from paying bills. In fact, it has become obvious that while consumption of those utilities increased over time, revenues received by providers of public utilities showed a shrinking trend through focus on demand side. Due to unavailability of data on administrative,

operational and rehabilitation costs, the role of the supply side of public utilities providers will be examined indirectly (PCBS, Water and Energy Statistics, Several Issues 2010, 2011).

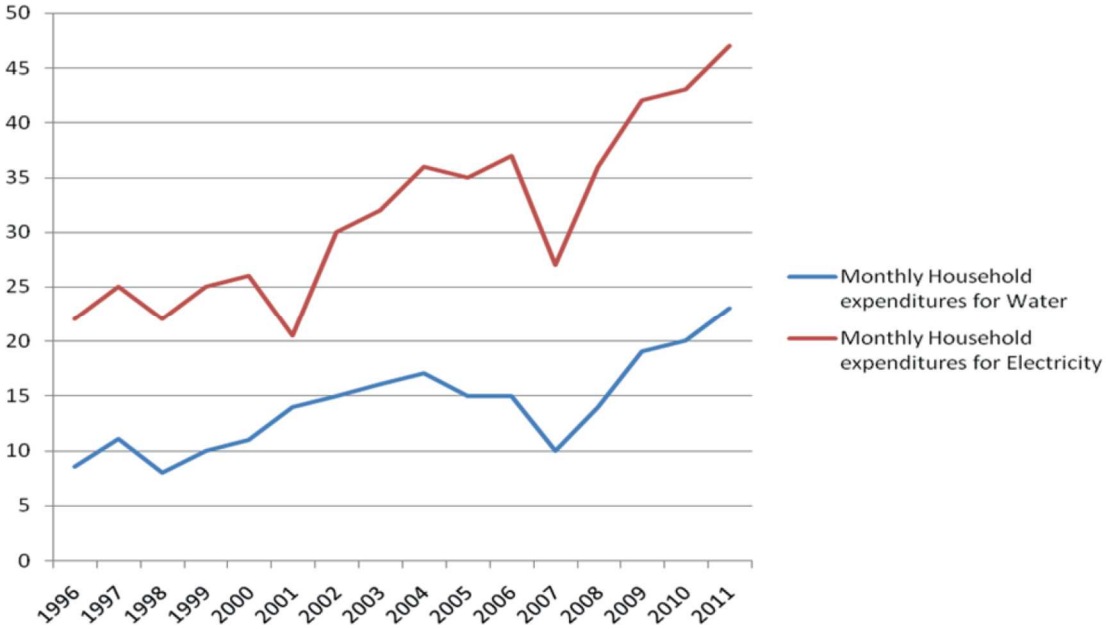
Although annual household income rose rapidly from $10,000 in 1996 to $12,000 in 1999, it showed a reverse trend in the years from 2000 until 2006. In 2002, this annual income dropped to $9,000, a decrease of 25% from its reported level in 1999. However, by the year 2007, household income showed a recovery; its level rose almost to that of 1996. Since then, annual household income rose to $ 12,726 in the years 2010 and 2011 (PCBS: National Accounts, Several Issues).

On the other hand, household consumption expenditures showed a similar trend to that of household annual income. It increased from $7,000 in 1996 and reached a peak of $9,122 in 2011. However, it showed some variation from one year to another in the period between 1999 and 2007. During the period 2000-2007, household consumption expenditures were below their level in 1999. Since the year 2008, household consumption expenditures tended to increase compared to their level in 1996-1999. Household consumption expenditures increased from $8412 in 2008 to $9122 in 2011; it constituted an annual increase of 15%. The reduction in household income and consumption expenditures during the period 2000-2007, compared to its levels, during 1996-1999 and 2008-2011, could be attributed to several factors as listed below:

i. Israeli restrictions imposed on Palestinian labor mobility. Since the outbreak of the Second Uprising in the WB, the number of Palestinians working in Israeli economic sectors had dropped by 70%. It went down from 200,000 in 1999 to less than 80,000 during 2008-2011. As a result, many workers lost their jobs during 2000-2007; the rate of unemployment tripled and reached (36%), compared to its level of (10%) in 1999.
ii. Transfer payments showed a significant drop since the year 2000, for most of the donor aids were allocated to humanitarian relief.

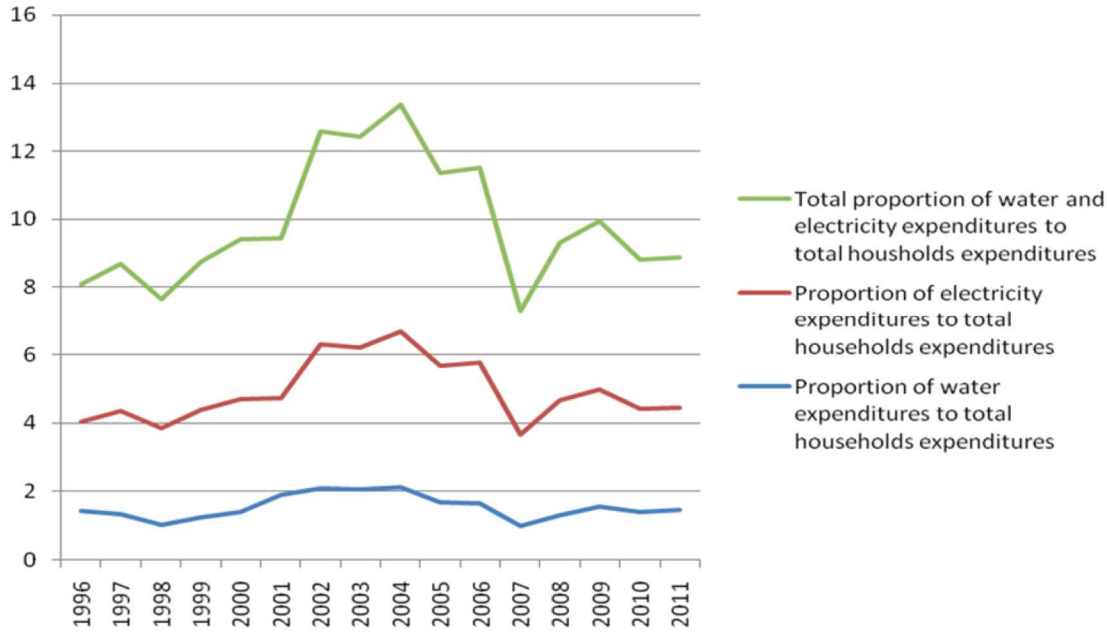
As a result, proportions of household expenditures on public utilities to household income have increased. Over the past decade, it rose from 8% in the year 1996 to 13% in 2004 and it rose up to 9% by the year 2011. Since water and electricity are considered life necessities, a decrease in household income exerted pressure on its consumption expenditures. Figure 1 shows an increasing trend of average monthly expenditures on water and electricity over the period 1996-2011, with some variations. In the year 2011, average monthly expenditures were $45 and $23 for water and electricity, respectively (PCBS, National Accounts, Several Issues).

Fig. 1 - Average monthly household expenditures on water and electricity in the West Bank (Jordanian Dinar. Jordan Dinar = 1.42 U.S Dollar)



Source: Palestinian Central Bureau of Statistics, Standard of Living, Several Issues.

Fig. 2 - Proportion of electricity and water expenditure to total household expenditures in percentages (%)



Source: Palestinian Central Bureau of Statistics, Standard of Living, Several Issues.

