The influence of Industrial Sector on Economic Growth in Palestine: A Kaldorian Approach

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Many thanks to Ms. Sana Atari for her effort and for her valuable comments that helped me achieve this research.

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Dedication

I dedicate my humble effort

To my husband and my parents, to my lovely son and daughters

Whose love and encouragement made me capable to get such successful accomplishment.

Abstract

The paper aims to test the Kaldor's laws in Palestine, by explaining and analyzing the Kaldor's first law and second law. This approach is considered one of the endogenous growth theories for making policies that will stimulate openness, competition, and efficiency. The laws formulated in terms of Co-integration and Granger causality analysis in order to examine the relation among growth in industrial output and growth in GDP in the long and short- run.

The study examines the contribution of industrial sector to the growth of Palestinian economy by via quarterly time series data from 2000 to 2015, and formulates the laws in term of co-integration and Granger causality between industrial output and GDP (the first law) and manufacturing output and labor productivity (Verdoons law/ second law) . Secondary data is obtained from Palestinian Central Bureau of Statistics. Due to the recent establishment of the Palestinian Authority (PA), data was limited for short period from 2000 to 2015. The study is based on both the descriptive analysis to describe the variables of the study, and statistical analysis to study the long run and short run relationship between the growth in the industrial sector and GDP and also to examine the relation among the industrial growth and the growth of productivity in industrial sector.

Three models are used in this study based on first and second Kaldor's growth laws. The first, real gross domestic product forms the dependent variable while industrial output is the independent variable. In the second, labor productivity in industrial sector forms the dependent variable while growth of industrial production is the independent variable. In the third, growth in the number of employees in manufacturing sector forms the dependent variable while growth in manufacturing output is the independent variable.

(ADF), Augmented Dickey Fuller Unit Root Test, show that the data is stationary at first difference, as most of the financial and economic variables are characterized by instability

(non-stationary) over time. Then, the co-integration analysis using Johansen co-integration test, to examine the presence of steady linear relation among non -stationary variables in the long run. this test indicates that industrial sector has significant and positive linear long run relationship with economic growth. Then vector auto-regression, the Granger Causality Test also used to capture causality among the variables in order to scrutinize the direction of the causal relation among the industrial output and growth of the economy in the short run. Finally, (VECM) the vector error correction model also used to scrutinize the long and short run equilibrium relationships among the variables.

The results of the data analysis through using various analytical models indicated an insignificant impact of growth in industrial sector on growth in real GDP in long run in Palestine, and there are no long run relation among the industrial output growth and the increase of labor productivity in manufacturing, and there are no long run relation among growth in industrial output and the growth of number of manufacturing employees. On the other side this empirical study also found the unidirectional Granger causality from growth in GDP to the growth in manufacturing sector , as GDP growth stimulates the development of the industrial sector in Palestine in the short run, despite this results opposed what Kaldor's proposed that the direction of causality should be from manufacturing sector to economic GDP growth, but the growth in GDP in Palestine in essential for the sake of development the industrial sector in short run. This empirical study also found short run unidirectional Granger causality from growth in manufacturing sector to growth in the number of employees in manufacturing, and also found that growth in manufacturing and growth of productivity do not cause each other in short run.

But there is a short run causal relationship, run in one direction from real gross domestic product to the industrial sector, which indicates that growth in real GDP causing the development of industrial sector over the short term. While it was not there a long-run causal

relationship from GDP growth to the growth in the manufacturing output, this may explain that the level of economic growth in Palestine is not enough to stimulate high growth rates in the Industrial sector in the long run. This study gives the guideline to the policy makers. In order to achieve high growth rates

الملخص

وتهدف الدراسة الى تحليل واختبار اثر مساهمة القطاع الصناعي في نمو الاقتصاد الفلسطيني بناءاً على نهج (Kaldorian) Approach و إلى اختبار قوانين kaldor في فلسطين، من خلال شرح وتحليل القانون الأول والقانون الثاني، ويعتبر هذا النهج واحدة من نظريات النمو الداخلي (endogenous growth theories) لصنع السياسات التي من شانها ان تعزز تحفيز الانفتاح والمنافسة والكفاءة. القوانين صيغت بناءاً على اختبار التكامل المشترك وتحليل جرانجر للسببية (of Co-integration and Granger causality analysis) من أجل دراسة العلاقة بين النمو في الانتاج الصناعي والنمو في الناتج المحلي الإجمالي في المدى الطويل والقصير.

وتبحث الدراسة في مدى مساهمة القطاع الصناعي في نمو الاقتصاد الفلسطيني من خلال بيانات السلاسل الزمنية الفصلية التي تغطي الفترة من 2000 الى2015، وصيغت القوانين بناءاً على اختبار التكامل المشترك وجرانجر للسببية بين الناتج الصناعي والناتج المحلي الإجمالي (Kaldor's first law) والناتج الصناعي وإنتاجية العمل (Verdoons and Kaldor second law)، حيث تعتمد الدراسة على البيانات الثانوية الربعية ، حيث تم الحصول على البيانات المتعلقة بالناتج المحلي الاجمالي وانتاج القطاع الصناعي وعدد العاملين في القطاع الصناعي من الجهاز المركزي للاحصاء الفلسطيني.

تقوم هذه الدراسة باستخدام التحليل الاحصائي الوصفي، ويستخدم الاسلوب الوصفي من اجل وصف المؤشرات الاقتصادية كالعمالة والانتاجية في القطاع الصناعي والناتج المحلي الاجمالي، بالاضافة الى التحليل الاحصائي لدراسة العلاقة بين

النمو في القطاع الصناعي والناتج المحلي الإجمالي (القانون الاول) في المدى القصير والطويل، وكذلك لفحص العلاقة بين النمو الصناعي ونمو الإنتاجية في القطاع الصناعي (القانون الثاني).

وتقوم هذه الدراسة على ثلاثة نماذج، على أساس القانون القانون الاول والثاني (first and second Kaldor's growth Laws). القانون الاول يتمثل بالناتج المحلي الإجمالي الحقيقي، حيث يشكل المتغير التابع بينما الانتاج الصناعي هو المتغير المستقل، بينما القانون الثاني يتمثل بإنتاجية العمل في القطاع الصناعي حيث تشكل المتغير التابع بينما نمو الإنتاج الصناعي هو المتغير المستقل.

