An Econometric Investigation of Aggregate Consumption in Palestine

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ملخص

تهدف هذه الدراسة إلى تقدير دوال الاستهلاك الكلي بنوعيها الثابت والديناميكي للضفة الغربية وقطاع غزة، وتقدير مؤشرات الاستهلاك بما فيها الميل الحدى للاستهلاك ومرونة الاستهلاك بالنسبة للدخل للمدى القصير والطويل. لقد تم استخدام طريقة المربعات الصغرى للفترة الزمنية الممتدة من ١٩٦٨ إلى ١٩٩١. ثم تطبيق نظرية الدخل المطلق ونظرية إصرار العادات الاستهلاكية بشقيها الخطي واللوغارتمي، بالإضافة إلى تحليل كوزنتس للاستهلاك.

تبين من النتائج أن الميل الحدى للاستهلاك في الضفة الغربية وقطاع غزة يساوى ٧١٪ و٧٢٪ وذلك عند استخدام النموذج الثابت بشقيه الخطي واللوغارتمي ولكن كان هنالك فروقات في تقدير المرونات. كما تبين من تحليل كوزنتس أن متوسط الاستهلاك يميل للثبات في المدى الطويل. أما في المدى القصير فقد تم تقدير مؤشرات الاستهلاك بناء على افتراض «الحالة المستقرة في الاستهلاك» Steady-State وحالة النمو في الدخل المتاح والاستهلاك. وقدر الميل الحدى للاستهلاك بـ٧١٪ لقطاع غزة و٦٨٪ للضفة الغربية عند افتراض الحالة المستقرة وكانت المرونات متقاربة جداً في هذه الحالة. أما في حالة النمو، فكانت النتائج متقاربة أيضاً حيث تراوحت قيمة الميل الحدى للاستهلاك ما بين ٦٥٪ و٦٩٪ والمرونات تراوحت ما بين ٧٧٪ و٨٢٪ في كل من الضفة الغربية وقطاع غزة.

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Introduction:

The Palestinian economy has witnessed major changes since the peace talks in the Middle East. These changes present opportunities as well as threats to the political and economic future of Palestine. Peace negotiations and political changes in the region have given the Palestinian people the opportunity, to a certain degree, to take control of their furture. Among many other things, Palestinians need to pursue their own economic interests reduce their heavy and distorted dependence on the Israeli economy mainly in the areas of trade, employment, fiscal and monetary issues.

This is an important time in our history, a time for planning setting priorities and selecting strategic options. In our march toward independence, it is extremely important to consider our strengths and weaknesses, explore our strategic options to make informed choices. Such choices are likely to make a big difference for the future of the Palestinian economy and its long term viability. However, making informed choices relies to a large extent on the availability of economic indicators that link economic variables and quantify relationships between them, and show causal directions between such variables.

Consumption is the largest component of aggregate demand, thus variation in consumption will affect economic growth and future prospects for all economic sectors. Therefore,

understanding aggregate consumption and its determinants is a necessity for analyzing and predicting future economic trends both at the aggregate and sectoral levels. Also, consumption indicators such as marginal propensities to consume and income elasticities are extremely important parameters for palnning and policy evaluation purposes. Drawing fiscal and monetary as well as their effectiveness is largely affected by the reaction of consumption to policy variables.

The purpose of this article is to estimate aggregate consumption functions for the West Bank and Gaza, and to calculate consumption indicators both in the short run and long run under steady state and economic growth scenarios. Static and dynamic functions will be estimated for linear and log-linear functional forms. Ordinary least squares (OLS) technique will be used in the estimates.

The paper consists of three sections in addition to the conclusions. The first section presents a descriptive analysis of consumption, mainly its growth and variations over the sample period. Methodology, econometric models and data are discussed in the second section. Statistical results are reported and discussed in the third section.

1- The Overall Economy and Consumption in the West Bank and Gaza Strip: Review

The Occupied Territories have a combined area of about

6000 square kilometers, a population of 2.609 million and a real GNP of 3.9 billion US$, and a per capita GNP of 1480 US$ in 1996 [11]. The Palestinian economy is mainly service oriented with services accounting for about 60% of GDP, agriculture accounts for 15% and 13% is the share of industry and 9% from construction. Private sector activities dominate with about 88% of GDP[8]. Since the Oslo agreement, the record of aggregate performance of Palestinian economy has been disappointing and way under expectations. The macro economy has been in a state of depression. Indeed, between 1992 and 1996, real GNP has declined by 22.7 and per capita GNP has declined by 38.8% over the same period [11]. The private sector performance too has not been so impressive even disappointing.