Since 2007, in Figure 1, sharp increases in average monthly expenditures on water and electricity services have been attributed to increases in the prices of these two services. In contrast, Figure 2, the proportion of average monthly expenditures on water and electricity services to average monthly household consumption expenditures showed a slight increase particularly in the years 2007-2011. This trend followed a decrease trend in the proportion of water and electricity expenditures to total household consumption expenditures, between 2003 and 2007. The green line, in Figure 2, shows the total proportion of household expenditures of electricity and water to total household consumption expenditures.

However, average monthly household expenditures (bills paid by customers) were on the decrease. Consequently, it was not surprising to find out that the gap between the value of consumption of public utilities and that of the bills paid by customers has widened over time. As a result, the fiscal deficit tended to increase. For example, the fiscal deficit of Jerusalem District Electricity Company went up from $30 million in the year 2000 to $100 million in the year 2011; an increase of 233%; with an annual growth rate of 13%. Similarly, the fiscal deficit of Palestinian Water Authority has doubled 15 times over the period 1996-2011. It had increased dramatically from $5 million in 1996 to $85 million in 2011 (PCBS, Standard of Living Reports, Several Issues; PCBS, Water and Energy Reports, Several Issues).

Data available on collection efficiency indicate that this ratio ranged between 69% in Tulkarem Governorate and 90% in Qalqilia. Collection efficiency is defined by the ratio of revenues received by Water Authority from customers to that of the current annual year billing. An increase of this ratio indicates an efficiency of collection in the value of bills issued by the Water Authority to customers. In Qalqilia and Ramallah, granting promotional discounts to customers is one of the policies practiced by water authorities to collect payments. (Palestinian Water Authority; Annual Regulation Report, Various Issues).

In addition, the administrations of public utilities have intensified investment in the public utilities, mainly water and electricity. Performance and efficiency improvement of infrastructure of both electricity and water sectors, through a decrease in loss rates, has been considered as the main reason behind intensification of investments in those sectors. The inefficiency has been manifested by increases in loss rates which reached over 30% of total utilities distributed from original supplier to final customers. In general, the value of loss rates is considered as a cost which is covered through an increase in the final price paid by customers. In addition, loss rates in water and electricity have been perceived as the major source for accumulation of debts for both Palestinian

Water Authorities and Electricity Companies. Over the period, 2000-2011, gross investments exceeded one billion U.S dollars (World Bank Reports, Several Issues).

Despite intensification of investments in water and electricity utilities toward rehabilitation and upgrade of their quality, fiscal deficits showed a persistent and continuous trend. Palestinian Water Authorities received loans to invest in upgrading and rehabilitation of their networks. However, loss rates remained above normal level (PCBS, Performance of the Palestinian Economy, Various Issues).

The main objective of this study is to assess the key factors behind Palestinian household willingness and ability to pay bills for these two public utilities: water and electricity. In particular, the gap between the value of actual consumption of these utilities and that of household expenditures on them, through payment of bills, calls for analysis of household behavior. Therefore, the imbalance, between the actual consumption of the utilities and bills paid by customers, has led to an increase in fiscal deficits which eventually led to an accumulation of debits of Public Utilities Authorities. However, the specific objectives of this study are intended to determine the factors behind household willingness and ability to pay bills received after one to two months following actual consumption of electricity and water. To achieve this objective, an ordered probit model of willingness and ability has been developed and estimated. It is expected that the empirical model would indicate the variables that most likely have an impact on decision making by the household to pay bills for water and electricity consumption. Based on empirical results, several recommendations and policies are formulated to decision makers in both Electricity and Water Authorities, separately and jointly. It is anticipated that these recommendations would be very helpful to enable them to mitigate their fiscal deficits, on one hand, and to pay their debts to Israeli suppliers of water and electricity services on the other.

2. *Performance and function of West Bank public utilities: water and electricity*

In this section, performance and function of the WB public utilities: electricity and water are outlined below. The performance of water public services is mentioned followed by an analysis of the electricity sector.

(i) Water authorities in the West Bank

Currently, there are six water authorities which provide services in the WB. They include:

i. Jerusalem Water Undertaking. It is a public and independent water supply utility. It provides services to northern areas of Jerusalem, Ramallah, Albeera, Betonia and several villages and camps located in the governorate.

ii. Water Authority of Bethlehem, Beit Jala and Beit Sahour. It is non-governmental body. It provides services to a population of 180,000 in the governorate, and it is located in four cities, three camps, and fifteen villages.

iii. Nablus, Tulkarem, Qalqilia, Salfeet Water Departments; each city has a water department, directed by municipality. They are classified as public providers and non-profit organizations.

The performance and function of each water authority or/and provider varies from one to another. While the average selling price per cubic meter to the end users (households and industry) is $1.5 in Bethlehem, Jerusalem, Ramallah and Nablus, it approximates $1 in Tulkarem and Salfeet and less than $0.5 in Qalqilia. In general, determination of sale price to end users depends mainly on operating costs per cubic meter of water. While it is the highest in Jerusalem, Ramallah, Bethlehem and Salfeet, the ratio of operating costs per m^3 of water to the selling price approximates 110%. In contrast, it accounts for less than 80% in Qalqilia (Palestinian Water Authority, Annual Reports).

Each provider supplies water from wells, springs located in each governorate and purchased water through WB Water Department (WBWD) from different sources such as Israeli Water Company (Mekorot) to cover shortages in water supply in the West Bank. WBWD is a governmental body. It plays the major role in regulating the function of water providers in terms of sale prices and volume of water in cubic meters pumped to end users. Also, WBWD, as a regulator, approves and monitors water prices to each water supplier located in the governorate. This policy aims to make this commodity reachable and attainable to each consumer (final user) on one hand and to ensure financial viability and sustainability of water services providers (Palestinian Water Authority, Annual Reports).
Due to the unique situation of the Palestinian economy, the determination of household expenditures for electricity and water depends, not only on the

economic situation in Palestine, but also on macroeconomic variables in Israel. While 60% of the WB water needs are imported from Israel, imports of electricity and energy account for more than 20% of total merchandise imports. In many WB governorates, 100% of electricity needs is imported by Palestinian Electricity Authorities to be distributed through them to the end-user in the Palestinian districts (PCBS, Foreign Trade, Statistics, Goods and Services, Several Issues).

In northern areas such as Tulkarem, Jenin and Salfeet, Water Authorities produce the total quantities of water distributed to end users. In contrast, Nablus, and Southern areas : Ramallah , Jerusalem , Bethlehem , and Hebron , their purchases from Israel water companies account for more than 60% of total water supplied to end users (Palestinian Water Authority , Annual Reports).

(ii) Palestinian electricity sector

Although the Electricity sector in Palestine depends on external energy sources, its role in determining tariffs and prices is highly considered. This sector consists of four major companies. They have a single source of power from Israeli Electricity Corporation; they are listed below:

i. Jerusalem District Electricity Company Limited. This is the largest company specialized in distributing electricity to concession areas located in the four central governorates: Jerusalem, Ramallah, Bethlehem and Jericho.
ii. Southern Electricity Company. It provides services to three major cities. Yatta, Dahriya and Dura.
iii. Hebron Electric Power Company. It provides services to Hebron and Hahoul cities.
iv. North Electricity Distribution Company. It provides services to only 40% of the population in the Northern districts of Nablus, Tulkarm, Jenin, Salfeat, Qalqilia, Tubas.

