Monitoring Socio-Economic Conditions in the Occupied Palestinian Territories:

Macroeconomics Benchmarking and Trend analysis.

2017

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**ABSTRACT:**

The impact of the blockade and of the War in 2014 on the Gaza strip has been undermined by the studies. The real impact of these two events on the standard of leaving is around twice as much as most of what other studies have estimated. Moreover, goods and services in the OPT is at least 2.5 times more expensive in 2016 than in 2000; while wages have increased only about 1.3 times in the same period.

This study uses an econometric model to assess the impact of the blockade and of the war in 2014 on the GDP per capita. It compares the level and the trend of the real GDP per capita of the Gaza strip in the period after 2006 with its own virtual trend had no blockade nor war of 2014 occurred. This robust tool showed the impact on the level and, as well, on the trend of the GDP per Capita since 2000 of which it allows to be compared with the Gaza Strip’s virtual performance. The study found that the percentage decline in the level of GDP per capita is 51.4% at the first quarter after the war (Q4 2014) due to decline in both the level and the trend since the blockade and the war. The damages of the blockade are not fully comprehended on the standard of living for the Gazans, and if this is combined with other measures and Israeli military campaigns, the impact become exponentially devastating. The blockade should be halted urgently. In the west bank, monetary polices should urgently address the weakened purchasing power. Particularly policies addressing the housing sector which is the sector which is most inflated. The Palestinians police maker should have more tools to independently control the money supply in their territory.
**SUMMARY**

The aim of this report is to review the long-term performance in terms of Macroeconomic indicators in the occupied Palestinian Territory since the start of the second intifada in 2000. The three main aggregate Macroeconomic indicators (output; employment/labor related, and inflation/prices and real wages) are the focus of this. The performance of these indicators was reviewed in the context of major political events that the OPT has experienced since 2000. Several main events occurred which have a significant impact on the economic and social sphere of the Palestinians. These events had different impact on different Macroeconomics aspects and the different region within the OPTs.

The impact of the intifada of 2000 and the major Israeli incursion of 2002 are clearly visible. It took the West Bank economy, with available fiscal and monetary policies tools, about 7 years to recover its pre-Intifada level of output. The Gaza Strip’s long-term trend of output showed no significant improvement since the intifada of 2000. The start of the intifada had an impact on GDP trend of the Gaza Strip; however, it bounced back and reached a regional peak a few years later (end of 2005). It took the economy of Gaza Strip almost 8 years until it reached briefly this peak again. The trend of the output in the Gaza Strip declined again after the 2014 war, since then the output level is on the track towards reaching again the level of pre-elections year².

The GDP per capita in the OPT indicated different behavior after 2006. There are sharp differences in living conditions between the two Occupied Palestinian Territories (West Bank & Gaza strip). Despite the recent high rates of growth in the Gaza Strip, the 2014 conflict further exacerbated the divergence between this area and the West Bank. Gaza strip, has never reached its pre-intifada level of GDP per capita (except for the last quarter of 2005).

The labor characteristics with the OPTs have experienced many developments since the year 2000. The labor market in the OPTs indicates vulnerability, weakness and lacks the ability to bounce back to its conditions before the start of the 2000 intifada. The situation in Gaza Strip is far more severe than that of the West Bank. The demographic characteristics has a direct impact on the resilience of the Labor participation. The gap between the West bank and the Gaza Strip has declined only to be halted by the 2014 war. Since 2010, the rate of participation is increasing in Gaza strip, which indicates that more people are willing to- or looking for job opportunities. A major contributor is the constant growth of females’ participation rate. The participation rate for females has increased faster than the rate for males since 2000. There is a clear difference in the dynamics and trend of the unemployment rate between the West Bank and the Gaza Strip. The West Bank unemployment rate reached its peak due to the Israeli incursion of 2002. Since then, the unemployment rate in West bank has experienced a gradual decline. The trend of the Gaza Strip unemployment rate has experiences a more volatile behavior and indicates vulnerability to almost all major political events since 2000.

The purchasing power since 2000 has declined exponentially reaching almost 40% below its 2000’s level in 2016. The declining in the purchasing power, however, is not met with an

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² The PCBS estimated figures of 2016 appear to reach and slightly exceed the level of output in the pre-elections year (2005).
equivalent growth of the average daily wages in the same period. This is an alarming evidence, which could indicate the impact of the Israeli control of the monetary policies has led to even more hidden hardship to the Palestinian households.

Finally, it is misleading to view the economic performance in the short-term only. A view of the short run developments could indicate a relatively high growth (more than 8% in 2016) while the situations is far from reaching its normal pre-conflict level. The impact on the Palestinian economic well-being is deteriorating on the slow pace but it this is evident clearly on revising the conditions at the long run.

**ACRONYMS**

**OPTs:** Occupied Palestinian Territories

**WB:** West Bank

**GS:** Gaza Strip

**CPI:** Consumer price index

**GDP:** Gross Domestic Product
Introduction

The Economy of the Occupied Palestinian Territories (OPTs) is not only small and resources-poor but it is also vulnerable to the dynamics of the political situation and the occupation. The occupation, its policy and measures on the ground have not only significantly distorted but also disordered the Palestinian Economy (UNCTAD, 2017). This distortion is a major issue but the disordering is an aspect that provides a long-lasting impact on the economy of the OPTs. However, reviewing the recent development, the OPT economy appears to have grown to a relatively high level (IMF, 2016). Focusing on the recent development gives a partial and even a misleading view of the impact of the distortion and the disordering events, which happened a few years earlier. This paper aims at providing an overview of the dynamics of the Palestinian economy while visualizing the impact of a number of major events that occurred since 2000.

Background

The OPT and its economy

The OPT economy consists of two separated entities; the West Bank (WB) and Gaza Strip (GS). The economic engine in the OPT is largely depending on trade (whether external or internal), on average, trade value is on average is more than 80% of the total GDP since the year 2000. Thus, a blockade by the Israelis on the transportation and trade roots will severely impact the economic situation in the Palestinian Territory.