The past and current performance of the economy have been profoundly affected by the constraints and obstacles created by the Isreali occupation. Overall, the Palestinian economy suffers from serious structural problems and imbalances. Structural imbalances are manifested in many areas among which: heavy dependence on external sources for employment mainly in Israel, limited agriculture base and unusually low level of industrialization compared with other countries with similar endowments, trade structure heavily dominated by trading links with Israel with chronic trade deficit, and very restrictive constraints caused by regulatory, institutional, political and security features, inadequate public services and infrastructure, and declining availbility of water land resources. Another

negative aspect of the Palestinian economy is its vulnerability to external shocks mainly due to the frequent and prolonged Israeli policy of boarder closures. Since the beginning of 1988 to the end of 1996, Israrel has closed the borders with the West bank and Gaza for 729 days.

Even though the Palestinian economy suffers from many structural imbalances, it has several promising and substantial assets. These include: a high quality human resource base, highly entrepreneurial business community that survived under unfriendly circumstances for long periods of time, large and relatively prosperous expatriate Palestinians, many religious, cultural and climatic attractions for tourists, and good prospects for attracting international assistance.

The latest available estimate of consumption was provided by the Palestinian central Bureau of Statistics (henceforth PCBS)[8]. These figures are reported in Table (1). Total final consumption in the three regions, West Bank, Gaza and East Jerusalem is greater than gross domestic product. Indeed, the final private consumption was greater than gross domestic product in West Bank and East Jerusalem. It was 103.4 in the West Bank and 105.4 in East Jerusalem. This indicates that the household sector alone consumes more than our gross domestic product. This phenomenon reflects how large is the dependence of the Palestinian economy on external resources mainly workers remittances from Israel and the Arabian Gulf Countries.

Table (1)
Final Consumption and Gross Domestic Product in 1994
(Current prices, Million US$ and percentage of GDP)

	West Bank		Gaza		East Jerusalem	
	$	%	$	%	$	%
- Total Final Consumption	2186.5	127.5	1147	126.2	421.57	120.2
- Final Private Consumption	1774.57	103.4	830.98	91.4	369.42	105.4
- Government Final Consumption	314.05	18.3	233.99	25.7	28.81	8.2
- Gross Domestic Product	1715.44	100	909.09	100	350.65	100

Source: National Accounts: Preliminary Estimates, 1997.
Palestinian Central Bureau of Statistics.

Historical data about income and consumption are reported in Table (A1) in the appendix. East Jerusalem is not included because the Israeli authorities exclude it from the territories of the West Bank and Gaza figures. It can be seen from Table (A1) that final private consumption has grown at an average annual rate of 7% in the West Bank and Gaza. However, consumption fluctuated widely from one year to another, indeed, the growth rate was as high as 24% in Gaza and 20% in the West Bank in 1972 and -18% and -7% in 1988 in each area respectively. Fluctuations in consumption are largely due to fluctuations in disposable income in the West Bank and Gaza. This issue will be discussed later in this section.

To check for trends in consumption fluctuations, the sample (1968-1991) was divided into sub-samples of five years. The average annual growth rate was 15.5% and 17% in the West Bank and Gaza respectively over the period 1968-1972. Sharp increase in real per capita income was registered during this period as a result of job opportunities to Palestinian workers in Israel. Consumption growth slowed down after 1972 to 6% in the West Bank and 9% inGaza until 1977. It even became slower between 1978 and 1982. Over this period, it grew at 4% in the West Bank and the rate was close to zero in Gaza. Between 1983 and 1985, the rate was 4% in Gaza, however in the West Bank it declined to 1% in general, the growth rate was higher in Gaza than that of the West Bank over the period 1983-1987. The rate was 6% in Gaza and 5.4% in the West Bank. During the period of the *Intifada*, (1988-1991), consumption growth slowed down to 4.5% and 4% in the West Bank and Gaza respectively.

It can be seen that average consumption growth in both areas is very close and fluctuates in the same direction before and during the *Intifada*. Indeed, the simple correlation coefficient of consumption in the two areas was 0.99 which is close to a perfect positive correlation. This strong connection is not a surprise because both areas undergo similar economic and political constraints during the Israeli occupation. this does not mean that there is no difference between the two regions in absolute terms. The national disposable income in Gaza was

47% of that in the West Bank and final private consumption in Gaza formed 45% of that in the West Bank.