(ADF), Augmented Dickey Fuller Unit Root Test) ، من اجل اختبار مدى استقرار البيانات حيث تستقر البيانات في الفرق الاول، وذلك لانه معظم المتغيرات المالية والاقتصادية هي بيانات غير مستقرة وغير ثابتة على مر الزمن.

حيث تحلل الدراسة البيانات باستخدام نموذج الانحدار الذاتي حيث تم استخدام (Johansen co-integration test) يوهانسن اختبار التكامل المشترك، لدراسة وجود علاقة خطية ثابتة بين متغيرات غيرالمستقرة (non-stationary) على المدى الطويل من اجل بحث امكانية وجود علاقة طويلة الامد بين المتغيرات قيد الدراسة، بالاضافة الى استخدام نموذج متجة الانحدار الذاتي وايضاً اختبار جرانجر للسببية(Auto-regression, the Granger Causality Test) . أجل تحديد اتجاه العلاقة السببية بين المتغيرات.

تشير نتائج تحليل البيانات الى عدم وجود علاقة طويلة الامد بين النمو في القطاع الصناعي و النمو في الناتج المحلي الإجمالي الحقيقي في فلسطين. وليس هناك أي علاقة طويلة المدى بين نمو الناتج الصناعي وزيادة إنتاجية العمل في

الصناعات التحويلية، وليس هناك أي علاقة طويلة المدى بين النمو في الانتاج الصناعي ونمو عدد العاملين في القطاع الصناعي .

وايضاً تشير النتائج الى وجود علاقة سببية أحادي الاتجاه من النمو في الناتج المحلي الإجمالي إلى النمو في قطاع الصناعات التحويلية في المدى القصير، فالنمو في الناتج المحلي الاجمالي في فلسطين في المدى القصير ضروري لتحفيز النمو في القطاع الصناعي. وايضاً تشير نتائج (Granger Causality) الى وجود علاقة سببية أحادي الاتجاه من النمو في قطاع الصناعة الى النمو في عدد العاملين في الصناعات التحويلية. ولا يوجد علاقة سببية من كلا الاتجاهيين بين النمو في قطاع الصناعة والانتاجية في القطاع الصناعي.

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CHAPTER ONE

1.1 Introduction

Economic growth is a macroeconomic goal each country seeks to achieve, its means that the economy will produce more than before. If the country increases its production by producing more, businesses are more money-making, and stock price goes up, make the firms invest more in capital and employ more workers, create more jobs, incomes goes up and consumers have more money to buy more goods and services, it increase country productivity, advances technology that causes of economic growth. Economic growth refers to the raise of the country's GDP (Attia, 2003)

GDP is normally designed on a yearly basis, as gross domestic product is the fiscal value of all the final production (good and services) produced across each country border in a particular period of time.

The study is based on the GDP quarter growth, the paper has scrutinized the factors affecting on the yearly growth of GDP of Palestine by focusing on the contribution of industrial sector as "manufacturing is the engine of growth hypothesis", (Kaldor,1960).

Manufacturing have a significant role in generating economic growth, the economic arguments Illustrated that the worsening of trade for deprived countries, raw material and agricultural exports, and how high growth in productivity is considered the core that leads to per capita income growth, which was only possible all the way through industrialization (**Helen Shapiro**, 2007).

One of the most popular approaches in explaining economic growth is "growth accounting approach". Neoclassical growth theory of Solow exogenous growth models where the growth factors divided into three components, growth of labor input, the growth of capital input and technical progress. Each factor contributes to economic growth.

The core feature of the new growth approach is the role of" increasing returns to scale" in

Clearing up the growth of the economy which called Kaldorian Approach (1966), as kaldor was dissatisfied with the capability Solow model to clarify economic growth; Nicholas Kaldor was one of the first who asserts the significance of demand in determining long-run growth.

Kaldor focus on demand as a central role to achieve long term growth, through exports growth and the significance of dynamic "increasing returns to scale".

Kaldor proposed that the economic growth is caused by manufacturing sector induced by demand-driven for numerous causes: primary, it is in industrial sector where growing and increasing returns exist. Next, the growth of industrial output is considered the net rise to the growth in economy as whole. Based on Kaldorian thinking, any raise in demand for manufacturing goods leads to an increase in productivity through increase of investment which leads to the improvement of technology. On the other hand, the growth of output creates technical progress through interactions between activities.

The goal of this study is to test and verify the "Kaldorian approach of growth" In Palestine, by using time-series data, based on Kaldor's causation model that suggests robust relation amongst manufacturing and GDP growth, the growth of industrial productivity and industrial output and close relationship between the growth of manufacturing employment and manufacturing growth.

Palestine as a small occupied country has a very fragile, weak and sensitive political, economic and social conditions due to the Israeli occupation. Palestinian economy and its GDP affected by many political, economic and social situations leads to fluctuations over time. With the exception of the recent popular uprising since September 2015and the Israeli war on the Gaza Strip in the mid-2014, the recent years have witnessed a state of relative stability in the security and political situation which is reflected on the activities of industrial sector.

The development of the Palestinian industrial sector and increase the degree of its contribution to real GDP, is one of the urgent necessities, especially in light of the financial crisis faced by the Palestinian Authority which is briefed in lack of funding and the low volume of foreign investments. Therefore, this study would be to measure the effectiveness of the Palestinian industrial sector, and its ability to push forward growth and economic development in the Palestinian territories.

Manufacturing sector is studied and analyzed through this research as the increase of industry makes modification in the structure of demand, international trade, and the employment of the labor force. These will effect in the use of economic resources and be the base of strategy of development to place the policies to the Palestinian economy.

This study intends to explore how growth in industrial output is affecting the GDP growth in Palestine. It also intends to measure the relationship between the manufacturing output and its impact on GDP.

The study consists of seven chapters. First chapter is an introduction of the study. Chapter two is concerning the literature review. Chapter three shows the methodology of the study. Chapter four about the manufacturing sector in Palestine. Chapter five shows the empirical results. And finally chapter sixth shows the conclusion of some policy implication and recommendations.

1.2 Problem Statement

The development of the Palestinian industrial sector and increase the degree of its contribution to real GDP is one of the urgent necessities, especially in light of the financial crisis faced by the Palestinian Authority which is briefed in lack of funding and the low volume of foreign investments. Therefore, this study would be to measure the effectiveness of

the Palestinian industrial sector, and its ability to push forward growth and development in the Palestinian areas.