The West Bank

The WB is further divided into different clusters; Area A, B & C. Area A is where the Palestinian National Authority (PNA) has a full civic and security control and it accounts about 18% of the WB area. Area A consists of 8 cities, which are not linked directly, forming separated islands surrounded by areas controlled fully by the Israelis within the WB. At the entrance of each of these 8 cities, an Israeli check points can block the movement of goods and people from entering and leaving the cities. Area B is where the PNA has control on the civic issues but partially have control on the security issues, it accounts for about 22%. Area B is not a single area in the WB, like area A, it consists of many separated parts. Finally, Area C is the largest area (more than 60%) of the WB, which is fully controlled by Israel (B’Tselem, 2013). This division and its impact on the economic conditions added to the vulnerability of the economy while facing any political shocks. The WB economy strongly depends on the trade with its neighbors; Jordan and Israel (World bank, 2008). On average, the trade activities (of which is 85% importing) accounts for more than 80% of the GDP in the OPT, among which 90% or more is trade with Israel (World Bank, 2008). The WB has a population of about 2.9 million (in 2016) growing at a rate of 2.5%, the unemployment rate is estimated to be around 20% in 2016 (employed people include those who work in Israel).

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3 Using the PCBS data, “Trade” reflects the money value of the sum of imports and exports. This sum is then divided by the total GDP value in the same year.
4 Data on trade obtained from the PCBS, in which it accounts for almost 85% imports and the trade (exports and imports) accounts 80% of the GDP of 2015.
The Gaza strip

The GS is a small coastal territory controlled by Israel by all side behalf the 11 km southern boarder with Egypt. The boarder with Israel is about 51 km linked with a few number of crossings under its full control. Israel indirectly influence the activities at the crossing with Egypt and it has a full control over the sea leaving the GS vulnerable for total blockade. The nature of the terrain of the GS, which is flat to rolling with largely sandy soil (UNRWA), created an opportunity to dig tunnels, starting in 1980’s, that provided a lifeline for the shaky economy (Pelham, 2012). The tunnels were used to smuggle a wide range of consumption goods (UNCTAD, 2016), which indicates, like the WB, the GS trade depends on its neighbors. The GS has a population of about 1.9 million (in 2016) growing at a rate of 3.3%, the unemployment rate exceeds 40% since 2014. Almost no person form GS works in Israel.

Main overview of the Economic condition of the OPT before 2000.

Between 1967 and 1994, the OPT was under the full control of the Israeli Authorities, which was also reflected in the economic trends. During this period, there is no strong evidence that Israel didn’t implement Economic policies aimed at harming the economic interests of the Palestinians (Arnon and Weinbatt, 2000). By early 1996, because of the peace agreement, the Palestinian Authority (PA) became in charge of the wellbeing and welfare of the Palestinians in the OPT, having the responsibility to provide all basic services. On the other hand, the PA was given little sovereignty over “core” economic policies: the PA can’t issue its own tender and/or its own currency, thereby restricting the ability to draft monetary policies, apart from supervising the banking system. Indirect taxes (VAT, import duties, purchase and excise taxes) were collected by the PA in area A of OPT but continued to be set by Israeli authorities. Trade and industrial policies also continued to be mostly determined by Israeli interests and political considerations. The only significant leverage of economic policy granted to the PA was the control of its own public expenditures and the setting of direct taxes (Dessus, 2004).

In the first few years after Oslo, the economy experienced growth due to the return of a few nationals and large inflows of public and private capital in addition to large injection of funds from international donners. Although, this growth experienced some drawback due to the short-lived closures of Israel in 1995-96, from 1997 to September 2000, the economic conditions provided a steady annual growth. During these years, closures were less frequent and Palestinian workers could generate income working in Israel and its settlements. This Israeli-paid income, in addition to an economic boom in Israel, enhanced the demand for domestic products, transaction costs fell and private investment increased. This resulted in reaching the maximum level of economic growth since the creation of the PA by the mid 2000 (Dessus, 2004).

Main overview of Economic conditions between 2000 and 2005

After reaching its maximum level of the economic growth, the outbreak of the second Intifada in the last quarter of 2000 fractured the dynamics of economic growth and clearly demonstrated the negative impact of closure on economic growth. The closures halted the flow of people and goods between the separated cities within the West bank and Gaza Strip and surely between these cities and Israel, Jordan and Egypt. The closure reached its peak in the second quarter of 2002 with the major Israeli incursions to the West Bank cities (area A). During these five years, no significant and major changes in terms of policy making

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5 Check map in the appendix  
6 PCBS data
for the PA and the condition in terms in any the autonomous to economic police making have not altered since Oslo agreement.

**Main overview of Economic conditions after 2005**

This period began with the Israeli withdrawal from the Gaza strip in 2005, legislation elections in 2006, blockade of the GS reached its peak in 2007, three wars on the GS in 2009, 2012 and 2014. The Election of 2006 resulted in a halt of the financial inflow to the PA and intensifying the blockade of the GS which had a drawback on the economic growth. Apart from a few interferences by the PA to simulate credits for the public servants and providing incentives to banks to take risks between 2007 and 2012, there were no major changes in terms of the autonomics economic policies since the establishment of the PA. However, the PA’ policies to expand credits in the unproductive sectors mainly, which was implemented in the WB, contributed to the economic recovery in the WB in that period (UNCTDA, 2016).

Figure 1: Map of the West Bank and classification of Areas
A dynamical view of the Economic conditions in Palestine

Since the start of the second millennium, the Occupied Palestinian Territory (OPT) has experienced a few major events. These events have affected the dynamics of the national economy. In this paper, we revisit the dynamics of a number of main Macroeconomic aspects since the year 2000. Assessing the short-term developments should be seen in the dynamical context of a long-term period.

The OPTs have experienced different events since the beginning of this millennium, it is always discussable as to which events are termed as major. For this report, we selected several events to assess their impact and to be used as benchmarks for the long-term growth. The following events are among the major ones: start of the second intifada (Q3/4 of 2000); major Israeli incursion of the West Bank (Q1/2 of 2002); the Palestinian elections (Q1 of 2006); Gaza blockade (Q3 of 2007); Gaza war (Q3 of 2014).