Descriptive statistics are provided in Table (A3). It can be seen from Table (A3) that the dispersion of national disposable income and final private consumption for the West Bank is about 2.21 of the corresponding values for Gaza. This reflects a wider variation in the West Bank figures. This phenomenon could be attributed, among other factors, to variations in the olive production which exhibits a wide swing every year as compared to the previous year. However, the relative dispersion of the West Bank and Gaza figures is identical as indicated by the coefficient of variation (C.V). The C.V is 35% for national disposable income and 31% for final private consumption. Also, the simple correlation coefficients between similar variables from the two areas are very high (0.99 and 0.98 for consumption and income respectively). This could be an indication that the variables under investigation vary in the same direction and relatively in the same magnitude.

Fluctuations in both income and consumption have caused sharp variations in the average propensity to consume (henceforth APC). APC ranged from 95% in 1973 to 70% in 1980 in the West Bank and from 90% in 1974 to 68% in 1982 in Gaza. It is difficult to detect an overall trend in APC for both regions. On average, the APC was 79% and 77% for the West Bank and Gaza. When the sample period was divided into

sub-samples of five years, APC increased on average during 1968-1872 and 1973-1977. It declined during 1983-1987 and stabilized during the *Intifada.*

A trend line was estimated by regressing APC against time. The results showed a negative trend factor in the West Bank. The estimated coefficient was 0.004 and it was statistically significant at a confidence level of 95%. As for Gaza, the estimated coefficient was very small (-0.0003) and statistically insignificant. This means that the APC is relatively constant and does not vary over time in Gaza.

(2) Methodology, Econometric Models and Data

In this section, the most common models of consumption will be reviewed. Emphasis will be given to those that can be applied to the West Bank and Gaza. Data availability will determine the models to be estimated. The first of these models is the Keynesian model, known as the absolute income hypothesis. It pertains that current consumption (Ct) is a linear function of current disposable income (Yt) and positively related to Yt. The relationship can be written as:

$$Ct = \alpha 0 + \alpha 1\ Yt,$$

where $\alpha 0$ is autonomous consumption. It reflects the effect of all omitted factors on current consumption. a1 is the marginal propensity to consume (henceforth MPC). This model yields an APC higher than the MPC and declines as Yt increases.

A logarithmic transformation of the Keynesian model is widely used. The log-linear form can be written as:

$$LnCt = \alpha 0 + \alpha l\ LnYt.$$

In this form, αl is the income elasticity of demand, and the MPC is not a constant any more as in the case of the linear form. MPC varies with income level and APC declines as income increases. Log-linear functions are widely chosen on the ground that the logarithmic transformation might cure hetroscedasticity (when the variance of the time series is not constant).

Even though, the two models include economically relevant variables, they are totally different in the interpretation of their coefficients. In a log-linear model, each coefficient measures the partial elasticity whereas in a linear model, each coefficient measures the absolute change in the dependent variable with respect to each independent variable holding all other variables constant. Also, a log-linear function implies a constant elasticity and a variable absolute change whereas the linear function implies a constant absolute change and variable elasticities.

One of the early applications of the Keynesian models was done by Kuznet[2]. He concluded that the Keynesian model explains well the short run consumption patterns in the United States. However, in the long run, he found a proportionate relationship between consumption and income. Which means that consumption is a constant proportion of income. Therefore,

APC does not decline as income increase as implied by the Keynesian model. Kuznet used a ten years over lapping figures to estimate long run values of income and consumption. The estimated consumption function was written as: Cl= αYl, where Cl and Yl are long run consumption and disposable income respectively. In this form, α equals the MPC and the APC.

Several models had been proposed and developed to explain Kuyznet's findings and to solve the apparent conflict between the short run implications of the Keynesian model and the long run behavior of consumption. These models include: the relative income hypothesis (RIH) proposed by James S. Duesenberry, the permanent income hypothesis (PIH) proposed by Milton Friedman, the life cycle hypothesis (LCH) proposed by Franco Modigliani and R. Brumberg and the habit persistence hypothesis [HPH proposed by Brown [1 and 4]. These hypotheses introduced dynamic analyses into consumption functions in one way or another. The available data allow us only to estimate habit persistence hypothesis(1).