The study highlights the importance of manufacturing industry in Palestine as an instance of the substantiation of Kaldor's law in the case of Palestine, to demonstrate how the developing manufacturing sector is the engine to sustaining the stability of Palestinian economy.

The main question to be answered: what are the impacts of manufacturing sector on growth in Palestine: a Kaldorian approach? In particular, the study attempts to reply the subsequent sub questions:

- Is there a relationship of any kind between the manufacturing sector growth and economic growth?
- What is the nature and direction of causality (if any) between growth of the industrial sector and GDP growth?
- Does the development of the industrial sector contribute to stimulate economic growth, or that economic growth is contributing to the growth of the industrial sector, or there is a causal correlation running in two directions?
- Does the output growth of manufacturing lead to growth in labor productivity?
- Is there a relationship of any kind between the industrial sector growth and the growth in labor productivity?
- How does the GDP in Palestine change?
- How does the Manufacturing sector in Palestine change?
- What strategies should be proposed in order to amplify the involvement of the manufacturing sector in GDP?

1.3 The Study objectives

The general purpose of the study is to define the influence of manufacturing sector on the Palestinian economic growth based on Kaldorian approach. Also the specific goals to be achieved include:

- To understand the structure of manufacturing sector in Palestine.
- To investigate the impacts of manufacturing sector on economic growth in Palestine.
- To define the direction of the causal correlation among the industrial sector and economic growth by using the Granger Causality Test.
- Strategies and policies ought to be proposed for the sake of increase the contribution of the manufacturing sector in GDP.

1.4 The Importance of the Study

In Palestine the industrial sector includes fifteen thousand registered companies in the West Bank and Gaza. The greater part of these corporations is medium and small family-owned firms. The industrial sector ratio to GDP is around 16%, and the industrial sector attracts around 13% of the total work force. Industrial sectors including construction, pharmaceuticals, metal and engineering, textiles, paper, plastic and rubber, printing and packaging, food and beverages, stone and marble, garments and leather, handicrafts, and furniture.

Where the Palestinian economy is suffering from the restrictions imposed by the Israeli occupation on the exploitation of natural resources, in addition to the frequent financial crisis facing the Ministry of Finance as a result of the withholding a significant portion of its revenues for political reasons. Palestinian economy also depends heavily on the assistance to be provided by donor countries especially in the government budget support and financing infrastructure projects. These grants are characterized by fluctuation and instability so the

process of the development of the industrial sector considered of the urgent necessities so as to overcome The problem of the scarcity of direct monetary resources and foreign investment and to achieve self-sufficiency through reduce the degree of dependence on aid provided by donor countries and its dependence on Israel and push forward the economical growth in the Palestinian territories.

- The outcome of this research will be of interest to academics, government, stakeholders and investors.
- The study aims to assess the net contribution of manufacturing sector.
- To the government and stakeholders, the study will be important as it will determine whether the current manufacturing production rate will enable Palestine achieve industrialized status.
- The findings of the study will be important to policy makers to formulate necessary policy required to increase manufacturing production output in aggregate GDP.

1.5 The scope and limitations of the study

As a result of recent establishment of Palestine Authority the limitation of the study is manifested in the shortness of time coverage period that is taken in analyzing the impact of the manufacturing growth on the GDP quarterly. The time series data coverage is (2000-2015).

1.5.1 Scope of the study

The study will aid in the following ways:

- The study will facilitate the policy makers concerning making policies related to manufacturing industry.
- The study will be an addition to the literature of the subject.

- The study will be the base for future research in manufacturing industry in Palestine.

1.6 Research Hypothesis

The research hypothesis for the research question is that Palestinian manufacturing output growth rate leads to increased economic growth rate against the null hypothesis that manufacturing output growth rate does not lead to increased economic growth rate.

CHAPTER TWO

2. Literature Review

This Chapter comprises of two parts. The First is a theoretical review that explained the many different theories, which deal with the correlation between the growth in industrial sector and economic growth. Section two is a review of practical literature which addresses the relationship among economic growth and growth in industrial sector in developed and developing countries, including some Arab countries.

2.1 Economic Growth

Different theories are reviewed in order to afford better insights into the close relationship and the influence of growth of industrialized output on economic growth. Furthermore, this part discusses the Kaldorian model that forms the foundation of the methodology used in this study.

Achieve high rates of growth is a chief and essential objective of any countries' economic development plans in particular developing countries.

Economic growth is a measure to express the extent of the increase achieved in the production of the country's goods and services over time, it is also considered one of the most important macroeconomic indicators which indicates the extent of the overall countries activity and this leads to an raise in average real "income per capita" over time and the level of well-being. (Ajamiyeh, 2006).

Economic growth can be identified as a raise in total output or income means increase in gross national income or increase in gross domestic product.

Identifying the determinants of and to find out sources of economic growth is one of the most vital objectives of the economic growth theory. Production process is depend on the use of factors of production and any society can increase its GDP by increasing the resources used in production or improving the productivity of these resources, and that is achieved as a result of improving the quality of work and the use of machines or a new technology or best administrative systems and the application of best more flexible and effective government policies.

Due to the great importance of economic growth, economists were interested across different schools and stages of economic thought with the growth issue and the interpretation of its occurrence, and knowledge of its determinants so several economic theories have emerged over time. So economists have discussed the determinants and causes of the economic growth for a long time. Mercantilists are the first, who are interested in increasing the wealth of the country. After that the classical school emerged represented the views of each of Smith , Ricardo, and Malthus, then the views of the neo-classical theory of growth represented the views of Solow and Swan based on exogenous growth model (1956).then in recent times, the Lucas (1988) and Romer (1986, 1990) based on models of endogenous growth.

2.1.1 Mercantists thoughts of economic growth:

Mercantilists are the first, who are interested in increasing the wealth of the country. The economic growth according to the Mercantilist thought concentrated on that the prosperity and wealth and poverty of any country depends on how much possession of precious metals (gold and silver), so that the main factor that will generate this growth is trade. Therefore, the country should export more goods than it imports to achieve the surplus in the trade balance. The second factor in its contribution to the economic growth is the industrial sector through its efficient role in increasing trade so the mercantilists gave a big attention to the

manufacture sector to achieve the economic growth and they considered that the government has an significant role in guiding the economic operation.