Major Events since the new millennia

Since 2000, the OPTs have experienced a number of political events. The major one could be seen either as those that lasted for a number of years (Second Intifada), those that were implemented on sequential manner before taking the final occurrence (Blockade of GS), or as those that presented a shocking impact (the war of 2014). However, there were many other (mostly minor) events, which have contributed to the overall wellbeing of the economy, we chose to analysis the impact of the major ones while only refer to some sub events when necessary

The Second intifada (2000-2005) and the major Israeli incursion of the West Bank (2002)

End of September 2000 the second intifada started. Soon after, this intifada turned to be militarized, in which most types of weapons were used (including tanks, airplanes, etc.). The intifada officially lasted until 2005 (Schachter, 2010), although some sporadic actions continue to exist for several years after. The intifada went through different phases, among which two significant events; the Israeli incursion of the west bank during 2002 and the Israeli withdrawal of the Gaza strip in 2005. The Israeli incursion of 2002 of area A was a major military action, which literally halted the economic life and had a major impact on the production in the west bank. The disengagement of the Israeli from Gaza summer 2005 and accompanied with the sequences of peace initiatives started in Sharm El Sheikh7, which aimed at easing the economic hardship of the OPTs, of which GS has exploited the most of it.

The blockade of Gaza strip (starts after the election in 2006 and tightened by 2007)

The blockade on the Gaza strip was graduate since early 1990s, which was intensified after the election of 2006 and the Hamas takeover of Gaza strip in 2007 (OCHA). The blockade went

7 The most significant of these is the Agreement on Movement and Access (AMA) of November. Which aimed at easing the restriction on the Gaza strip and open the Rafah crossing with Egypt
through several an event that left a mark on the economic life since 2000; the AMA agreement of the end-2005, aftermath of the election of early 2006, and intensified blockade of mid-2007, with the first as a positive one. From 10,400 trucks loaded with goods entering the GS in 2005 to an approximate average of 2400 trucks between 2006 and 2010. The number of trucks moves in and from the GS is fully determined by the Israeli restrictions since goods and services can only enter and leave the GS via a Kerem Shalom, which is under full Israeli control (Gisha, 2017).

The war of 2014 on Gaza strip

The war devastated the economic infrastructure causing severe damages to buildings, factories and agricultural land and livestock (UNRWA; FAO). The war lasted more than 50 days and left the Gaza’s economy in a complete disastrous situation.

Macroeconomic aggregate indicators

Macroeconomics is the study of economy-wide phenomena, including inflation, unemployment, and Economic output and growth and the interaction (Mankiw, 2016). Our analysis focuses on these three main aspects, taking the main aggregate macroeconomic indicators: national output (GDP) and its growth, unemployment, and inflation (Blanchard, 2011).

The Gross Domestic Product (GDP) can be measured by two approaches, the income approach and the expenditure approach. Revisiting the expenditure approach which consists of four different parts: Consumption, Investment, Government expenditure and Net Export. The impact of the fiscal policies (Government expenditure and Taxes), should be thus reflected in this aggregate indicator.

Inflation reflects the change of the general prices between two consecutive periods. Inflation which is measured by the change of the consumer price index of two consecutive periods. The impact of monetary policies (money supply), is limited to non-comprehensive tools, (i.e. basically only the reserve requirement), due to the lack of own currency (Arab Monetary Fund, 2016).

Unemployment reflects the rate of the population who is seeking and wanting to find a job but is unable to find one. This rate, in addition to other related rates, presents the dynamics of the labor market since 2000.

Although, analyzing the impact of the Palestinian fiscal and “limited” monetary policies on the Macroeconomic trends could be relevant but is beyond the focus of this paper. Additionally, there is no evidence of any immediate and significant Palestinian counter fiscal policies to adjust for the impact of Israeli restriction or blockade polices.

In this section, we present the description of the trends’ behavior. Thereafter we provide the analysis per category within the section.

Output (GDP): Description
We adjusted\(^8\) the quarterly data of the GDP considering the seasonal effect. Adjusting the GDP to seasonality is important to tackle the fluctuation of this output due to seasons (Lunsford, 2017). The trend reveals several issues as illustrated in Figure 1 below.

**The West Bank:**

Looking at the GDP since 2000 (in Figure 1), we can clearly see the impact of the intifada of 2000 and the Israeli incursion of 2002. It took the West Bank economy about 7 years (until 2007) to recover its pre-Intifada level of output. Another visible shift is upward behavior of the trend marked the aftermath of sacking the government in 2007 (associated with the blockade on Gaza of 2007). The WB after 2007 experienced an upward trend only to slow down around the war of 2014 in GS.

**The Gaza Strip:**

For the GS, the long-term trend of the output showed no significant improvement since 2000 (Figure 1). The start of the intifada had an impact on GDP trend; however, it bounced back and reached a regional peak a few years later (end of 2005). It took the economy of Gaza strip at least 5 years until it reached again this peak shortly (2012). However, the trend declined sharply after the 2014 war, since then the output level is on the track to reach again the level of 2005 \(^9\).

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\(^8\) Although there are a number of different approaches to tackle adjust seasonality, for the purpose of our analysis we chose a simple seasonally adjustment method (multiplying the quarterly data with the average weight per quarter).

\(^9\) The PCBS estimated figures of 2016 appear to reach, and slightly exceed, the maximum level of output in the pre-elections year.
Output per capita (as an indicator for the economic wellbeing of the citizen)

Description

The most intriguing in the behavior of the GDP per capita is the differences between the WB and the GS and their different behavior with the political circumstances. There is an increasingly sharp difference in living conditions between the Occupied Palestinian Territories since 2000 and now. Despite the recent high rates of growth in GDP per capita in the Gaza Strip, the 2014 conflict further exacerbated the divergence between this area GDP per capita and the West Bank’s. While the GDP per capita of the West Bank in 2016 was, 28.4% above its level in 2000, the GDP per capita of the Gaza Strip in 2016 was still 9.0% below its 2000 level. The best period in terms of the smallest different between the two areas was at the end of 2005.
The end of 2005 presented a peak for the GS as it reached the highest level since 2000.