The RIH argues that consumption patterns of an individual depend on consumption patterns of others (friends, neighbors, relatives). That is an individual tries to imitate the consumption patterns of the people around him. This phenomenon is known as the demonstration effect. Therefore, an individual whose disposable income is less than the average disposable income of the group to which he belongs, his APC will be higher than the

APC of another individual whose income is higher than the average income of the group. The same analysis applies at the family level. Accordingly, given a stable income distribution in the long run, individuals will not change their relative APCs. Drastic changes in income distribution will affect the relative APC of an individual or a family. to make his analysis operational, Duesenberry distinguished between peak income (YP) and current income (YC). Consumption is a function of YP and YC in the form: C= (a-b) YP+bYC, where a is the long run MPC and b is the short run MPC. If YP= YC, then we have the long run cosumption function C= aYC. While if YP diverges from YC, then we get the short run conumption function C=(a-b)YP+bYC.

Both PIH and LCH argue that individuals achieve a higher utility level when they maintain a stable consumption patterns and not adjusting consumption to temporary changes in income. Stability of consumption is achieved by consuming a stable fraction of permanent or lifetime income. According to the PIH, measured income (observed) is divided into permanent (Yp) and transitory income (Yt). Also, measured consumption is divided into permanent (Cp) and transitory consumption (Ct). Permanent consumption is determined by permanent income. That is Cp=aYp. Where a is the long run MPC. In Friedman's model, Yp is used as a proxy of the expected flow of income from human and non-human wealth. While transitory income has little or no

effect on permanent consumption. Thus average propensities to consume and to save tend to be stable over time(2).

According to the LCH, the family's consumption and saving are not based on current income alone, but it takes into account the expected future earning from work and property. Also, LCH pertains that the need to save varies with age. Young families who have little assets may go on debt now and look for higher future earnings to cover their debt. At the opposite extreme, retired families have no wage income, so they tend to save to maintain their standards of living. Thus the consumption and saving functions are a function of the population in particular age group and the nation's consumption function will vary with the number of population in each age group. According to LCH, consumption function can be written as: C=a0+alYDe+a2W. Where YDe is the expected disposable income and W is wealth.

According to the habit persistence hypothesis, current consumption is a function of current disposable income and lagged consumption [9]. The linear form of this relation can be written as:

$$C_t = \alpha 0 + \alpha 1\, Y_t + \alpha 2\, C_{t-1}.$$

Where C_{t-1} is lagged consumption. $\alpha 2$ reflects the effects of past consumption habits. Using lagged variables allow us to distinguish between short run and long run MPC, and income elasticities. A log-linear function is usually estimated in the form:

$$LnC_t = \alpha 0 + \alpha 1\ LnY_t + \alpha 2\ LnC_{t-1}.$$

In the linear form, $\alpha 1$ represents the short run MPC while it represents the short run income elasticity in the log-linear mode. The long run parameters can be calculated under two scenarios: the first is a steady state scenario and the second takes into consideration economic growth:

Under the steady state scenario, current consumption equals lagged consumption in the long run, ($C_t = C_{t-1}$). Therefore, the linear consumption function can be written as:

$$C_t = \alpha 0 + \alpha 1\ Y_t + \alpha 2\ C_t,$$

which can be rewritten as:

$$C_t = \alpha 0/ (1-\alpha 2) + [\alpha 1/(1-\alpha 2)]\ Y_t.$$

According to this scenario, the long run MPC (hence forth LRMPC) equals $\alpha 1/(1-\alpha 2)$, and the long run income elasticity of demand (henceforth LRηY) equals LRMPC/APC.

A drawback of the steady-state assumption ($C_t = C_{t-1}$), is that it dosen't allow for economic growth to affect the propensities to consume and income elasticities. To overcome this issue, another scenario, that allows economic growth to be taken into consideration, is used in the form ($C_t = (1+g)\ C_{t-1}$), where g is the average growth rate of consumption. The function can be written as:

$$Ct = \alpha 0 + \alpha 1\ Yt + [\alpha 2/ (1+g)]\ Ct,$$

which can be rewritten as:

$C_t = [(1+g)\ \alpha 0/ (1+g-\alpha 2) + [(1+g)\ \alpha 1/ (1+g-\alpha 2)]\ Y_t$.