Their interest in economical growth has been focused on the level of aggregate output as the total output gives an indication of the size of the community and strength of its political power and without any concern for the well-being of the members of the community and they also distinguished between classes of society in terms of their share to the fruits of growth in output or income that occurs in the community, where priority and the attention have been given to the merchant and manufacturers class as they constitute the productive class but other classes have been neglected as a class of farmers, which is exposed to wage reduction and increasing in their working hours, in order to reduce costs and increase the volume of total output.

2.1.2 Traditional theory of economic growth:

Classical theory concentrated on the factors that cause the economic growth based on division of labor, capital accumulation and profitability.

Adam Smith's analysis of economic growth

In his first book, "An Inquiry into nature and causes of the wealth of nations"1776 Smith proposed his ideas and perceptions in explaining economic growth through focusing on the industrial area as the basis for economic growth in the community because in manufacturing sector the increasing returns to scale exist due to specialization of labor and segmentation of labor which in turn relies on accumulation of capital (Salvadori, 2003).

Smith considered that" capital accumulation is the engine of economic growth" and source for such accumulation is savings that comes from the capitalist class's profits as he

considered the saving and investment monopolized by capitalist class while the worker class spends all their income on consumption for the survival of life on the "subsistence level".

Smith proposed and recommended policies that will make the environment suitable to drive the growth process like free trade; the government must give attention to education, public works and tax to generate revenues for country. Smith believes that the economic growth of the community will not last long because of the slow pace of technical progress due to lower profits, resulting from the rising wages as a result of limited resources.

Due to the importance of the economic growth, the Palestinian Authority worked hard to improve Economic growth rates with the start of its establishing since 1994 so the early years of the Palestinian Authority (1994-1999) characterized with achieving positive growth rates accordingly of the high rate of investment, capital accumulation and the development Policies of human capital that accompanied the building of the Palestinian Authority's institutions at the beginning of its founding.

2.2 Manufacturing sector

Manufacturing industry is the central source of economic growth, leading to modernization and creating skilled job, it is a basic cause for industrialization as it plays a key role in structural issues and transformation by increasing its share in total output leading to accelerated growth, it helps in relocate of labor resources from low productive sectors (hidden employment in agriculture and informal sectors) to more productive economic sector, industrial sector.

2.3 Applied Research

The growth economic literature is still indecisive on how to promote growth and richness in emerging and low income countries, some emphasized that the competitive advantage theory asserts that countries should to specialize in those industries in which they are able to produce at lower costs than competitors, but also a country's manufacturing sector can grow at the expense of economies of scale, domestic market demand chances and productivity enhancement and consequently create positive effects on economy as a whole.

Development and Growth literature emphasizes a robust positive casual relation among the growth of GDP and industrial output growth, infer to the role of "manufacturing as an engine of growth" this is empirically investigated and confirmed in industrialized and newly industrializing Countries.

Many Researchers all over the world have examined the effect of manufacturing sector on economic growth of different countries for different time series. Some studies concentrated on the developed countries, much attention was paid to the developing countries, including some Arab countries.

Growth and development literature infer a robust positive casual correlation among GDP growths and growth of manufacturing output. This is empirically confirmed in industrialized and newly industrializing countries this is realized when the contribution of industrialized output in GDP total output is growing rapidly as hypothesized by Kaldor. (Thirwall and Wells, 2003).

2.3.1 Developed Countries:

Concetta Castiglione (2011) examines the association between the industrialized output growth rate and labor productivity growth rate (Verdoorn's law) in the United States. So as to examine Kaldor- Verdoorn's law a quarterly U.S. time series data covering the period from

1987 to 2007 is used, Manufacturing output is measured in term of real output in manufacturing based on (BLS) US Bureau of labor statistics index. Labor productivity is weighted based on of real output for each hour in manufacturing.

The law is prepared and formulated in terms of Granger causality and Co-integration among labor productivity and industrial output.

Investigate the Granger causality among these variables so as to determine the orientation of the causal relation in a Vector error correction. Three very important steps where used:

To test the stability of each variable, (ADF)" Augmented Dickey-Fuller" stationary test used as a first step in the co -integration method performed for each of the relevant variables to examine and analyze the long- run relation between industrialized output and Labor productivity.

To examine the co- integration two different methods are used. The first is to detect for the presence of long run connection by co-integration analysis using Johansen co-integration test, to test for presence of stable linear long- run connection among non-stationary variables. The second is to define the direction of causal relation among variables, the Granger – Engle test for Causality used to capture causality among the variables so as to verify the direction of the causal relation among the variables.

Based on Granger arguments that since the variables are co- integrated, causal relation must be at any rate in one direction, stand on this, the direction of causal relation among the variables (labor productivity and industrialized sector output) tested by using the Error Correction Models.

The outcomes based on Engle-Granger test show proof in favor of co- integration between the labor productivity in the industrial sector and manufacturing output, on the other side the results based on error correction models demonstrate a long- run positive relation among the two variables.

2.3.2 Developing Countries:

Yongbok Jeon (2008) investigates the validation of the "Kaldorian approach" to development and growth in Chins through its restructuring period from 1979 to 2004. This study is based on both time-series and regional panel data on economic growth that is used as the dependent variable while manufacturing output growth form the independent variables. This paper used panel data and time series sequentially to get strong results. The data are obtained from the National statistics Bureau of China from its China Statistical Yearbooks, and Panel data for 24 areas collected from online service data which is regulated and certified by the" National Statistics Bureau of China". The study used the secondary industry data based on the industrial categorization of the Statistics Bureau of China; Agriculture sector which is the primary industry while services sector is the tertiary industry. The values of all the variables of the study were in real term, the base was real price of 1978. The hypotheses are tested using panel data (cross section) and time series data covering the period from 1979 to 2004. The Granger Causality test is used as Kaldor proposed that the direction of causal relation is supposed to move from growth of industrial sector to GDP growth. And the direction of causality should run from the GDP growth to the growth of agriculture and services.