Currently, a specific tariff has been proposed for each electricity company by Palestinian Electricity Regulatory Council (PERC). Tariff rates are determined based on operating costs to enable companies to provide services through reducing technical and nontechnical losses (Palestinian Electricity Regulatory Council, Annual Reports).
While household consumption of water reaches peak levels during summer season (June, July, August, September), it tends to reach lower levels between November to March. It is obvious to find out that values of water bills show an

increasing trend during summer season compared to other months of the year. In contrast, electricity bills are usually greater during winter season compared to their levels in other months of the year.

Due to high values of electricity bills compared to low value of water bills in winter months, households' willingness and ability to pay bills for water are more than those for electricity. In the same manner, during the summer season, the values of electricity bills are relatively lower than those of the water bills. Consequently, households have more willingness and ability to pay electricity bills than water bills in summer seasons.

The evaluation of water depends on volume of cubic meters received by household and the number of days; water services are provided to end users monthly. Therefore, any decrease in service days or/and volume of cubic meters of water would push consumers to buy water from private companies. Usually, the price of selling water from private companies to end users is four times more than that charged by Water Authorities during the summer season. Consequently, water bills have become very high particularly, when consumers pay for water needs purchased from private sources.

By the same token, while a consumer would pay in advance to private companies in order to receive water services, he/she may not pay water bill received from public authority. However, although household demand for water is very latent and water consumption depends on household needs, particularly in summer, household purchases of water from private sources are largely dependent on price level and household income.

3. Conceptual framework

Household affordability and ability to pay for water and electricity consumption have been extensively discussed, particularly over the last decade (Ahmad, Goldba and Misra 2005; Merrett 2002). While research on those issues had been conducted at micro levels, several methodologies are employed. Although research on affordability and ability to pay is multidisciplinary (Sociology, Economics and Political Sciences) and a major concern for decision makers, at this stage, only applied Economics research studies are reviewed.

At the micro level, Fankhauser (Fankhauser 2005, 2006, and 2008) investigated the affordability and ability concepts on household expenditures for public utilities in transitional economies in Eastern Europe. Also, Pavlova (Pavlova 2004) discussed willingness and ability to pay for health care services in

Bulgaria. The impact of socio-demographic and economic factors on the responses to willingness to pay was examined. Also Snowball (Snowball et al. 2008) examined willingness to pay and preferences for water in South Africa. The empirical results indicate that prices have a direct and significant effect on determining preferences. The paper suggests that lower income and educational levels can be used in the model to state household choices. In this study, ordered probit model has been employed to investigate factors affecting household behavior toward payment of bills for electricity and water public utilities. This technique has been extensively used to determine the degree of household willingness and ability to pay bills for electricity and water consumption. On the other hand, AlGhuraiz and Enshasi (AlGhuraiz and Enshasi 2005) examined how water pricing could be integrated with socio-economic objectives to effectively meet cost and make water prices affordable to consumers (Greene 2012; Haghjou et al. 2013; Teker et al. 2013; Sukant et al. 1991).

For the analytical framework, the model specified and estimated in this study is based on research works done by Yang and Raehsler (Yang and Raehsler 2005), Raehsler (Raehsler et al. 2012), Duncan (Duncan et al. 2005), Chan, Miller and Tcha (Chan, Miller and Tcha 2005).
In this study, willingness and ability to pay for water and electricity services are considered in formulating the model. Due to unsystematic payment of bills, degree of willingness and ability to pay are investigated. The gap between payment of bills and actual value of electricity and water consumption is attributed to the following reasons:

1) Although tariff rates for electricity and water services are constant for all users, the level of actual payment by households varies from one month to another. Therefore, total or partial payment of bills or even non-payment at all depends on the WTP and ATP.
2) Consequently, the analysis focuses on the degree of WTP and / or of ATP. While previous research work used binary variables (1, 0) to quantify the WTP and ATP toward a change in tariff rates and selling prices to end users, in this study, a range of values is employed to quantify WTP and ATP. For example, WTP=5, if the household shows a very high degree of willingness to pay the full bill of the service (electricity or water). Similarly, WTP=4, if the household has high degree of willingness to pay the whole bill of the service; he or she may pay a portion of the bill. The third degree, WTP=3, is when the household has a reasonable willingness to pay the bill of the service. However, the scale of willingness to pay could be represented as follows:

   WTP=5, Household shows a very high degree of willingness to pay the full bill.

WTP=4, Household shows a high degree of willingness to pay the bill.
WTP=3, Household shows a reasonable degree of willingness to pay more than 50% of the bill.
WTP=2, Household shows a low degree of willingness to pay small portion of the bill.
WTP=1, Household shows a very low degree of willingness to pay the bill.
WTP=0, When the household lacks willingness to pay the bill totally.

Similarly, ATP could be scaled following the same manner of measuring WTP, which can be represented as follows:

ATP=5, Household shows a very high degree of ability to pay the bill.
ATP=4, Household shows a high degree of ability to pay the bill.
ATP=3, Household shows a reasonable degree of ability to pay the bill.
ATP=2, Household shows a low degree of ability to pay the bill.
ATP=1, Household shows a very low degree of ability to pay the bill.
ATP=0, When the household lacks the ability to pay the bill.

Based on the above considerations, an economic model will be utilized to analyze the expected impact of the economic, social and political factors on the degrees of WTP versus ATP which causes the gap between actual consumption and household payment of bills for public utilities namely, electricity and water. In other words, through analyzing the determination of collection inefficiency of bills, a better billing and collection mechanism is proposed.
This study has identified the major elements behind household expenditures on public utilities within the context of the following factors:

(1) Economic factors,
(2) Social factors,
(3) Legal factors.

Investigation of factors behind widening the gap between actual value of household consumption of water and electricity and household expenditures for these utilities represents the key issue in this study. Therefore, this study will provide a better understanding of the extent that Palestinian households can afford and/or be able to pay bills when she/he receives them separately or jointly at the end of the month. The impact of factors behind the decision made by customers to pay bills totally, partially or abstain from doing so, is the most significant subject matter of this study.

In the case of water and electricity, the customer consumes and/or utilizes the service and then she/he pays for consumption. This case is different from other goods and services when payments are made before acquiring the services such

as health and education. However, payment of water and electricity bills is made at the end of the month, households set up priorities for their payments for services such as transportation, health and education. In such situations, household payments become subject to various degrees of willingness and ability to pay when he or she succeeds in allocating the budget to finance household needs.

It seems that the degree of WTP is determined based on his/ her degree of ATP and other socio-economic factors. ATP reflects the level of consumption expenditures allocated by the household on commodity sets. It is expected that someone (a household) may show one of the thirty six options towards paying the bill after consumption of water and /or electricity services, shown, below in Table 1.