**Source:** ESCWA calculation using PCBS data

**Analysis (GDP & GDP per capita)**

The trend since 2000 reflects clearly the vulnerability of the OPTs economy to the occurrence of political volatility and Israeli actions. The output volatility is obvious during the entire period and therefore, it hinders the performance of the long-term growth in output (Dabušinskas et.al, 2012). The services economy, of which more than 82% of its GDP is not from tradable own produced goods (Agricultural and industrial) in 2016 (UNCTAD, 2016), is dependent on mainly its ability to trade with the outsiders, on the internationals’ donor money, and slightly on the number of workers who work in Israel and its settlements (Kav LaOved, 2012). Therefore, any lasting measure that restrict the movements of goods across the border will have an instant impact on the economic output (World Bank, 2009). After the elections of 2006 and the blockade of 2007, the economy of Gaza has slowed down significantly, while the economy of the West Bank appeared to show resilience and growth. This is explained by the fact that the international community has directed more financial means to the West Bank away from the Gaza strip after 2007. This is in addition to the Israeli policies of strict closure of the Gaza strip while exercise openness and facilitation policy in West Bank. Figure 5 down illustrate the dynamics of the difference in the GDP per capita between the WB and the GS. Between the end of 2000 (start of the intifada) and the end of 2005 (after a sequence of easing restrictions of the Gaza Strip), the difference has clearly declined. Since the election year, the subsequent blockades and wars (2009, 2012, & 2014), the difference in the GDP per capita has kept increasing. The difference in the GDP per capita was as low as 21 $ between the WG and GS in the fourth quarter of 2005 and increased to exceed the 300$ after 2014.
Interrupted Time Series Analysis in Measuring the Impact of the Blockade and the War of 2014\textsuperscript{11} on the real GDP per capita in the GS:

**GDP per capita as an indicator for the standard of living:** The GDP per capita, which has been used intensively in the literature as an indicator for the standard of living, is not a perfect measure, however it is probably the most accurate single indicator (Tabarrok, 2016). This is not because the GDP per capita only captures what nations can buy, but this is because empirical evidences show a strong correlation with other aspects such as life expectancies, average happiness, health performance, Economic freedom, dissatisfying with the standard of living, and Human Development Index. As real GDP per capita increases, the nation’s wellbeing improves as well.

Previous studies have undermined the real impact of these two political issues on the standard of living. For instance, UNRWA in 2015 estimated that the GDP per capita in GS has declined by 29\% between 2005 and 2014. The UNRWA study used annual values comparing the growth rate

\textsuperscript{10} Seasonally adjusted

\textsuperscript{11} The impact of other events (i.e. wars of 2009 and 2012) were tested statistically whether they have a lasting impact. Although they did have an impact on the short run, the impact on the level and the trend behavior is not statistically significant.
between these two years. The IMF in 2014 estimated that the real GDP per capita in GS has declined by 30% by 2013. The IMF study used a relativity approach by fixing the level of the GDP per capita in GS in the year of 2005 as the base year and comparing this level to the one of 2013. This study didn’t include the impact of the war in 2014. UNCTAD in 2015 compared the GDP per capita in 2016, used its macro econometrics model to assess the potential improvement on the GDP per capita in the OPT had the PA implemented certain policies to be 24%. A study presented at FAO meeting by AlWehaidy in 2013 assessed the impact of the blockade to reduce the GDP per capita in the GS to 17% between 2005 and 2011. Etkes & Zimring (2015) estimated a decline of the welfare in GS up to 27% between 2006 and 2010. See table 1 for a summary of a number of relevant studies.

Table 1: Summary of the literature

<table>
<thead>
<tr>
<th>Authors</th>
<th>Date</th>
<th>period</th>
<th>Methodology</th>
<th>Indicators</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etkes &amp; Zimring</td>
<td>2015</td>
<td>2006–2010</td>
<td>Using the West Bank as a counterfactual economy</td>
<td>Consumption as welfare indicator for the GS</td>
<td>Drop: 14%-27%</td>
</tr>
<tr>
<td>MoNE &amp; ARIJ</td>
<td>2011</td>
<td>2006-2010</td>
<td>Using the West Bank as a counterfactual economy and projecting the behavior of the GDP in GS</td>
<td>The difference of “the west bank alike” counterfactual projection – Not clearly elaborated</td>
<td>The difference indicates of about 50% loss of the GDP</td>
</tr>
<tr>
<td>UNRWA</td>
<td>2015</td>
<td>2004-2014</td>
<td>Annual percentage of growth/decline in the GS</td>
<td>GDP per capita; annual including both the war and the blockade on GS</td>
<td>29% lower</td>
</tr>
<tr>
<td>World Bank</td>
<td>2015</td>
<td>1994-2014</td>
<td>Blockade, war and poor governance; growth comparison on GS</td>
<td>Real per capita income (GNI) the year 2014 when compared to the level on year 1994</td>
<td>31% lower than 20 years</td>
</tr>
<tr>
<td>Al Wehaidy at FAO meeting</td>
<td>2013</td>
<td>2005-2011</td>
<td>Only blockade on GS</td>
<td>GDP per capita 2011 and 2005</td>
<td>17% below</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>2015</td>
<td>1994-2015</td>
<td>Just comparing two years’ number in GS</td>
<td>GDP per capita</td>
<td>72% of</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>2016</td>
<td>2000-2014</td>
<td>Both blockade and the war; using “UNCTAD macro econometric model”</td>
<td>GDP per capita Using projection – all OPT together</td>
<td>24% more had the PA applied the integrated policies</td>
</tr>
<tr>
<td>IMF</td>
<td>2014</td>
<td>2005-2014</td>
<td>Fixing the GDP per capita with the year 2005 in the GS.</td>
<td>GDP per capita</td>
<td>Between 2005 and 2013: (30%)</td>
</tr>
<tr>
<td>And 18% between 2013 and projected 2014</td>
<td></td>
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</tr>
<tr>
<td>UNSCO</td>
<td>2017</td>
<td>2016</td>
<td>Between the last quarters (Q3 &amp;Q4), and the yearly to year quarter in GS</td>
<td>GDP per capita</td>
<td>Growth was reported between these quarters</td>
</tr>
</tbody>
</table>
Using the Interrupted Time Series Analysis\textsuperscript{12} (also called segmented Time Series Analysis) to assess the impact of two major events, the blockade and the war of 2014, on the real GDP per capita in the GS, the results indicated the impact of these two events to be around 51\%. The Interrupted Time Series (ITS) is the solidiest and the most used quasi experimental empirical studies (Jandoc, et al., 2015). The ITS is to compare longitudinal trends and level before and after on a certain event or policy changes (Law, 2017).