The results of the tests were emphasized that the Kaldor's first law is valid in China, as the hypothesis of "manufacturing sector is the engine of economic growth " in China during the restricting period from 1979 to 2004 was satisfied. The study concluded that the Kaldor's hypothesis is agreeable in China through the reform time; it illustrates that there are a positive relation among the growth of GDP and the growth of the manufacturing sector (secondary industry) which asserted that the manufacturing sector exhibit increasing returns of scale. In addition, there are a negative relationship between the productivity of the economy as whole and the growth of services (tertiary industry) and agriculture (primary industry) employments.

ABDUL RAZZAQ (2013) examines "the effect of agriculture industry, manufacturing industry and service industry on the GDP annual growth of Pakistan". For the purpose of the study, the secondary data was used for 31 preceding years. This paper is step-up on time-series data collected from the indicators of world development from the year 1980 till 2010. Economic growth that is used as the dependent variable while the independent variables that included in the model were the growth of agriculture sector, growth of manufacturing sector and growth of services sector. To testing the time series data, the study used co- integration technique. The multivariate co- integration technique (Johansen test) is used to analyze the long-run relation between variables and to examine whether the independent variables explain the variation of dependent variable and to analyze the effect of manufacturing growth, services growth and agriculture growth on GDP growth of Pakistan. To test the stability of each variable, (ADF) Augmented Dickey-Fuller stationary test used as a first step in the co -integration method performed for each of the relevant variables to examine and analyze the long run relationship.

The outcomes of the paper showed that the agriculture sector is the engine for stimulate growth which is the more significant sector than the other sectors of the economy for Pakistan.

Dong GUO (2007) investigate the impacts of the growth in manufacturing sector on the economic growth (growth of GDP), by using the Kaldorian approach through analyzing the Kaldorian laws based on territorial data covering the period from 1978 to 2004 in China.

China has witnessed and achieved high rates of economic growth due high manufacturing growth rate since 1970, as witnessed a quick industrialization as China's main concern is based on the strategy of developing and enhancing the industrial sector to catch up with the advanced countries. Consequently, the experience of development in China go with

Kaldorian laws, which emphasis that the growth of the economy is triggered by growth in manufacturing sector based on demand-driven.

The study used data from National Bureau Statistics of China, from 31 regions covering the period from 1949 to 2004, based on the China's NBS Industrial classification which is the tertiary, primary and secondary industries.

OLS method employed to estimate the kaldorian hypothesis.

The results of the paper asserted that the Kaldor laws are valid in China, through the time of economic rehabilitation.

RIOBA MARTIN EVANS. (2014) investigate and analyze the relationship amongst the growth in industrialized sector and the economic growth (GDP growth) for Kenya, based on Kaldorian approach to determine the role of industrialization in economic growth, as to investigate the degree of growth in manufactured output that is needed to describe the growth Kenya's economy, through testing the Kaldor's laws based on time series data during 1982 to 2013. As Kenya economy has experienced low growth rates with yearly average of 3.4% opposed the Kenya's 2030 vision to reach the target annual growth rate of 10%.

Real GDP growth rate is the dependent variable, while growth rate of manufactured output, growth rate of non-manufactured output and growth rate of employment in manufacture sector form the independent variables. Data for all variables are obtained from the UN National data accounts and KNBS, RPED.

The estimated results do not show that the Kaldor's laws hold in Kenya. Consequently Kaldor's first law "manufacturing is the engine of growth" not verified in Kenya. Non-manufacturing sector (agriculture and services sectors) which comprises the main component

of GDP is not considered the engine of growth, which explains low GDP growth about 3.93 per cent per year.

The results of equation regarding the Kaldor's second law conclude alternative hypothesis that manufacturing industry does not reveal increasing return to scale. The study concludes that industrialized sector in Kenya does not lead to raise economic growth there.

CHAPTER THREE

3. Methodology

3.1 The Kaldorian framework

3.1.1The Khaldorian Model

In this section, Kaldorian hypotheses for economic growth are reviewed and suitable test specifications are suggested.

This study builds its model based on kaldorian approach. According to Kaldor who was the first to theorize about stylized facts regarding the benefits of the manufacturing sector for the overall economy, Kaldor (1960) defined the benefits of industrialization, when the industrial sector develops and grows, it soak up the surplus production which produced outside the manufacturing sector, these may be the goods of mining or agriculture, more manufacturing growth creates demand for a lot of types of services, as banking, insurance and professional services of a range of types and thus to some extent responsible for a rapid growth of the non-manufacturing sectors, (Kaldor, 1960).

In 1967, Kaldor wrote economic growth which contains the use of modern skills, knowledge, equipment, tools and machines which end in great real income per capita is unimaginable without industrial development (Kaldor, 1967). This causal relationship is considered as exclusive way to economic growth, and the proof that industrialization is a basic order in order to attain and maintain high rates of economy growth in the long run (Michele Alessandrini, 2009).

3.1.2 Kaldor elaborates his ideas, thinking in three popular laws:

The first law (Kaldor's Initial Law)

As the first law: the economic growth (GDP) is significantly correlated to the growth of the manufacturing sector in the economy (positive relationship). And, the causal relation is proposed to move from growth of the industrial sector to growth of gross domestic product (GDP). For the reason of this positive relationship amongst the growth of GDP and industrialized growth, this law is known as "the engine of growth hypothesis".

$$q_{GDP} = a_1 + a_2 q_m,\ a_2 > 0 \ldots\ldots\ldots(1)$$

Where:

qGDP : the rate of gross domestic product growth.

qm: the rate of industrial growth.

The positive *a*2 is the most important coefficient in this equation; specify a significant relation among the growth of industrial sector production and the growth of GDP which represents the variation of GDP growth ratio when the manufacturing growth ratio fluctuates. As this equation may have a relation among q_{GDPt} and q_{mt} (growth rate of GDP and the industry output growth rate) due to that, industrial output consists the big and bulky part of GDP output so the regression coefficient a_2 is expected to be positive mean that high GDP growth rate is achieved where the industrial output increased and grow more than and exceed the growing in GDP. The results of equation (1), indicate that an annual growth rate less than unity will be existed only in the case where industrial output grows more than GDP.

$$q\ GDP = a_1 + a_2\ (q\ m - q\ nm) + e_t \ldots\ldots\ldots\ldots 2$$

Where:

(q m) is output growth from manufacturing,

(q nm) is the growth rate of non-manufacturing output

(a_2) is regression coefficient

The second equation indicate that the larger the surplus of the growth rate of manufacturing output above the growth of non-manufacturing output, the more and faster the GDP growth rate .