Tab. 1 - Cross-Tabulation of possible options of the degree of willingness and ability to pay

	Degree of Willingness to Pay					
Degree of Ability to pay	Very high =5	High =4	Reasonable =3	Low =2	Very low =1	Lacking =0
Very high = 5	25[1](1)[2]	20(2)	15(3)	10(4)	5(5)	0(6)
High = 4	20(7)	16(8)	12(9)	8(10)	4(11)	0(12)
Reasonable = 3	15(13)	12(14)	9(15)	6(16)	3(17)	0(18)
Low = 2	10(19)	8(20)	6(21)	4(22)	2(23)	0(24)
Very low = 1	5(25)	4(26)	3(27)	2(28)	1(29)	0(30)
Lacking = 0	0(31)	0(32)	0(33)	0(34)	0(35)	0(36)

Each cell presents the interaction between the degree of willingness and ability to pay bills. For example, cell number 1 indicates the highest level of willingness and ability to pay. The value of cell 1 is calculated by multiplying the degree of willingness to pay in the first column (Very high =5) by the degree of ability to pay in the first row (Very high =5). Consequently, the value of cell 1 equals 25. In the same manner, the value of cell number 7 equals 20. However, the value of cell 36 is the lowest; it equals zero. On the other hand, Table 1 shows the interaction and compensation between willingness and ability to pay, and

[1] The value of the cell that indicates the interaction between the degree of willingness and ability to pay bills.

[2] The number of the cell.

consequently the rank or the index of payment bills. For example , the value of cell 2 , indicates that degree of ATP is greater than the degree of WTP. On the other hand , the value of cell 7 equal cell 2, but it shows that the that degree of WTP is greater than the degree of ATP.

Moreover, Table 1 shows 36 outcomes that would represent the probabilities of household behavior toward payment of bills for water and electricity. Each cell contains the number of respondents, showing their attitudes toward willingness and ability to pay bills. It is obvious that the relationships between the degree of WTP and the degree ATP is indeterminate. In other words, the relationship between the degree of WTP and ATP could be complementary or independent. The horizontal axis shows scale measures of potential willingness to install payment for bills of consuming and/or utilizing electricity and / or water services. The vertical axis shows potential ability to pay bills for consuming water and electricity services. Each cell in Table 1 shows the interaction between various degrees of willingness and ability to pay bills for water and electricity consumption. As the degree of WTP increases, it becomes closer to 5.

4. Specification of the model and methodology

The decision made by a household who has willingness and/or the ability to pay his/her bills following the elapse of a certain period of time of consumption of water or electricity can be expressed by the following model.

(i) Equations of Degree of willingness to pay (DWTP)

The following equation represents the degree of willingness to pay the bills after consumption of water and electricity services; it could be represented as follows:

$$\mathbf{DWTP_{ij} = Bo + B_{1k}ECOn_{ij} + B_{2l}PRFi_{jj} + B_{3m}LAW_{ij} + B_{4h}DATP_{ij} + U_{ij}} \qquad (1)$$

Where:

$DWTP_{ij}$ = Degree of willingness to pay bills for water or electricity consumption by the jth household. The value of the variable $DWTP_i$ ranges between 0 and 5. If the value equals zero, the WTP does not exist. On the other hand, if DWTP=5, the household has the highest degree of willingness to pay the bills for water and / or electricity consumption. i=1 for water; i=2 for electricity. Bo, B1k, B2l, B3m, B4h are parameters to be estimated. K, l, m, h, are set of parameters to be estimated with respect to variables included in each group of variables.

The value of DWTPij or /and $DATP_{ij}$ for paying bills for water and /or electricity was estimated from data obtained by questionnaires filled by Palestinian families in the West Bank, see section 2 in the questionnaire attached as appendix . In this regard, the values of DWTPij or /and $DATP_{ij}$ were constructed based on the perceptions of the Palestinian families (respondents) as demonstrated in the questionnaires. Although Table 1 shows that there is a trade-off between DWTPij and DATPij on one hand , there is a positive and mutual relationship between them . Variables included in the right hand have selected based on economic theory. Therefore, it is not expected to have inconsistency in the specification of the model.

$DATP_{ij}$ = Degree of ability to pay bills for water or electricity consumption by the jth household. The value of the variable $DATP_{ij}$ is coded between 0 and 5. If the value equals zero, the ATP does not exist. On the hand, if DATP=5, the household has the highest degree of ability to pay bills for water and / or electricity consumption (Cooper and Schindler 2011).

PRF_{ij} = Group of personal factors related to household respondents. They include age, marital status, family size, education.

$ECon_{ij}$ = Group of economic factors such as incomes received by the household, family members who received incomes; number of appliances owned by the household; household debts of unpaid bills for electricity and water consumption; proportion of bills value to household consumption expenditures; exemptions and discounts; debts accumulations; debts interest rates.

LAW_{ij} = Group of legislative factors related to law enforcement such as notice sent by Water Authorities and Electricity Companies to households to pay debts.

U_{ij}= Disturbance terms, normally distributed with zero mean and constant variance.

Variables included in equation (1) above were based on the empirical models specified and estimated in the empirical work (Haghjou et al. 2013;Teker et al. 2013; Sukant et al. 1991).
While certain variables are quantitatively classified, others are considered qualitative. Following Cooper and Schindler, 2011, qualitative variables were quantitatively transformed to evaluate the attitudes and behaviors of consumers when they decide to pay bills for water and electricity consumption. In this regard, measurements of qualitative variables were developed based on Likert scale, for more details see Appendix 1.

(ii) Equations of Degree of ability to pay (DATP)

The following model represents the degree of ability to pay the bills of electricity and water consumption by household. It could be represented as follows:

$$DATP_{ij} = Bo + B_{1k}ECOn_{ij} + B_{2l}PRF_{ij} + B_{3m}LAW_{ij} + B_{4h}DWTP_{ij} + U_{ij} \quad (2)$$

Where variables are defined as above in equation 1.

Equations (1) and (2) represent households' behavior toward their payment for actual demand for public utilities: water and electricity. In the WB, consumption of water and electricity precedes paying bills. They include the price and the amount of money that a household should pay as a result of his/her consumption of those services. In this model, the degree of WTP has been considered to range from 0 to 5. When the degree of WTP equals 0, it indicates that the household lacks interests and willingness to pay bills for consumption of electricity and water, regardless of his/her ability to pay (income). If the degree of WTP approaches 5, customer proceeding to pay the bill is subject to his / her ATP (income) and other socio-economic and legal factors. On the other hand, ATP is subject to WTP. It implies that when ATP approaches 5, the household has a high degree of ability (income) to pay bills, and this is subject to the degree of WTP. The relationship between the DATP and DWTP is expected to be positive. As mentioned above, several possibilities could be stated regarding interactions or combinations of relationships between ATP and WTP.
As income increases, standard of living could rise and acquisition of electrical appliances that use water and electricity would increase. Therefore, it is expected that ATP and WTP would move jointly. On the other hand, ATP reflects the allocation of consumption expenditure to a different set of commodities. In the real world, each household allocates consumption expenditures to a set of commodities to maximize his/her utility. This is called "multistage maximization". While priorities are given to food, housing and clothes, consumption expenditure on water and electricity services usually comes in the lowest rank. However, as household income increases the DATP would increase. Similarly, DWTP would be positively associated with the level of education, age, and location in the city and so on. In the case of a high degree of WTP customers are satisfied with the quality of services (water or /and electricity).