According to this form, the LRMPC equals $(1+g)\alpha 1/(1+g-\alpha 2)$. Similarly, the LR$\eta$Y equals LRMPC/APC. As for the log-linear form, the LRηY= $\alpha 1/ [1-\alpha 2(1+g)$ and the LRMPC= $\alpha 1/ [1-\alpha 2\ (1+g)]$*APC under the second scenario. Average values of APC (1969-1991) as well as the 1991 values will be used in the calculations marginal propensities to consume and income elasticities of demand. Ordinary least squares technique will be used in estimations. Diagnostic tests will be conducted, mainly to check for autocorrelation, and corrective measures will be introduced when needed.

Real annual figures of the period 1969-1991 are used in the estimation. The base year is 1986. Consumption is measured by the final. Data are obtained from a World Bank report entitled *Developing the Occupied Territories: And Investment in Peace*, volume 2, which was published in 1993. The World Bank figures are based on Israeli estimates available in the Statistical Abstract of Israel.

Due to the *Intifada*, the national accounts of the Occupied Territories were mostly rough estimates, Indeed, many macroeconomic figures are published as classes starting from 1988 to 1991. For estimation purposes, the average value of the class is taken as value for such years. this could further contribute to the "poor" quality of the available data.

(3) Statistical Results:

Table (2) presents regression results for both the static model and Kuznet's model. Linear and log-linear forms have been estimated. Both $\alpha 0$ and $\alpha 1$ terms are positive and well behaved. The estimated functions almost fit perfectly as indicated by the high coefficient of determination (henceforth R^2) for both the linear and log-linear forms. Also, the results are statistically significant, except the constant terms for Gaza.

Table (2)
Regression results of the Static Models (Linear, Log-linear) and Kuznet's Model

Region / Model	$\alpha 0$	$\alpha 1$	R-2	DW
West Bank				
Linear	110 (2.2)	0.71 (25)	0.96	1.8
Log-Linear	0.76 (3.4)	0.86 (28)	0.98	1.9
Kuznet's	-182 (-0.9)	0.83 (10.3)	0.99	1.86
Gaza				
Linear	39 (0.9)	0.72 (13.7)	0.94	1.6
Log-Linear	0.56 (0.87)	0.87 (8.9)	0.97	1.64
Kuznet's	26 (0.3)	0.72 (8.3)	0.99	1.14

Values in parentheses are the t-statistics.

The corresponding indicators (MPC and income elasticity)

are reported in Table (3). the estimated MPC are very close for the West Bank and Gaza. This result is unexpected given the wide differences in income and consumption levels in the two areas. Theoretically, the MPC is expected to be inversely related to income. However, as we saw earlier, the relative dispersions of income and consumption in the two areas are almost identical. As for income elasticities, both forms yielded identical estimates in the two regions. However, estimates of the linear form were lower than that of the log-linear form. the indicators are calculated using the average values (1969-1991) and 1991 values. In using 1991 values, the latest available data are used, as results of the two functional forms. This could be an indication that using the 1991 values are more appropriate in calculating the indicators.

Table (3)
Marginal Propensities to Consume (MPC) and Income Elasticities (ηY) of the Static Models

Region / Model	MPC		ηY	
	Average values	1991 values	Average values	1991 values
West Bank				
Linear	0.71	0.71	0.56	0.60
Log-Linear	0.68	0.72	0.86	0.86
Gaza				
Linear	0.72	0.72	0.55	0.62
Log-Linear	0.67	0.72	0.87	0.87

However, the goodness of fit means little and could lead to a contradictory conclusions when it comes to the relationship between APC and income over time. After all, consumption forms a high percentage of income, thus it is expected to be highly correlated with income. Indeed the simple correlation coefficients between income and consumption were 0.98 and 0.97 in the West Bank and Gaza. The results coincide with the estimated trend in APC as we saw earlier, however, this result should not be taken for granted. Since the estimated trend coefficient was very small and the APC tends to fluctuate and it was hard to detect a general trend in its movement over time as we can see from Table (A1). Economists worried about their economic implications of declining APC over time[1]. An inverse relationship between APC and income implies that our ancestors were relatively net disservers. This can be proven by means backward extrapolation.