So this equation in order to get rid of the spurious correlation and this provide support for equation 1, as manufacturing output is expected to represent a major part of GDP.

The second support for equation one when testing the following equation:

$$q\ nm = a_1 + a_2\ (q\ m) + e_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

Where,

(q m) is output growth from manufacturing.

(q nm) is the non-manufacturing output growth rate.

The support is achieved when the non-manufacturing growing rate positively correlated to growth rate of manufacturing output growing rate.

Equation 1 are used to test the kaldor's first law and equation2 and 3 is used to support the first equation and to eliminate spurious correlation arising in equation # one as manufacturing industry output is expected to constitute the largest part of aggregate GDP.

The first equation showed strong correlation amongst GDP growing rate and the growing rate of manufacturing even though the manufacturing sector takes the bigger share in an economy which called a "share effect". Regarding that, Bairam (1991) proposes to regress the agriculture and service growth rates on the manufacturing growth rate, in order to remove this share effect. So there is no such close connection between mining and agriculture and GDP if compared to the correlation between the growing rate of manufacturing and of GDP in order

to support the Kaldor hypothesis as “manufacturing is the engine of economic growth". Nevertheless, it is seemed that the growing rate of service sector is associated directly to the growing rate of GDP; so Kaldor proposed that the direction of causal relation must run from GDP growth to growth of services, as growth of GDP make more demand for the services sector, due to this increase in demand for services induced by the growth of GDP, the result will be the growing of the services sector.

The significance of this law is that, manufacturing is subject to increasing returns to scale. Manufactured goods constitute the biggest components of trades and export lead growth; so exports and numerous services rely on industrialized goods.

The Second Law: Kaldor-Verdoorn’s Law

The main issue of the second law is that the growing rate of productivity is positively associated with the growing rate of industrialized output.

$$P_m = b_1 + b_2 q_m \ldots\ldots\ldots\ldots\ldots (3)$$

Where**:**

P_m is labor productivity growing rate in manufacturing.

q_m is manufacturing output growth rate

b_2 is called the “Verdoorn coefficient”

Kaldor was aware that equation (3) has spurious correlation problem.

Kaldor suggested another specification to avoid spurious correlation.

$$P_m = b_1 + b_2 q_m$$

$$e_m = c_{1+c_2} q_m \ldots\ldots\ldots\ldots\ldots (4)$$

Where:

e_m =is the labor employment growth in manufacturing.

The above was what Verdoorn had confirmed that when the growth in manufacturing output increase by percentage point, manufacturing labor productivity will rise by approximately one half per cent, that is, $b_2 = c_{2=}0.5$.

c_2 is the sufficient condition for the Verdean's law which demonstrations the presence of increasing return to scale where the value of is c_2 is supposed to be less than unity.

Verdoorn's coefficient in equation $(p_{m=a_{1+b_1}} q_m)$ specified by the effect of dynamic increasing return to scale, technical advancement due to accumulation of capital and the response of investment to the growth of manufacturing output, all of these are connected significantly to the amount of rising returns to scale.

Verdoorn's coefficient incorporates both the technical improvement and dynamic increasing returns to scale. (Dixon & Thirlwall, 1975, Targetti, 1992)

The technical progress is a function of capital accumulation as in the following equation:

$p_{m=} \alpha_{1+} \alpha_2 k$**…….(5)**

Where:

k: is the growing rate of capital per worker

α_1 : Represents disembodied independent technical progress, on one hand can be the results of a technical advancement and can also be as a result from learning by doing.

α_2: Represents represent technical progress stimulated by capital accumulation,

The Kaldor's third Law

The equation for the third law:

$$P_{GDP=} d_0 + d_{1q}\ q_m \ldots\ldots\ldots\ldots (6)$$

Where:

P_{GDP}=GDP productivity.

q_m= growth of manufacturing sector.

As the third law: the growth of GDP productivity is positively correlated to the growth of the manufacturing sector. And, the causality is proposed to run from growth of the industrial sector to the growth of GDP productivity throughout the labor reallocation to manufacturing sector from other sectors such as agriculture and services sectors. Due to:

- wage differential between low productivity sectors that characterized with surplus labor and high productivity sectors that characterized with shortage in demand for labor, consequently, the surplus labor in low productive sectors will transferred to manufacturing sector (high productive sector) without any reduction in output in low productive sectors.
- The other sectors (agriculture and services) have diminishing returns to scale so the workers shift to manufacturing sector, so the productivity for the reminder labor will rise. And according to the Kaldors –Verdoorn law, the productivity of industrial sector will also increase as it attracted more labor to make additional products.

All in all, it is the degree at which the surplus workers in low productive sectors are relocated to the high productive sector (manufacturing sector) that leads to increase the growing rate of productivity to all economy. (Kaldor, 1968).

3.2 Data

The paper uses Quarterly time series data of industrial sector and GDP, for the period of 2000 to 2015. The data was obtained from Palestine Central Bureau of Statistics. As this study investigates the contribution of growth in industry to economic growth in Palestine, secondary data is suitable for this study.

3.3 Model specification

This study examines the influence of manufacturing sector to economic growth and the contribution of growth in industrial sector to labor productivity in manufacturing to the growth in employments in manufacturing based on Kaldonian approach in Palestine from 2000 to 2015. Correlation analysis is used to investigate the relation between independent variables and dependent variable the in the study.