5. Data sources and sample characteristics

Primary data were gathered on household expenditures and consumption of

water and electricity in the WB. Moreover, a questionnaire was designed to gather data on the variables related to household decision to pay for consumption of public utilities. More data were gathered on the economic, social and academic variables related to the customers. The model examined how a payment decision is made after the consumption of public utilities. In addition, semi-structured interviews were conducted with senior personnel in the Palestinian Water Authority and Palestinian Electricity Regulatory Council during the years 2011 and 2012.
The field work for the study was undertaken in the period between July 2011to February 2012. Field workers, who helped us in collecting the data, are highly trained and qualified. They gathered data from the head of the family, by handing questionnaires to him/or her directly. Although gathering data was relatively expensive with respect to average cost rate, the approach followed by the field workers to collect the questionnaires was very rewarding. To meet the objectives of the study, the data for this study were collected via a face-to-face questionnaire. The survey was conducted among Palestinian households in the WB cities, villages and camps. Household distribution of the sample was based on secondary data published by Palestinian Central Bureau of Statistics (PCBS). The questionnaire was distributed on a sample of 500 households across the WB governorates using random sampling. The sample (N= 500) indicates that the response rate was 100%.

The questionnaire consisted of four parts. Data gathered on personal and social demographic variables were in the first part. The second part was designed to collect information on electrical appliances used by households and whether their use depends on water and electricity. Also, it included information on household loans used to pay for water authorities and electricity companies.

The third part of the questionnaire dealt with data on household satisfaction with consumption of water and electricity services. The reasons and factors that push households to pay or abstain from paying electricity bills were included. Those factors include proportion of expenditures to income, receiving bills on time, receiving exemptions, receiving water, electricity and other bills at the same time.

Policies and incentives that were provided by water authorities and electricity companies to encourage households to pay their bills regularly were presented in part four. An empirical analysis of the degree of willingness and ability to pay was conducted based on the primary data collected during 2011 and early 2012. For more details, see appendix A.

Table 2 shows the main indicators of the sample of Palestinian household expenditures on public utilities (Electricity & Water) in the WB during 2011 and

early 2012. They are outlined below as follows:

1) 87.4% and 88.6% of the households respondents were males and married, respectively. These indicators are consistent with statistics published by PCBS . They indicate that that for more than 85% of Palestinian families are headed by men.
2) The age distribution was dominated by customers at the age of 45 or less. They accounted for more than 80%.
3) On the other hand, family size with more than 5 members accounted for more than 60%.
4) The highest level of education of the respondents was high school 50%. However,
5) heads of households who hold B.Sc. degree and above accounted for 33%.
6) Regarding ownership of houses, 84% of respondents owned houses.
7) Monthly household income averaged $600 for 46% of the respondents[3].
8) 96% of the income is generated by the father.

Table 3 summarizes the expected outcomes of the attitudes of households in the WB toward bill payments for water and electricity consumption. Due to the lag period from one to two months between consumption and expenditures of electricity and water services, household behavior toward payments and appreciation of the services could be outlined as follows:

1) 31% of the households appreciate the quality of water services, and they pay bills on time.
2) On the other hand, around 62% of the households do not appreciate the quality of water services. In fact the demand for water is very latent due to high shortages in fresh water supply in the WB. While 31% of the respondents have the ATP, 31% are unwilling to pay their bills; they do not recognize the quality of water services which makes them declare that they are unwilling to pay.
3) While only 15% of the respondents realize the quality of water services (willingness to pay) they do not have the ATP. This segment of customers should be treated positively to help them pay their bills.
4) For electricity, around 78% of the respondents disregarded the quality of these services.
5) While 37% of the households have the ability to pay, 41% are unwilling and unable to pay.
6) Only 4% of the respondents ignore the quality of electricity, regardless of their inability to pay for the bills of this service.
7) It is obvious, in Table 2, that households in the WB are willing to pay

[3] U.S dollar= 3.9 new Israeli Shekel(NIS).

bills for water consumption more than their willingness to pay for electricity consumption bills. Around 78% of the respondents underestimated the quality of electricity services. In contrast, 62% of the respondents ignored the quality of water.

Tab. 2 - Sample Characteristics of Palestinian Household Expenditures on Public Utilities (Electricity & Water) in the West Bank, 2011

Variables	Categories	N.	%
Gender	Male	437	87.4
	Female	63	12.6
Marital status	Married	428	85.6
	Single	65	13.0
	Divorced	7	1.4
Age structure	20-30	172	34.4
	31-45	236	47.1
	46-60	85	17.1
	Above 61	7	1.4
Family size	2	44	8.7
	3	67	13.5
	4	79	15.9
	5	89	17.8
	>6	220	44.1
Academic Qualification	High school and less	251	50.1
	Intermediate Diploma	84	16.8
	B.Sc. and above	165	33.1
Family Income	Less than $599	232	46.2
	$600-800	150	30
	$900-1,499	86	17.1
	Greater than $1,500	32	6.25
Source of income	Father	480	96
	Mother	20	4
Housing	Owns the houses	422	84.2
	Rent Houses	78	15.7
Place of Residency	City	261	52.1
	Villages	194	38.9
	Camp	45	9
governorates	Bethlehem	78	15.6
	Hebron	75	15.1
	Jerusalem	36	8.2
	Jericho	80	15.8
	Ramallah	10	2
	Nablus	75	15
	Jenin	88	17.6
	Qalqilia	58	11.4

Tab. 3 - Distribution of Household Expenditures for Water and Electricity in the West Bank with respect to their WTP/UWTP and ATP/ IATP

I: Water services[4]

Attitudes	IATP	ATP	Total
	23.0% (115)	15% (75)	38.6% (190)
	31% (155)	31% (155)	62% (310)
	54.6% (270)	46% (230)	500

II: Electricity services

Attitudes	IATP	ATP	Total
WTP	18% (90)	3.9% (20)	21.9% (110)
UWTP	37% (185)	41% (205)	78% (390)
Total	55% (275)	44.9 (225)	500

1-percentage of the sample in that option
Numbers in parenthesis are absolute values
WTP= Willingness to pay.
UWTP= Unwillingness to pay.
ATP=Ability to pay.
IATP= Inability to pay.

Around these three dimensions, a new perspective on integration, through migration may be incurred. Our people are condemned to live together.

6. Empirical results

In this section, the empirical results of the estimated equations are presented and discussed. The estimated equations, presented in Table 4, concerning the degree of willingness and ability to pay water bills are discussed. Then, the estimated equations of the willingness and ability to pay electricity bills, shown in Table 5, are also analyzed.

Given that primary data utilized to estimate the model, the first consideration for estimation procedure is the statistical specification of the equations and selection of the appropriate estimation technique. Since DWTP and DATP are

[4] Numbers in parenthesis are the subset of the sample in that option.

polychotomous variables and in natural order, they reflect only ranking where, the dependent variable is coded from 0 to 5, as shown in Table 1.
Equations (1) and (2) are classified ordered probit model. In this case, estimation is undertaken by maximum likelihood, where DWTP or DATP is an unobserved index of satisfaction of willingness and ability to pay by the household consumption of water and electricity services j=1 electricity; 2= water (Yang and Raehsler 2005; Kennedy 2003; Kutner Nachtsheim Neter 2005; Greene 2003).
With the ordered probit model, a positive coefficient indicates higher probability of degree of willingness and / or ability to pay for bills. However, since most of the independent and dependent variables are qualitative variables, they have been transformed into quantitative variables. The discussion of the estimated coefficient is kept general. Therefore, the effects of the explanatory variables are computed at the sample average of the variables.

Significant and insignificant variables in the estimated equations are presented in Tables (4) to (5). The coefficient estimates with standard error of estimates for each estimated coefficient are shown as well as F- test and R2 to show the degree of significance of each estimated equation. Most of the coefficient estimates of those variables are highly significant at .01 percent level. The coefficient estimates measure the degree or level of impact of each explanatory variable with respect to the endogenous variable on one hand and the other explanatory variable in each estimated equation on the other.