Kuznet's model was estimated using a ten years overlapping figures to estimate the long-run values of disposable income and private consumption. The estimated long-run figures used in the regression model are reported in Table (A2). A constant term was added to the estimated function. This was made to see if the constant term is significant or not. If it proves to be insignificant then it supports Kunznet's hypothesis. Even though, the Keynesian and Kuznet's model have the same functional forms, their variables are different. The Keynesian model uses current

values of disposable income and consumption while Kyznet's model uses the estimated long run figures of disposable income and consumption. Regression results are reported in Table (2) and they suggest that the APC forms a constant proportion of income in the long run. The constant terms were statistically insignificant for both the West Bank and Gaza. These results tend to support Kuznet's findings of a proportionate relationship between APC and income. Evidence of autocorrelation was founded in the estimated equation for Gaza. Attempts to correct it using Cochrane-Orcitt iterative procedure yielded inconsistent results. Therefore, the estimated coefficient might be biased. However, trend analysis that we did earlier suggested that the APC in Gaza is stable over time.

Dynamic models, both linear and log-linear forms, have been estimated. The results are reported in Table (4). The estimated coefficients are positive and well behaved. Also, the estimated functions almost fit perfectly as indicated by the high coefficient of determination (henceforth R^2) for both the linear and log-linear forms. The results are statistically significant, except some of the constant terms. Durbin-h statistics has been used to check for autocorrelation. This statistics is used when the estimated equation includes a lagged dependent variable. Evidence of autocorrelation was found in the linear model for Gaza. Corrective measures did not succeed in removing it. Therefore, the results might be biased and care has to be taken when these results are considered for policy analysis.

Table (4)
Regression Results of the Dynamic Models

Region / Model	α0	α1	α2	R-2	D-h
West Bank					
Linear	84.8(1.35)	0.414(4.5)	0.43(3.26)	0.95	0.06
Log-Linear	0.67(3.63)	0.46 (4)	0.43(3.6)	0.98	0.93
Gaza					
Linear	36(1.06)	0.458(2.98)	0.358(1.73)	0.93	2.7
Log-Linear	0.46(1.6)	0.427(2.33)	0.486(2.8	0.97	0.37

Values in parentheses are the t-statistics, and D-h is Durbin h-statistics

The corresponding short-run indicators are reported in Table (5). The short run marginal propensities to consume (SRMPC) are 0.41 from the linear function and 0.36 from the log-linear for the West Bank using the average values of APC. The log-linear model yields considerably lower MPC compared with the linear form. The difference between the two models is 12%. For Gaza, the corresponding MPCs are 0.46 and 0.33 for linear and the log-linear models respectively. Again, the log-linear form yielded lower MPC (by 28%). Comparing the estimated short-run MPC of the West Bank and Gaza, we see that the linear form yielded higher estimate for Gaza than in the West Bank. This result is expected given the differences in per capita income in the two areas. However, the log-linear model yields higher MPC for the West Bank than Gaza. The same results

apply when the 1991 value of APC is used. However, the diversion between the estimates became smaller. Even though, the MPC in Gaza is expected to be higher due to lower per capita income as compared to the West Bank. This expectation is not strong enough to say the linear form is more appropriate than the log-linear specially if keeping in mind that the estimated linear equation for Gaza suffers from autocorrelation. It is not possible to tell which form is more appropriate from the information given in the two models. Further analysis is needed to determine which functional form is more appropriate. Box-Cox Transformation might help in this regard but it is not considered in this paper. this issue will be investigated in a separate paper.

Table (5)
Short-run Marginal Propensities to Consume (SRMPC) Income Elasticities (SRηY) of the Dynamic Models

Region / Model	SRMPC		SRηY	
	Average values	1991 values	Average values	1991 values
West Bank				
Linear	0.41	0.41	0.53	0.49
Log-Linear	0.63	0.39	0.46	0.46
Gaza				
Linear	0.46	0.46	0.61	0.53
Log-Linear	0.33	0.37	0.43	0.43

The estimated short-run income elasticity for the West Bank

is 0.53 using the linear form and 0.46 for the log-linear form. This means that an increase in income by 10% will increase consumption by 5.3% when the linear model is used and by 4.6% for the log-linear model. the difference between the two forms is about 13%. As for Gaza, the estimated SRηY is 0.61 and 0.43 for the linear and log-linear models respectively. The linear form yielded high estimates of SRηY in both regions than the log-linear model.

The long-run marginal propensities to consume (LRMPC) and income elasticities (LRηY) are reported in Table (6). these indicators are calculated under a steady-state and with economic growth scenarios. The implied LRMPCs under the steady-state scenario from the log-linear form is 0.71 for Gaza and 0.68 for the West Bank (using 1991 values). This difference (about 4.4%) could be due to the lower level of income in Gaza relative to the West Bank. According to the World Bank data, per capita income in Gaza forms only about 47% of that in the West Bank. Accordingly, the LRMPC in Gaza is expected to be higher compared to the LRMPC of the West Bank. As for the long-run income elasticities, the same conclusion applies. The LRηY for the West Bank is 0.81 and 0.82 for Gaza. The estimated LRηY are alomst identical.