\textbf{Interrupted Time Series analysis\textsuperscript{13}.}

Interrupted time series (ITS) analysis is strong and robust approach using segmented regressions and exploit the nature of the time series data (Bernal et al, 2017; Penfold & Zhang 2013). ITS is a quasi-experimental an alternative to randomized trials, it reflects the difference of the level and the slope of time series data just after the interruption by known reason (Ramsey et al, 2003).

Using the segmented regression analysis (Wagner et al, 2002), the proposed model is:

\[ \hat{Y}_t = \beta_0 + \beta_1 \ast \text{time}_t + \beta_2 \ast \text{intervention}_t + \beta_3 \ast \text{time}_t \ast \text{after}_t + e_t \]

Out interrupted time series model is modified as following:

\[ \hat{\text{GDP}}_{\text{Cpi}_t} = \beta_0 + \beta_1 \text{Time}_t + \beta_2 \ast \text{the blockade}_t + \beta_3 \ast \text{time}_t \ast \text{after}_t + e_t \]

\[ \text{time}_{2006} \ast \text{blockade}_{2006t} + \beta_4 \ast \text{War}_{2014t} + \beta_5 \ast \text{Time} \ast \text{after}_t \ast \text{war}_{2014t} + e_t \]

\( \beta_0 \) estimates the base level of the outcome at the beginning of the series.
\( \beta_1 \) estimates the base trend, i.e. the change in GDP per capita per quarter in the pre-blockade segment
\( \beta_2 \) estimates the change in level in the post-blockade segment
\( \beta_3 \) estimates the change in trend in the post-blockade segment
\( \beta_4 \) estimates the change in level in the post-war 2014 segment
\( \beta_5 \) estimates the change in trend in the post-war 2014 segment
\( e_t \) estimates the error

Given the nature of this case, no threat for internal validity is confirmed. For instance, there are no other changes that happened at the same time when implementing the strict blockade in the first quarter 2006 (i.e. no historical threat for the validity)\textsuperscript{14}, this same goes with the war of 2014.

\textsuperscript{12} Interrupted Time Series Analysis is intensively used to assess the impact of certain events, policy change or a treatment. The basic idea is that it studies the impact of the events on level and the trend

\textsuperscript{13} See Appendix II for further analysis of implementing the ITS

\textsuperscript{14} No history threat to validity as no other major event, issue or policy happened at the same period. No maturation threat to validity as the trend since 2000, although fluctuated severely, it does not sound that the level and trend after the blockade behave according to naturally behaving trend. No statistical threat to validity (no random selection of the observation. No instrumentation threat, as there were no changes in the way the GDP per capita is measured since then.}
After preparing the data and seasonally adjusting it, we visualize the data to check whether we have any significant issue (such as wild points). Wild points (outliers) are characterized to be isolated which can reflect either anticipatory effect, data quality or short-term history events.

The results indicated that the impact is as follows

- The percentage of decline in the level of GDP per capita at the last data point (Q3 2016) is between (29.5\%^{15} - 40.9\%) had no blockade and no war occurred in 2014 (i.e. the difference between the actual point in Q3 2016 and the virtual value on the dashed red line).
- The percentage of decline in the level of GDP per capita is between (44.0\%^{16} - 51.4\%) at the first quarter after the war (Q4 2014), (i.e. the difference between the actual point in Q4 2014 and the virtual value on the dashed red line).
- The blockade on GS has caused the level and the trend (blue solid line) to decline from the virtual level and trend (red dashed line) by 77.83 $ and by 1.03$ each quarter, respectively.
- The war of 2014 on GS has caused the level (green solid line) to decline from the virtual level and trend (red dashed line) an additional 61.67$ while the trend increased from the blockade level (dashed blue line) by 3.26$ each quarter.

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^{15} The lowest figure if we corrected the model for outliers and the highest figure is impact on level without modeling for the outliers

^{16} The lowest figure if we corrected the model for outliers and the highest figure is impact on level without modeling for the outliers
2. Labor market

The labor market in the OPT indicates vulnerability and weakness while unable to bounce back to its level before the start of the 2000 intifada. The situation in Gaza is far more severe than that of the West Bank. The demographic characteristics has a direct impact on the resilience of the Labor participation. For instance, about 40% of the population in 2015 are younger than 15 years old. And among those who are older than 15, around 55% are outside the labor force of these 8.3% have not tried to find a job. Most those outside the labor force are housekeeping (46%). Figure 5 provides a map of the labor market of 2015.

![Figure 6: Labor market platform in 2015](image)

Source: PCBS
* Full Employment and time related underemployment are the percentage from the total Labour Force.
i. Labor participation rate

Regional Aspects

The Labor participation rate does not show a significant reaction to the major events happened since the beginning of the millennia (with the expectation of the start of the intifada in 2000 and the major Israeli incursion of 2002). The gap between the West bank and the Gaza Strip has declined only to be halted by the 2014 war. Since 2010, the rate of participation is increasing in Gaza strip, which indicates that more people are willing to- or looking for job opportunities. This is an indicator of an “added worker” effect; those who were outside the labor force is now seeking to work. For these, although they could tolerate poorer work conditions and compensations, they may not easily find job in Gaza strip. This should be reflected in an increase in the unemployment rate.

![Figure 7: Labour participation rate](image)

Source: ESCWA calculation using PCBS data on Labour

Gender Aspects

A major indicator is the constant growth of females’ participation rate. The participation rate for females increases faster than the one for males since 2000. Females participation rate increased by 34% in 2016 from its level in 2000, while the males’ participation rate increased only by 2% in 2016 in the same period.
ii. Unemployment

Regional Aspects

There is a clear different in the dynamics and trend of the Unemployment rate between the West Bank and the Gaza Strip (See figure 8).