This paper will use the following equations to examine the relation amongst manufacturing output growth and economic growth in Palestine;

$q_{GDPt} = a_1 + a_2 q_{mt+et}, \quad a_2 > 0$ …….(1)

$\log GDPt = a_1 + a_2 \log mt_{+et}, \quad a_2 > 0$ ……..……(1)

Where,

GDP= real growth rate of GDP

$q_{mt=}$ industrial output growth rate

TL: is the time period

ET: is the error term

a_1= intercept

a_2= co efficient

Growth of labor productivity in manufacturing

$P_m = b_1 + b_2 q_m$……..…..(2)

$\log Pm = b_1 + b_2 \log q_m$……..(2)

Where**:**

P_m is the growing rate of labor productivity in manufacturing.

q_m is the manufacturing output growth rate

b_2 is called the "Verdoorn coefficient"

Growth of Employment in manufacturing sector

$e_{m=c_{1+c_2}} q_m$……..(3)

Where**:**

q_m Is the manufacturing output growth rate

Em= is the employment growth rate in manufacturing

The equations

Equation	
$q_{GDPt} = a_1 + a_2 q_{mt+et}$	
$q\ nm = a_1 + a_2\ q\ m, + e_t$	
$e_{m=c_{1+c_2}} q_m$	

3.4 Introduction to Granger causality

Investigate the Granger Causal relation amongst the variables so as to define the track of causation in a Vector error correction. Three very important steps are needed. First is to test the non-stationary then determine order of integration of the variables by apply "Augmented Dickey Fuller Test Unit Root Tests", which will illustrate that the time series data is stationary at difference, as most of the financial and economic variables are characterized by instability (non-stationary) over time. Second is to detect the presence of long- run relationship by co-integration analysis using Johansen co-integration test, to examine for presence of steady linear, long run relation amongst non- stationary variables. Third is to define the direction of causal relation between variables. Granger Test for Causality used to

capture causality among the variables so as to verify the direction of the causal relationship among the variables.

3.4.1 Stationary Test

The quarterly secondary time series data for a period from 2000 to 2015 are used to find out the correlation between GDP and manufacturing sector in Palestine. The primary step of the estimation is to scrutinize the stationary of the time series data since most variables show a trend as the majority these variables are non-stationary, so time series will have to be stationary at first difference. Therefore before making any analysis of the variables, it is required to guarantee that the variables are stationary at level or at first difference (Nelson, 1982).

The study of long run equilibrium relationship face a problem concerning non stationary of time series, to guarantee the stationary as the time series should fluctuate randomly around constant mean and variance this means that the mean and the variance of the values of the series does not depend on Time. In many cases, the non-stationary of time series data leads to spurious regression between economic variables (Granger and Newbold, 1974).

(ADF), Augmented Dicky Fuller to show that the time series data are stationary at first difference. The ADF test contains extra lagged terms of independent and dependent variables so as to abolish autocorrelation, Dicky Fuller have developed this test which takes into account the autocorrelation of error term -that include three model to check whether the variables got a unit root so that the variables are non-stationary, the regression models are:

"Yt = B1 + B2t + dyt-1 +ai +et…. (Intercept + trend)

Yt = B1 +dyt -1 +ai + et…….. (Only Intercept)

Yt = dyt-1 +ai + et…….. (No intercept +No trend)"

Where:

d_{yt-1} = represents the first difference

The Augmented Dicky Fuller test represented by the following model

$$\Delta Yt = B0 + B1t + \delta\, Yt\text{-}1 + \alpha i \Sigma \Delta Yt\text{-}i + Ut$$

So the (ADF) Augmented Dicky Fuller test use trend and intercept and test for variables stationary at levels and first difference, so the variables that are non-stationary in their levels, became stationary after taking first difference.

The all model should tell the same thing that the time series variables are non- stationary when the value of test statistic< critical value so the null hypothesis (null: y has unit root or non-stationary) cannot be rejected but accepted.

3.4.2 Co-integration

Granger indicated that in the case when the time series variables at the level, are non-stationary, but at first difference are stationary that is, there will be a long run linear relationship.

The use of least square method (OLS) in the estimation of regression between the non-stationary time series variables leads to spurious relationship among these variables thus the co-integration test is used which enable the estimation of the correct relationship and to overcome the issue of spurious regression among variables. Johansson test requires the identification the following: first the stationarity of the time series variables. Second, selection the lag length through lag selection criteria which are obtained by using the unrestricted VAR (VAR diagnostic and tests).

After investigating the stationary of the time series variables, then we used Johansen test to test for co-integration between the time series variables, to examine the presence of steady linear relation among non- stationary variables in the long run. Co-integration means in spite

of the time series variables are non-stationary a linear relationship of time series data can be stationary. As long as the linear relationship of non-stationary variables is stationary then the variables are co-integrated of same order.

There are two co-integration tests, firstly, is the trace statistic as when trace statistic value $>$ critical value at 5% this will lead to reject the null hypothesis, (null: there is NO co-integration) and accept the alternative hypothesis (there is co-integration) meaning that between variables there are a long run relationship. The second test is the test maximum Eigen value statistic that will tell the same story.

3.4.3 Granger Causality test

Engle and Granger argued: given that the variables are co-integrated, then causality has to be at any rate in one direction between two variables and tested by F-statistics so the null hypothesis rejected if probability value $<$ 0.05. Following their method, the direction of causal relation among manufacturing output, labor productivity and GDP will be identified by using the error-correction model.

Econometric theory affirms that co- integration is required for significant demonstration of long-run equilibrium among the two variables. Moreover, Verdoorn's law signifies that there should be Granger-causal relation move from manufacturing output to labor productivity, with a positive impact.

CHAPTER FOUR

4. Descriptive Analysis

4.1 Introduction

First of all the researcher speaks about the Time periods that will be studied and analyzed in the study, The Researcher will divide the total time period according to political circumstances that faced the Palestinian region in the following manner:

1. The period after 1967war: The Palestinian manufacturing sector remained weak, disabled and distorted during the period of Israeli occupation Israeli occupation of Gaza strip and West bank after 1967 war.
2. The period from 1994 to the fourth quarter of 1999: this period characterized of relative calm since the beginning of establishment of Palestinian Authority.
3. The first quarter of 2000 until the fourth quarter of 2002: this period witnessed of the second intifada, and difficult political instability.
4. The first quarter of 2003 until the fourth quarter of 2005: this period witnessed the return of relative steadiness in Palestinian territories.
5. The first quarter of 2006 until the fourth quarter of 2006: this period witnessed the imposition of a comprehensive siege on the Palestinian territories
6. The first quarter of 2007 until the fourth quarter of 2015: this period witnessed mitigation of restrictions on Palestinian territories. (Attia, 2003)

4.2 Manufacturing sector in Palestine:

Manufacturing has a recognized level in any country with regard to economic development growth for it has significant contribution in gross domestic product(GDP) , in finding jobs to manpower, solving unemployment and poverty issues, increasing exports revenues,