This scenario is more realistic than the steady state scenario because it allows for economic growth to affect the indicators. The LRMPC and LRηY declined for both areas. The implied

LRMPCs and LRηY are very close in both regions and under both 1991 values and average values of APC. The estimated LRMPC ranges from 0.65 to 0.69 and the estimated LRηY ranges from 0.77 to 0.82. This conclusion contradicts with the widely held belief among Palestinian economists that the MPC in Gaza is higher than that in the West Bank due to income differences. However, it seems that similarity of economic and political constraints that faces the two regions during the Israeli occupation have resulted in a similar consumption behavior in the long run. However. differences were obvious in the short run.

Table (6)
Long-run Marginal Propensities to Consume (LRMPC) and Income Elasticities (LRηY) of the Dynamic Models

	Steady State				With Economic Growth			
	LRMPC		LRηY		LRMPC		LRηY	
	Average values	1991 values	Average values	1991 values	Average values	1991 values	Average values	1991 values
West Bank								
Linear	0.73	0.73	0.93	0.87	0.69	0.69	0.89	0.82
Log-Linear	0.63	0.68	0.81	0.81	0.60	0.65	0.77	0.77
Gaza								
Linear	0.71	0.71	0.94	0.82	0.69	0.69	0.91	0.82
Log-Linear	0.63	0.71	0.82	0.82	0.59	0.67	0.77	0.77

(4) Conclusions

Descriptive analysis showed that average consumption

growth in both areas is very close and fluctuates in the same direction before and during the *Intifada*. This strong connection is not a surprise because both areas undergo similar economic and political constraints during the Israeli occupation. Also, consumption fluctuates widely in the two regions as a result of income fluctuation. In relative terms the fluctuations are almost identical as indicated by the coefficient of variation. The C.V is 35% for national disposable income and 31% for final private consumption. The simple correlation coefficient between similar variables is close to one. However, large absolute differences exist between the two areas. National disposable income in Gaza formed 47% of that in the West Bank and final private consumption formed 45% of that in the West Bank. Also, the dispersion of national disposable income and final private consumption for the West Bank is about 2.21 of the corresponding values for Gaza. This reflects a wider variation in the West Bank figures. This phenomenon could be attributed, among other factors, to variations in the olive production which exhibits a wide swing every year as compared to the previous year. This could be an indication that the variables under investigation vary in the same direction and relatively in the magnitude.

Static and dynamic models of consumption for the West Bank and Gaza Strip had been estimated in this paper. These models include the Absolute Income Hypothesis attributed to John M. Keynes and Brown's Habit Persistence Hypothesis. The

analysis is applied using liner and log-linear functional forms. Usually the choice is limited to linear and log-linear specifications. The linear model implies constant marginal propensities to consume and variable income elasticities. While the log-linear implies constant elasticities and variable propensities. The log-linear model is commonly used in case where the variance of the time series is not constant.

All models and forms did well in terms of their explanatory power as indicated by the coefficient of determination. Therefore, if estimation is done for forecasting purpose, it does't make much difference which specification is used. Consumption indicators including marginal propensity to consume and income elasticities were calculated for each model. The estimated indicators were statistically significant, and coincide with economic predictions of consumption models. However, the implied indicators are different for each functional form specially the dynamic models.

The static-linear and log-linear yielded identical estimates of MPC (0.71 and 0.72) for the West Bank and Gaza respectively using the 1991 values of APC. However, the estimate income elasticities were not close. The estimated elasticity were (0.86 for the West Bank and .87 for Gaza) when log-linear model is used and 0.60 and 0.62 for the West Bank and Gaza under the linear model. The static models implied a decreasing APC as income rises. This conclusion contradicts with the long run

behavior of consumption where APC is relatively constant. Kuznet's model was estimated and the results showed that APC tends to be constant both in the West Bank and Gaza.