(i) The estimated model of the willingness and ability to pay water bills

The empirical results indicate that DWTP is more likely to increase with respect to changes in the following variables:

Personal variables: Household respondents aged above 31, married, with a large family size, living in the city; households with university qualifications affect positively household attitudes towards willingness to pay bills. These results explain that the degree of willingness to pay would increase when the household respondents acquire those characteristics. Therefore, households, who acquire those characteristics have a positive attitude toward water services. On the contrary, for a given income, large families may have a lower willingness to pay their bills. Similarly, large families would reduce the household ability to pay water bills, particularly, when one of the parents is the major source of income.

Economic variables: It is expected that the DWTP would rise as the level of households with higher income classes' increases, particularly when more than one person generates income in the family. In addition, a coefficient estimate of the number of electrical appliances denotes that this factor is highly correlated

with income and standard of living. As a result, the households will spend more money on their prosperity through acquiring electrical appliances, which require more utilization of water and electricity. Also, the empirical results showed that the DWTP would increase when households feel that they pay a fair tariff to water authority. These variables appeared to be highly significant. On the other hand, DWTP would decrease gradually with respect to the following variables.

- When proportion of bill values to total consumption expenditures increases over time.
- When the value of debts per household becomes larger for Water Authority, DWTP would decrease.

From the customer side, abstention from paying water bills would lead to accumulation of debts. Therefore, when the law is not enforced, Water Authority usually lacks the power to force households to pay their bills. The only measures used by Water Authority were to impose fines on household debts.

The coefficient determination implies that 89% of variations in the DWTP are attributed to changes in personal and economic variables in the right hand side of the model. The empirical results of the estimated model of the DATP are similar to those discussed with DWTP. With respect to personal and demographic variables, the coefficient estimates signify that households aged above 45 were more highly significant than those with respect DATP compared to those variables with respect to DWTP. In addition, DATP was highly sensitive and significant with respect to economic variables, particularly, income classes above 3000 NIS and number of workers in the family. However, DATP would decrease if the level of debts to Water Authority increases.

Coordination and cooperation between water authorities and other public utility providers would enable households to pay these bills. It implies that DATP would increase. For example, when households receive a number of bills at the same time, DATP would decrease. Therefore, receiving the electricity or water bills month by month would enable the household to pay the bill on time.

The absence of law enforcement remains one of the major factors behind the decline in DATP. Therefore, enforcement of law has a positive impact on DATP and leads to an improvement of collection efficiency. In this regard, one could conclude that the gap between DWTAP and DATP would be bridged through approval of a set of legislations and eventually transfer them into law enforcement.

The existence of a law with other measures could increase the degree of DWTP and DATP. Households would pay bills when they are granted exemptions and

discounts along with a waiver on debts interest rates.
Based on the empirical results in Table 4, households with high degree of ability to pay were highly greater than those with a high degree of willingness to pay; therefore, several measures should be applied to improve collection efficiency of DWP and DATP jointly since households recognize that they consume a high quality service.

(ii) The estimated model of the willingness and ability to pay electricity bills

Table 5 indicates that DATP were more highly sensitive than DWTP to personal, economic and legal factors. These results could be attributed to the fact that electricity companies and authorities can apply several measures and practices toward household users. Households, aged above 20 have DATP greater than DWTP. These results indicate that households aged between 20 and 60 years olod are more likely able to pay bills than households who are above 60 and less than 20. In addition, households with income ranging from 3,000 to 5,000 NIS, living in their own houses and do consider prices, are more able to pay electricity bills.

Similar to those results discussed about DATP and DWTP for water, the increases in the proportion of bills value to total consumption expenditures would increase household debts to Electricity Company. Therefore, increasing debts has a negative impact on the DATP. On the other hand, household debts above 2,000 and increase in proportion of bill value to total consumption expenditures, receiving more than one bill at the same time and absence of law enforcement have a negative impact on the ability to pay electricity bills. Consequently, it was not surprising to find out that only 37% of household respondents have high degree of WTP and ATP to pay electricity bills. However, around 18% of the respondents showed a very low degree of WTP. 41% expressed inability to pay and unwillingness to pay electricity bills.

The empirical results signify that DWTP and DATP are highly sensitive to law enforcement. Over the past three years, law enforcement in the WB has been enhanced. Payment in advance is a new mechanism that has been applied by electricity companies. When the customers' debts increase over time, the electricity company would cease the services and then he/she must pay in advance before consumption. This measure has pushed many household users to pay electricity bills on time. However, this case is not applicable on water services. According to domestic laws and regulations no one can prevent households from receiving water services.

The regression results presented in Table (5) show that the academic

qualifications (Bachelor Degree), households owning houses, households receiving incomes above NIS 2,000, price satisfaction, households aged above 45, bills received on time, households with debts less than NIS 1,000 and granted exemptions, appeared to be the most significant factors behind enhancement of the DWTP. These results imply that households are concerned about economic variables. In contrast, family size, income with less than NIS 1,000, increase in debts values, absence of law enforcement and receiving more than one bill at the same time are the main factors that would have negative impacts on the DWTP. However, adjustment of those variables would be very helpful to increase DWTP. It is obvious that few factors have impacted the attitudes of the households toward the DWTP. In this regard, the degree of DWTP requires an enhancement of other factors that could promote awareness among households.

Tab. 4 - Estimated Model Based on the Degree of Willingness and Ability to Pay for Water Bills

Independent variables	DWTP		DATP	
	Coefficient estimates	Standard error of estimates	Coefficient estimates	Standard error of estimates
Constant	0.543	0.86	0.343	0.55
DWTP5	4.412	1.69*		
DWTP4	2.397	0.85**		
DWTP3	1.195	0.34*		
DWTP2	0.98	0.26*		
DWTP1	0.69	0.16*		
DATP5			4.56	0.15*
DATP4			2.451	0.061*
DATP3			1.299	0.084*
DATP2			0.66	0.096
DATP1			0.45	0.16*
DATP/ DWTP	DATP/0.35	0.12*	DWTP/0.65	0.26*
Personal variables				
- Sex (Male)	0.75	0.26*	0.85	0.33*
- Age				
20-30	-0.15	-0.17	-0.25	-0.35
31-44	0.39	0.17**	0.49	0.22**
45-60	0.2	0.008*	0.3	0.006*
60 and above	0.1	0.002*	0.15	0.02*
- Marital Status (Married)	0.5	0.0113*	0.65	.0006*
- Family Size	0.35	0.11*	0.55	0.022*
- Housing Style (Owner)	0.6	0.06*	0.7	0.336*
- Residence				
City	0.7	0.4**	0.8	0.22*
Village	0.39	0.33	0.49	0.33**
- Education				
Less than high	-0.13	-0.1	-0.23	-0.55
Bachelor Degree	0.45	0.15**	0.35	0.03*
- Income				
Less than 2,000 NIS	-0.09	-0.005*	-0.19	-0.02*
2,000-3,000	0.65	0.335**	0.55	0.22**
3,000-5,000	0.55	0.005*	0.45	0.033
5,000 and above	0.2	0.001*	0.3	0.009*
- Family provider (father)	0.22	0.005*	0.42	0.05*
- Mother (worker)	0.27	0.02*	0.17	0.06**
- N. of electrical appliances	0.55	0.3**	0.75	0.33*
- Debt to Water Authority (500-1,000) NIS	0.1	0.006*	0.2	0.065*