The West Bank:

The West Bank unemployment rate reached its peak due to the Israeli incursion of 2002. Since then, the unemployment rate in West bank has experienced a gradual decline. This gradual decline has not resulted for the unemployment rate to reach its 2000 level (pre-intifada level).

Gaza Strip:

The trend of the Gaza Strip unemployment rate has experiences a more volatile behavior and indicates vulnerability to almost all major events since 2000. The unemployment rate reached a regional peak in 2002, in 2006, in 2008, and in 2014. All these are associated either with a military event or with major political shift (elections). Since 2000, the unemployment rate in Gaza strip showed an upward trend, reaching its maximum after the war of 2014.
Gender Aspects

The Gap between the unemployment rate of males and the females indicates a strong reaction to the main events since 2000.

Male Unemployment rate:

Since the start of the intifada and the Israeli incursion of 2002, the unemployment rate of men more than doubled from 14.6% to 33.5%. In 2002, the male unemployment rate reached its maximum level. Since 2002, the unemployment rate declined. However, this decline has not resulted in reaching the pre-intifada level of (14.6%).

Females Unemployment rate:

The females’ unemployment rate started with 12.4 and has since kept an almost perfect upward trend reaching 40.5% in 2016. Contrary to the unemployment rate of the males, the females’ rate appears largely not to be affected by the major event. On the contrary, the females’ rate showed an extra increase since the Blockade of Gaza of 2007. This is not necessarily a positive development, it simply indicates that more females are willing to enter the labour force to compensate for the lack of income per household. It
The rate of unemployment of Females is not only higher than that of men (46.5% for Females compared to 23.7% for men in fourth quarter 2016) but it has also continued to rise for almost 10 consecutive years. One positive development is the recent increase in the participation rate of Females. However, despite this encouraging trend, the labour force participation of Females in the fourth quarter of 2016, at 19.5% of the population aged 15 or more is still considerably below that of men at 70.9%.

The rate of unemployment declined slightly, by 0.4%, in the fourth quarter of 2016 compared to the same period of 2015. At the same time, the labour participation rate declined by 2.2% during the same period, suggesting that many people are leaving the labour force (“discouraged worker” effect).

Unemployment rate in Gaza strip continued to increase and it reached 42% in the third quarter of 2016. The average for 2016 was 41.7%, still above its pre-2014 level, showing that the labour markets of this region are still struggling to recover from the fallout of the conflict.

Youth Aspects

Although the rate of unemployment among young Palestinians (15-29 years old) showed a modest improvement in the last quarter of the 2016, on average it increased by 1.5% during the entire year of 2016. This rate reached, in the third quarter of 2016, its highest level since 2014 (45.4%).

Figure 11: Youth Unemployment trend since 2010
iii. **Purchasing power and inflation**

The purchasing power\(^{17}\) since 2000, which is based on the relative percentage change of the CPI from the 2000 (Magnien, 2002), (has declined exponentially reaching almost 40% below its 2000’s level in 2016 (i.e. goods and services are more expensive). This level of decline on the purchasing power reflects the inability, of both, to exercise any monetary policies to control the inflation and to control imported inflation. The inability of drawing effective monetary policies has been explained above, however, the inability to control the imported inflation (mainly from Israel but also from the rest of the world), could be explained due to binding price-level agreements with the Israeli side. The purchasing power for the West-bankers in 2016 is 40.62% lower while it is for the Gazans is 31.77% than their respective values of the year 2000. The ability to purchase the same basket of goods and services in 2016 are at least 40% less than in the year of 2000.

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\(^{17}\) Purchasing power is measured using the consumer price index (CPI). For example, the CPI of year 2000 is divided by the CPI of 2016 the ratio converted to percentage, and the result was subtracted from 100%. This indicates the purchasing power of 2016’s relative to the 2000’s same basket of goods and service.
Average Daily Wages

The declining purchasing power raised an alarming indicator, which could be eased when is met with a comparable growth in average wages and an increasing employment rate. As noted above the employment rate has been steadily declining since 2000, moreover the growth rate of the average wages does not meet the declining level of the purchasing power in 2016.
The average daily wages of 2016 are 23.4% higher than that of 2000. This level is different for the West Bank (25.7% higher) and for the Gaza Strip (14.1% higher). In Gaza Strip, the average daily wage reached its optimal level in 2006 (23.9% higher than its level of 2000) and since then it declined continually reaching 9.8% of its level in 2010.

Average Daily Wages vs purchasing power in 2016

The declining in the purchasing power is not met with an equivalent growing in the average daily wages in the same period. This is an alarming evidence which could indicate that the impact of the Israeli control of the monetary policies will lead to more hardship of the Palestinian household. This would lead to several social and economic pressures on the Palestinians, which and will contribute to the shrinking of the middle class further. This situation is not significantly different between the West Bank and the Gaza Strip. The impact of the war in 2014 on the wages development has reduced the average daily wages, after a short improvement since 2010.
The inability of the economy to create a significant growth of the number of employed people in addition to a declining real average daily wage raised a serious alarm to the policy makers.

Prices per group indicate that the purchasing power of Food, Housing, Education and Health care has increased. In 2016, Food is 66.5% and 60.6% more expensive than in 2000 in the West Bank and Gaza Strip, respectively. In same year, housing is 82.6% and 30.4% more expensive in West Bank and Gaza Strip, respectively. In addition, Education and Health is more than 60% and 17% more expensive in 2016 than 2000 in the West Bank and Gaza Strip, respectively.
Reviewing the behavior of the macro economic trends provides a clearer view of the recent development than only focusing on any recent development. In this paper, we address the main aggregate indicators of the Macroeconomics (output & growth, unemployment, and inflation). Describing the trend of several aspects related to these aggregate indicators showed that certain political events have left a major impact on their dynamics. Focusing partially on the latest development is misleading given the long-term impact.