The dynamic models allow the distinction between short run and long run consumption indicators. Short and long-run marginal propensities to consume and income elasticities were calculated under two scenarios; steady-state, and with economic growth. The second scenario is more realistic since it takes into consideration the impact of economic growth on the propensities to consume and income elasticities. The implied LRMPCs under the steady-state scenario from the log-linear form is 0.71 for Gaza and 0.68 for the West Bank (using 1991 values). This difference (about 4.4%) could be due to the lower level of income in Gaza relative to the West Bank. According to the World Bank data, per capita income in Gaza forms only about 47% of that in the West Bank. Accordingly, the LRMPC in Gaza is expected to be higher compared to the LRMPC of the West Bank. As for the long-run income elasticities, the same conclusion applies the LRηY for the West Bank is 0.81 and 0.82 for Gaza. The estimated LRηY are almost identical. Under the second scenario, The implied LRMPCs and LRηY are very close in both regions and under both 1991 values and average values of APC. The estimated LRMPC ranges from 0.65 to 0.69 and the estimated LRηY ranges from 0.77 to 0.82. This conclusion contradicts with the widely held belief among Palestinians that the MPC in Gaza is higher than that in the West Bank due to

income differences. However, it seems that similarity of economic and political constraints that faces the two regions during the Israeli occupation have resulted in a similar consumption behavior in the long run. However, differences were obvious in the short run.

Finally, it is difficult to decide which functional form is more appopriate, the linear or log-linear on theoretical bases. This is decided using other techniques mainly the Box-Cox tranformation. However, the results of the log-linear model seems more appropriate for two reasons. The first is that the estimated results agree with the expected results specially when comparison was needed between the west Bank and Gaza. The second is that the estimated linear equation for Gaza suffers from autocorrelation thus the results might be biased.

Appendix

Table (A1)
National Disposable Income (Y) and
Final Private Consumption (C),
(Million NIS, Base = 1986)*

Year	West Bank		Gaza	
	Y	C	Y	C
1968	725	517	274	223
1969	717	618	335	263
1970	789	692	415	310
1971	936	767	465	332
1972	1147	918	524	412
1973	1005	950	516	433
1974	1235	1033	528	475
1975	1278	1108	594	532
1976	1531	1217	731	532
1977	1490	1223	753	616
1978	1756	1225	820	615
1979	1696	1346	886	616
1980	1938	1359	846	608
1981	1808	1420	825	617
1982	2033	1470	928	631
1983	1954	1471	940	655
1984	1966	1521	927	685
1985	1922	1501	863	702
1986	2364	1676	999	776
1987	2424	1892	1133	833
1988	2392	1762	953	685
1989	2363	1771	991	750
1990	2829	2077	1088	809
1991	2648	2229	1096	946

Source: The World Bank, 1993

* NIS: New Israeli Shakle.

Table (A2)
The Estimated Long-run Disposable Income (Y) and Final Private Consumption (C), (Using a ten years overlapping figures)

Year	West Bank		Gaza	
	Y	C	Y	C
1968 - 77	1084	904	514	413
1696 - 78	1187	975	568	452
1970 - 79	1285	1048	623	487
1971 - 80	1400	1115	666	517
1972 - 81	1488	1180	702	456
1973 - 82	1577	1235	743	567
1974 - 83	1672	1287	785	590
1975 - 84	1745	1336	825	611
1976 - 85	1810	1375	852	628
1977 - 86	1893	1430	879	652
1978 - 87	1986	1498	917	674
1979 - 88	2050	1551	930	681
1980 - 89	2116	1594	941	694
1981 - 90	2205	1666	865	714
1982 - 91	2289	1747	992	747

Source: Derived from Table A1.

Table (A3)
Descriptive Statistics
National disposable income Y and final private consumption C (Million NIS, base = 1986)

Year	West Bank		Gaza	
	Y	C	Y	C
Minimum	717	517	273	222
Maximum	2424	1894	1132	833
Average 1969-1991	1535	1200	715	543
APC	78%		76%	
Standard Deviation	532	374	241	169
	35%	31%	34%	31%

Correlation Matrix of Variables

Y1	1.0			
C1	0.98	1.0		
Y2	0.98	0.98	1.0	
C2	0.97	0.99	0.97	1.0
	Y1	C1	Y2	C2

Footnotes & References

Footnotes :

1- Under certin mathematical assumptions, it can be proven that the Habit Persistence hypothesis is a special case of the Permanent Income hypothesis. The only difference is that the estimated form of the Habit Persistence hypothesis includes a constant trem while the other hypotheses dose not. [For this proof, we refer to Bronfenbrener p. 165, 1979].

2 - To see how these concepts can be made operational, we refer to Bronfenbrener 1979.

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