Tab. 4 - continue

Independent variables	DWTP		DATP	
	Coefficient estimates	Standard error of estimates	Coefficient estimates	Standard error of estimates
1,000-2,000	0.23	0.020**	0.43	
2,000-5,000	-0.19	0.003*	-0.29	-0.055*
More than 5,000	-0.12	-0.0042*	-0.25	0.0321*
- Quality Satisfaction	0.05	0.03	0.1	0.003*
- Price Satisfaction	0.09	0.004**	0.09	0.004*
- Service Continuity	0.11	0.045	0.16	0.0365*
Economic variables - Proportion of bill value to consumption expenditures				
- Bills received on time	-0.15	-0.005*	-0.15	-0.009*
- Granted exemptions	0.21	0.005*	0.28	0.12**
- Increase of debts values	-0.13	-0.06**	-0.17	-0.05*
- Encouragement to pay	0.15	1.006	0.13	0.069**
- Received > 1 bill at the same time of other services (Electricity and Telephone)	-0.6	0.004*	-0.8	-0.006*
- Absence of law	-0.7	0.005*	-0.5	0.002*
- Imposing investor debtor Authorities and Companies request customers to pay back debts	-0.2	-0.005*	-0.3	-0.0045*
R^2=	0.0.91		0.85	
F=	30.3		45.5	
Df =	454		454	

Tab. 5 - Ordinal Probit Model Based on the Degree of Willingness and Ability to Pay for Electricity Bills

Independent variables	DWTP		DATP	
	Coefficient estimates	Standard error of estimates	Coefficient estimates	Standard error of estimates
Constant	0.65	0.85	0.59	0.1.5
DWTP5	2.96	0.74		
DWTP4	1.19	0.23		
DWTP3	1.62	0.27		
DWTP2	3.18	1.06		
DWTP1	2.2	0.44		
DATP5			3.55	0.88
DATP4			2.36	0.59
DATP3			1.84	0.23
DATP2			2.06	0.34
DATP1			1.5	0.3
DATP/ DWTP	DATP=0.36	0.15	DWTP=0.55	0.22
Personal variables	0.46	0.18	0.66	035
- Sex (Male)				
- Age				
20-30	-0.1	-0.05	-0.15	0.0225
31-44	0.3	0.1	0.35	0.095
45-60	0.25	0.105	0.4	0.162
60 and above	0.20	0.05	0.3	0.06
- Marital Status (Married)	0.37	0.21	0.47	0.33
- Family Size	-0.21	-0.11	-0.31	-0.15
- Housing Style (Owner)	0.6	0.33	0.7	0.54
- Residence				
City	0.105	0.05	0.116	0.007
Village	0.09	0.06	0.14	0.09
- Education				
Less than high	0.1	0.2	0.14	0.19
Bachelor Degree	0.2	0.012	0.25	0.036
- Income				
Less than 2,000 NIS	-0.66	0.22	-0.56	-0.35
2,000-3,000	0.33	0.18	0.77	0.64
3,000-5,000	0.66	0.135	0.52	0.235
5,000 and above	0.33	0.16	0.25	0.17
- Family provider (father)	0.27	0.14	0.37	0.19
- Mother (worker)	0.05	0.007	0.08	0.005
- N. of electrical appliances	0.3	0.23	0.32	0.123
- Debt to Water Authority (500-1,000) NIS	0.08	0.009	0.16	0.1

Tab. 5 - continue

Independent variables	DWTP		DATP	
	Coefficient estimates	Standard error of estimates	Coefficient estimates	Standard error of estimates
1,000-2,000	0.33	0.18	0.39	0.156
2,000-5,000	-0.43	0.13	-0.45	-0.16
More than 5,000	-0.5	-0.03	-0.6	-0.04
- Quality Satisfaction	0.05	0.02	0.1	0.027
- Price Satisfaction	0.25	0.032	0.41	0.232
- Service Continuity	0.1	0.003	0.16	0.006
Economic variables				
- Proportion of bill value to consumption expenditures	-0.36	-0.171	-0.56	-0.175
- Bills received on time	-0.19	-0.08	-0.27	-0.864
- Granted exemptions	0.31	0.07	0.43	0.16
- Increase of debts values	-0.12	0.18	-0.4	-0.65
- Encouragement to pay	0.11	0.06	0.13	0.07
- Received > 1 bill at the same time of other services (Electricity and Telephone)	-0.18	-0.015	-0.31	-0.13
- Absence of law	-0.8	-0.25	-0.95	-0.45
- Imposing investor debtor Authorities and Companies request customers to pay back debts	-0.15	-0.098	-0.28	-0.09
R^2=	0.85		0.90	
F=	113.0		144.0	
Df =	455		455	

7. Policy implications and conclusions

This paper has highlighted the major determinants behind the DWTP and DATP bills for water and electricity consumption. The empirical results of the estimated model indicate a set of personal, economic, social and legislative variables as the major determinants behind households' behavior toward payments of bills. Advance payment for water and electricity is an inefficient and insufficient mechanism to improve collection efficiency. Instead, areas of cooperation, between providers of water and electricity on one hand and customers on the other hand, should be enhanced to improve the DWTP and DATP jointly. Furthermore, certain types of support packages should be carried out by providers of water and electricity services to widen the scope of efficiency in running public utilities in the WB. Therefore, they should count on economic factors such as incomes, prices and tariffs to enable customers to pay their bills.

In order to make use of enhancing DWTP and DATP and pushing them to be associated positively, a number of measures must be taken by the water and electricity authorities and companies. Empirical results indicated that coefficient estimates of personal factors showed differences between customers' attitudes that should be taken into account in collecting water bills from those of electricity. Therefore, several areas of cooperation between provider side and demand side should be applied by both in order to improve collection efficiency of bills.

The study concluded that enhancement of DWTP and DATP could be achieved through different mechanisms and behavioral directions. In this study, only 23% and 18% of the households showed that they have high DWTP and DATP to pay bills for water and electricity consumption, respectively. The next in importance were 31% and 37% of the respondents who have high DATP but UWTP to pay bills for water and electricity consumption.

It is expected that applying the following measures would lead to an increase of payments and settlement for water and electricity bills. Therefore, based on empirical results, water authorities and electricity companies should work with their customers on the following levels:

1. Enhancing the DWTP through applying several measures to make water and electricity services more attractive to households. At the same time, the DATP would increase not only as a result of increase in income but also with the introduction of a set of arrangements to ease payment of bills for water and electricity consumption.
2. It is obvious that collection efficiency would improve and

consequently the gap would be narrowed down between revenues and expenditures of water authorities and electricity companies. This could be achieved through investigation of the positive factors that could mobilize households' willingness and ability to pay bills.