The Gross Domestic Product (GDP): The impact of the Israeli measures since the second intifada is clearly illustrated on the major shocks the GDP and the GDP per capita trends. For instance, the major Israeli incursion of 2002, the quarter just after the election and the strictness of the blockade of GS in 2006, and the three wars and with the one of 2014 is the major one. However, the difference of impact between the GS and WB depends on the level of Israeli measures on the sub-area. For instance, the impact of the incursion is harsher on the WB than on the GS, since the incursion was of the WB cities and not of the GS’s, while the impact of the blockade and war of 2014 is harsher on the GS.

**Source:** ESCWA calculation using PCBS data

![Figure 15: The inflation of prices in 2016 when compared to the prices of 2000](image)
The impact of the blockade and the war of 2014 on the seasonally-adjusted GDP per capita on the GS was illustrated in figure 5 above. The impact of these both events together on the Q3 of 2016 is between 29.5% and 40.9% lower than its potential.

Unemployment: The annual unemployment rate of WB has been in the recovery conditions since the major Israeli incursion in 2002, while the situation in GS continues to get worse with time reaching above 40% of the participation rate since 2014. The unemployment rate for females has continue to grow overpassing the unemployment rate of the male by 2009 reaching 40.5% in 2016, moreover, the youth. However, the participation rate has continued to raise since 2000 for both areas of the OPT and for both sexes (with a steady increased rate for the females).

The inflation: reviewing the trend of purchasing power since 2000, the ability of the Palestinians to purchase the same basket has declined to around 40% less (in the west bank higher than in the GS). On the other hand, the average nominal wages have grown of about 25% since 2000 (also in the west bank higher than in the GS). This indicates that, although, wages have increased in WB in 2016 more than in GS (when compared with 2000), its purchasing power has declined more than in GS. Housing prices in the WB inflated the most by 2016, this could be explained by the prices of rents and real estates in the limited space of area A and B within the WB.

The impact of the Israeli direct and indirect measures on the GDP, the unemployment and the inflation is clearly apparent. Direct measures, such as to fully controlling the movement of goods and people, had a sever and clear impact on the development of the Macroeconomic trends. Indirect measure, linked to allowing the PA to issue its own monetary policies and release them from the price- binding agreements, are, however, clear at the long run. The inflation figures are alarming, these in addition to the increased level of unemployment, needs an urgent attention as to able to reach sustainable development goals and to sustain the livelihood in Palestine.

Finally, this report is the first in a series of reports aims at assessing the long-term impact of the Israeli measures on the sustainable development of the Palestinian people.
References:

Al Wehaidy R., (2013); “Palestinian National Development Plan 2011-2013 – current priorities, challenges and opportunities”, UNITED NATIONS SEMINAR ON ASSISTANCE TO THE PALESTINIAN PEOPLE Assistance to the Palestinians — challenges and opportunities in the new reality of a State under occupation FAO Headquarters,


FAO, (2014); “Gaza: Agricultural sector paralyzed, over 80 percent of the population food insecure. access on may 2017.

GISHA, (2017); Legal Center for the freedom of movement, website accessed in May.

IMF (2016); West Bank and Gaza Key Issues; August 26, 2016.


MoNE and ARIJ, (2011); “The economic costs of the Israeli occupation for the occupied Palestinian territory”, A bulletin published by the Palestinian Ministry of National Economy (MoNE) in cooperation with the Applied Research Institute- Jerusalem (ARIJ).

Pelham (2012); “Gaza's Tunnel Phenomenon: The Unintended Dynamics of Israel's Siege”. The Journal of Palestine Studies, 2011/12; V.41, n4


Schachter, J. (2010); The end of the Second Intifada? Strategic Assessment. 13 (3), 63-70


UNCTAD (2017); “The Occupied Palestinian Territory: Twin Deficits or an Imposed Resource Gap?”. UNCTAD/GDS/APP/2017/1 and Corr.1

UNCTAD (2016); “Report on UNCTAD assistance to the Palestinian people: Developments in the economy of the Occupied Palestinian Territory”. UNCTAD/APP/2016/1

UNRWA, (2017); Gaza Strip information website accessed on 1/12/2017.

UNSCO (2017); “UNSCO Socio-Economic Report: Overview of the Palestinian Economy in Q4/2016”.


World Bank, (2013); Area C and the Future of the Palestinian Economy. Report No. AUS2922

World Bank, (2009); “Palestinian Economic Perspectives: Gaza Recovery and West Bank”.

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Appendix I - The Gaza Strip
The Gaza Strip is a 360 Sq. Km of coastal area, it has 72 km of land bordering among which is 13 Km with Egypt and the rest is with Israel. It has 7 crossing points with either Israel (Erez, NahalOz, Karmi (at its conveyer belt), Kissufim, Sufa, and Karem Shalom) or Egypt (Rafah-crossing). After closing 4 of these crossings (Kissufim in 2005; Karmi in 2007; Sufa in 2008; NahalOz in 2010; and the Karmi conveyer belt in 2011), all trucks load crossing GS via Karem Shalom, while Rafah and Erez are crossing for people only (Gisha, 2017).

The Economy of the small strip depends thus totally on the crossing of the truckloads on both directions. The economy in the GS depends mainly on the crossings which has experience a strong volatility depending on the political conditions (Blockade and Wars).

The number of truckloads entering GS (2009-2017) are shown in the figure bellow:

Figure A12: the number of trucks load entered Gaza Strip since 2009

Source: compiled by GISHA of PalTrade, OCHA-OPT and UNSCO
Appendix II

Methodology

Evaluation of the impact of the Israeli measures (blockade & War) on the GDP per capita/Gaza strip

To measure the impact of the Israeli measures on the GDP per capita, we used Interrupted time series analysis. Two majors are of our concern at this analysis: the blockade, starting just after the 2006 elections and the war of 2014.

The economy of the GS depends strongly on the measures at the crossings either with Egypt or with Israel. Thus, the impact of any sever measure will be felt and reflected on the economic indicators. A powerful summary indicator of the economic development is the GDP per capita (UNSD). The GDP per capita is among the indicators that reflect the extent to which the population share of the total production of the GS.

![Figure 1: GDP per capita Seasonally adjusted](image)

**Source:** ESCWA calculation using PCBS data

**Interrupted Time Series analysis.**

Interrupted time series (ITS) analysis is strong and robust approach using segmented regressions and exploit the nature of the time series data (Bernal et al, 2017; Penfold & Zhang 2013). ITS is a quasi-experimental an alternative to randomized trials, it reflects the difference of the level and the slope of time series data just after the interruption by known reason (Ramsey et al, 2003).

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18 Although the blockade started earlier and gradual stages but the major two intensifying events (the election of 2006 and the Hamas retake of power in 2007.

19 Although the salaries of the public servants and those who work with international organizations and NGOs also contribute to the economy with the GS, however, it size is relatively minor
Use segmented regression analysis (Wagner et al, 2002):

\[ \hat{Y}_t = \beta_0 + \beta_1 \times \text{time}_t + \beta_2 \times \text{intervention}_t + \beta_3 \times \text{time_after_intervention}_t + \epsilon_t \]

Out interrupted time series model is modified as following:

\[
\frac{\overline{GDP}}{\text{GDP per capita}} = \beta_0 + \beta_1 \text{Time}_t + \beta_2 \times \text{the blockade of 2006}_t + \beta_3 \times \text{Time after the blockade of 2006}_t + \beta_4 \times \text{War 2014}_t + \beta_5 \times \text{Time after War 2014}_t + \epsilon_t
\]

\( \beta_0 \) estimates the base level of the outcome at the beginning of the series.
\( \beta_1 \) estimates the base trend, i.e. the change in GDP per capita per quarter in the pre-blockade segment
\( \beta_2 \) estimates the change in level in the post-blockade segment
\( \beta_3 \) estimates the change in trend in the post-blockade segment
\( \beta_4 \) estimates the change in level in the post-war 2014 segment
\( \beta_5 \) estimates the change in trend in the post-war 2014 segment
\( \epsilon_t \) estimates the error

After preparing the data and seasonally adjusting it, we visualize the data to check whether we have any significant issue (such as wild points). Wild points (outliers) are characterized to be isolated which can reflect either anticipatory effect, data quality or short-term history events.
We note two potential wild points, (Q4-2005 & Q4 2014). Knowing that in 2005, a gradual easing in restriction did occur by the Israeli reaching its peak in the months before the elections of 2006, the election which brought Hamas to power. Thus, the impact has been gradual and that the last two quarters of 2005 are close to each other. Also, knowing that the aftermath of the war of 2014 (Q4 2014), which resulted in major destruction of the economic infrastructure and halted the economic activities almost entirely. Testing for two points none of which was significant, we choose to model these two points with our model for the fact that these two points are located at the edge of the segments.

Checking autocorrelation with drawing against the residual and the Durbin-Watson test. Figure 3 below has two parts on the left side the graph of OLS residual without modelling for the two outliers, while the graph at the right is the graph against

Figure 3: The Autocorrelation with and without considering the outliers.

Source: ESCWA calculation using PCBS data

We thus concluded to consider the outliers in the model. After drawing the PACF and ACF we start with an ARMA (4:3) model. Figure 4 has both the ACF and PACF.
Figure 4: the ACF and PACF to check for autocorrelation

Source: ESCWA calculation using PCBS data

Coefficients:

| Coefficient | Estimate | Std. Error | t value | Pr(>|t|) |
|-------------|----------|------------|---------|----------|
| (Intercept) | 252.4544 | 11.8396    | 21.323  | < 2e-16  *** |
| Time        | 2.5192   | 0.8635     | 2.917   | 0.00499 ** |
| Levele2006  | -77.8333 | 15.2638    | -5.099  | 3.79e-06 *** |
| TrendE      | -1.0272  | 0.9880     | -1.040  | 0.30275  |
| levelw2014  | -61.6694 | 26.8842    | -2.294  | 0.02537 * |
| Trendw2014  | 3.2553   | 4.2657     | 0.763   | 0.44842  |
| war2014     | -36.4804 | 34.8238    | -1.048  | 0.29911  |
| gaza2005    | 57.9674  | 29.9123    | 1.938   | 0.05742  |

Residual standard error: 27.47 on 59 degrees of freedom
Multiple R-squared: 0.4733, Adjusted R-squared: 0.4108
F-statistic: 7.574 on 7 and 59 DF, p-value: 1.694e-06
Figure 5: the interrupted time series considering the outliers

![Graph showing the interrupted time series with data points and lines indicating different periods and levels of GDP per capita, with sources and notes as follows:]

*Source: ESCWA calculation using PCBS data*

The effect of the blockade, which started just after the election of 2006 is sever. The results show that the current estimated level is between 111.5 $ and 191.1 $ less the end of 2016 has not the GS suffered from the blockade nor the war of 2014. It is about (29.1% and 40.9%) less. Although the positive development after the war of 2014, the overall GDP per capita is still at least 111.5 $ less than it should have been have no blockade and no wars occurred. The impact of the blockade only on the GDP per capita before the war of 2014, at which the GDP per capita is between 84$ and 147.6$ less than it should be has no blockade occur (between 22.9% and 33.8% less). After the war of 2014, the GDP per capita is between 161.5$ and 226.5 $ less than its supposed level had no war and no blockade occurred, this is between 44% and 51.4% below the level.

Results comparing the current level with the level without Blockade and war of 2014 (the dashed red line).

<table>
<thead>
<tr>
<th></th>
<th>At the end of the period (Q3 2016)</th>
<th>Just before the war of 2014</th>
<th>Just after the war of 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ignoring the outliers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>-191.1</td>
<td>-147.6</td>
<td>-226.5</td>
</tr>
<tr>
<td>Per cent</td>
<td>-40.9%</td>
<td>-33.8%</td>
<td>-51.4%</td>
</tr>
<tr>
<td><strong>Modeling the outliers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>-111.5 $</td>
<td>-84 less</td>
<td>-161.5</td>
</tr>
<tr>
<td>Per cent</td>
<td>-29.5%</td>
<td>-22.9% less</td>
<td>-44%</td>
</tr>
</tbody>
</table>

*Source: ESCWA calculation using PCBS data*