3. Water Authorities and Electricity Companies should discuss their plans with household and private sectors and the government to promote their willingness and ability to pay bills for water and electricity consumption. In fact, each sector is interested in a certain type of mechanism to be carried out directly or indirectly, totally or partially to convince customers of those parties, in particular the household sector, to settle their debts. Patterns of payment by households could be applied to promote their willingness and /or ability to pay should be implemented.
4. The empirical results indicate that cooperation between the government and water and electricity authorities and companies should focus mainly on advancement of main legislations and law enforcement. Therefore, they should work jointly to develop laws that aim to regulate and protect their rights particularly with households who have high DATP and low DWTP. Around 31% and 37% of the households have high DATP and low DWTP to pay bills for water and electricity consumption, respectively. Unfortunately, households which lack high DATP, but acquire a high DWTP for water and electricity were 15% and 4%, respectively. For the case of high DATP and low DWTP, law enforcement is required to push customers to pay bills for consumption of water and electricity. Also, a package of incentives and subsidies should be set-up to deal with the segment of households who lack ATP, but own a high DWTP.
5. On the other hand, establishment of support programs that have the potential subsidies to households with low DWTP and low DATP to isolate interaction between them. This segment of households should be persuaded to pay bills once their ATP is improved. Consequently, DDWTP would increase. It is concluded that the increase in unemployment rates among households and those receiving low incomes are is the main reason behind the increase in this segment of customers. These segments of customers are waiting to receive a package of assistance through price support and a rescheduling of their debts resulting from water and electricity consumption.

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Appendix A

This research aims to evaluate the current water and electricity practices by households in the West Bank. Most of the questions focus on whether the head of the household and /or spouse is able and willing to pay bills of water and electricity after one month from consumption. Answers will only be used for the purposes of this study .They will be kept very confidential.

I. First Part: Personal Data

Please put an X mark in the provided box for the answer that you see is suitable for the following questions:

1-**Sex**: Male ☐ Female ☐

2-**Age**: 1- From 17 to 30 ☐ 2- From 31 to 44 ☐ 3- From 44 to 58 ☐

4- More than 58 ☐

3- **Marital status:**

1- Single ☐ 2- Divorced ☐ 3- Widowed ☐ 4- Separated ☐

5- Married ☐

4- **Family size**:

1- Two ☐ 2- Three ☐ 3- Four ☐ 4- Five ☐

5- More than five ☐

5- **Housing Style:**

1- Owned ☐ 2- Rented ☐

6- **Place of residency**: 1- City ☐ 2- Countryside ☐ 3. Camp ☐

7-**Name of your Governorate** : _

8- **Educational qualifications of the head of family**:

1- Illiterate ☐ 2- Primary ☐ 3- Lower secondary ☐ 4- Secondary ☐

5- Institute ☐ 6- University ☐

9- **Breadwinner of the family**: 1- Father ☐ 2- Mother ☐

10- **The sector in which the breadwinner works**:

1- Private ☐ 2- Public ☐ 3- Has own work ☐ 4- Non-governmental ☐

5- Jobless ☐ 6- House keeper ☐

11- **Income of head of family**:

1-Less than 1,000 NIS ☐ 2- Between 1,001 and 2,000 NIS ☐
3- Between 2,001 and 3,000 NIS ☐ 4- Between 3,001 and 5,000 NIS ☐
5- More than 5,000 NIS ☐

12- **Career of wife (if the father is the head of family):**

1- The wife works ☐ 2- She is a housewife ☐
If the wife works, she works at:
1- Private sector ☐ 2- Public sector ☐ 3-Has own work ☐
4- NGO ☐

13-**Number of workers in the family, including parents**:

1- None ☐ 2- One ☐ 3- Two ☐ 4- More than two ☐

II-Second Part: Socio-Economic Data

1- Does the family has?

	NO	YES	Single meter	Multi- meter	The number
Water meter	☐	☐	☐	☐	☐
Electricity meter	☐	☐	☐	☐	☐

2- Source of receiving electricity:

i-Jerusalem District Electricity Company ☐ ii- Israel ☐ iii-private meter ☐

3- The source of getting water:

i-Municipality ☐ ii-Water Authority ☐ iii-Other ☐

4- Electrical appliances owned by the family (please tick X in the appropriate box):

Appliances	No	Yes	Number
Television			
Computer			
Electrical iron			
Washing machine			
Dishwasher			
Water Heater (electric)			
Electric oven			
Electric fan			
Microwave			
Blender			
Air condition			
Fridge			

5- If you are subscribed one of the following services please tick X in the appropriate box

-Do you have debts to?

	Subscriber	Less than 100 NIS	Between 100 to 500 NIS	Between 500 to 1,000 NIS	Between 1,000 & 2,000 NIS	Between 2,000 & 5,000 NIS	More than 5,000 NIS
1	Water						
2	Electricity						

Third Part: Economic and Financial Decisions

This section identifies the participant's point of view about the decision of spending on public services (Research topic)

1- Select the appropriate answer for each of the following questions (The degree of satisfaction)

	Satisfied with quality	Satisfied with the price of the service	Satisfied with continuity of the service
Water	excellent ☐	excellent ☐	excellent ☐
	very good ☐	very good ☐	very good ☐
	good ☐	good ☐	good ☐
	acceptable ☐	acceptable ☐	acceptable ☐
Electricity	excellent ☐	excellent ☐	excellent ☐
	very good ☐	very good ☐	very good ☐
	good ☐	good ☐	good ☐
	acceptable ☐	acceptable ☐	acceptable ☐

2- Select the appropriate answer for each of the following questions (The degree of approval of each of the five proposed reasons)

If you pay an invoice for one of the following services (water or electricity) or do not pay, it is because of:

	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
You pay the value of the monthly invoice because it is affordable					
You pay the value of the invoice (every two months)because it is affordable					
You pay the invoice regardless of its value constantly					
You pay the invoice when you have the required sum					

3-There are many accumulated debts on the customers of water and electricity services, from your point of view, what is the actual reason for these non-payment debts. Is it?

Service	The reason of non -payment	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
water	1-The value of invoice is higher than my income					
	2-The invoices are not received on time					
	3-Expect to receive exemptions					
	4-There are a lot of accumulated debts					
	5-Others encourage non-payment					
	6-Unwillingness to pay					
	7-Several invoices received at the same time					
	8-Absence of Law					
	9-The company does not claim payment					
	10-Impose delay fines on past debts					
Electricity	1-Value of invoice is higher than income					
	2-Invoices are not received on time					
	3-Expect to receive exemptions					
	4-There are a lot of accumulated debts					
	5-Others encourage non –payment					
	6-Unwillingness to pay					
	7-Several invoices received at the same time					
	8-Absence of law					
	9-Company does not claim payment					
	10-Impose delay fines on past debts					

Forth part:

Way of payment of debts for water and electricity (Please determine the degree of approval to each of them).

1- The way that you suggest to be adopted by the Electricity Company and Water Authority and expect it will give better results in paying water and electricity invoices.

	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
Water					
Discount on imposed interests on debts					
Discount on debts					
Debt rescheduling (Installment only)					
Debt rescheduling and discount interests					
Reduced pricing					
Electricity					
Discount on imposed interests on debts					
Discount on debt					
Debt rescheduling (Installment only)					
Debt rescheduling and discount interests					
Reduce pricing					

Dear participant, what are the appropriate ways for paying invoices regularly?

Initiation of the next months, to avoid cutting off electricity or water and legal liability, what are the ways and methods that you see for paying invoices without delay?

Proposed mechanism	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
Budget allocation of monthly invoices (Distribution of spending)					
Urge others to pay the invoices (Awareness)					
Design a system for volume of consumption (when the consumption increases the price will increase)					
Activation of collection of follow-up by suppliers					
Start to pay debts by installments					

2- Please determine the degree of acceptance to each of the proposed ways that could lead to a facilitation of payments of Debts.

Do you think this is achieved by?

The way	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
Reduce the use of unnecessary hardware					
Use of lighting when needed					
Create behavior in family members about savings					
Reduce spending on other goods and services					