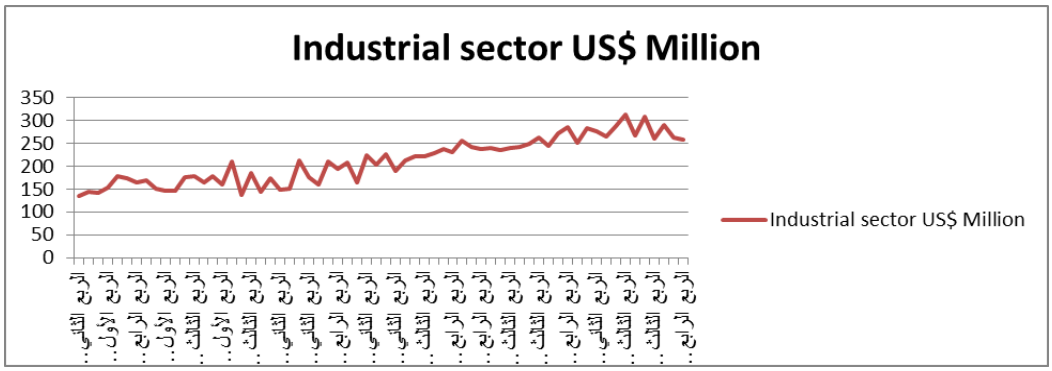
mitigating deficit in trade balance, realizing economic independence, enhancing the standard level of living, and achieving industrial development. Therefore, developing manufacturing sector is considered a principal goal for attaining the desired economic development in deferent societies which predisposes in achieving an increased rate of economic growth

This section sheds the light on the volume of Palestinian manufacturing sector and its workforce since the Palestinian manufacturing sector suffered numerous complex periods, hard conditions and structural problems due to Israeli policies and measures that aimed to foster the dependence of the Palestinian economy on the Israeli economy making it weak and simply affected by any changes in the Israeli economy consequently hinder its growth

4.2.1 Palestinian industrial sector before 1967

The Palestinian manufacturing sector remained weak, disabled and distorted during the period of Israeli occupation of Gaza Strip and West Bank after 1967 war, as a consequence of the Israeli policies and measures with main goal to dominate the Palestinian areas at confiscate Palestinian lands, as well as controlling and dominating the Palestinian economy and enslaving it for benefit and service of Israeli economy.

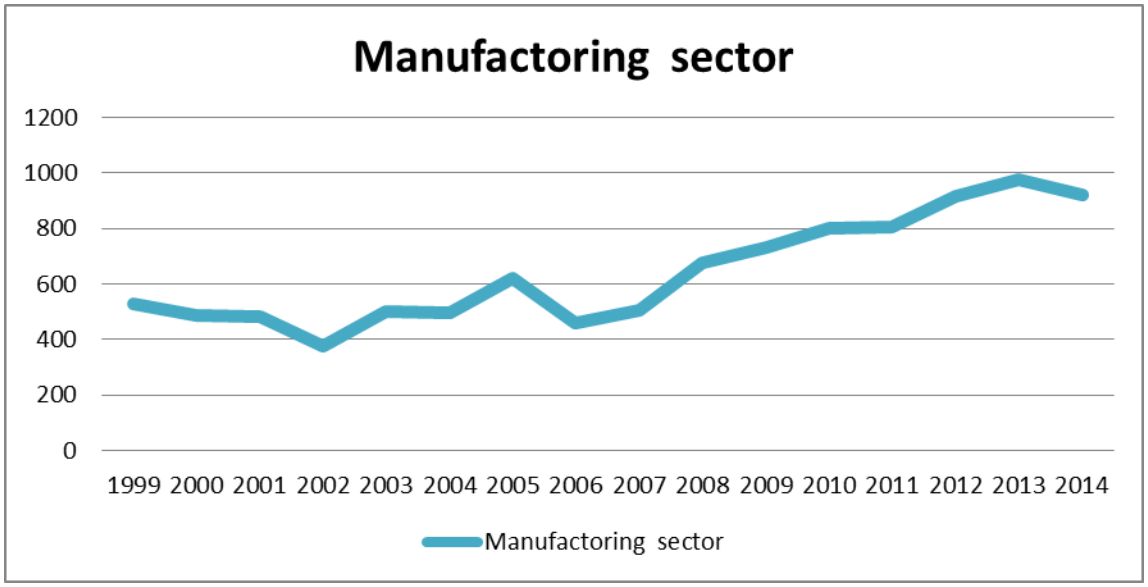
4.2.2 Palestinian industrial sector after the Oslo Accords



Prepared : the researcher

Source data of manufacturing output: Central Bureau of Statistics

Figure 4.1: industrial sector (US$ million) in Palestine (2000-2015) Quarterly



Prepared: the researcher

Source data of manufacturing output: Central Bureau of Statistics

Figure 4.2: industrial sector (US$ million) in Palestine (2000-2015) annually

It can be noticed that there were fluctuations in the behavior of industrial output over each quarter where the industrial output showed relatively the same behavior over the period. It can be noticed also that for certain years, industrial output during different quarters showed some differences in behavior.

Moreover The Palestinian industrial sector made some progress after the establishment of Palestinian Authority following the Oslo agreements in 1993, during the period of 1994-1999,with the assistance and under the sponsorship of donor in many aspects particularly the implementation of infra- structure projects, building the institutions, enhancing the economy and put the laws and legislations in order to improve the investment environment in Palestine, where there is continuous Israeli measures hampering any progress in any economic aspects particularly industry.

where this progress didn't last too long as a result of Al-Aqsa Intifada on 2000 and the imposition the siege and closure policies by Israeli occupation against the Palestinian areas

where the borders were closed for long time that impeded the mobility of persons and goods, preventing raw materials and factors of production from getting into Palestinian manufacturing firms, consequently, transportation cost increased, profit deceased and industrial zones closed down. These restrictions on the economy as a whole, in particular on the industry leads to harsh damage on private and public possessions, consequently several industrial firms destroyed and the economic infrastructure especially for industrial sector has been damaged, in addition to a decline in Palestinian purchase power as the demand for domestic goods fall due to the loss of jobs, increase in unemployment rate, the Government reduction in its public expenditures.

Regarding the behavior of Industrial sector which witnessed variations over the quarters of 2006 and first quarter of 2007, it witnessed a decrease over that quarter while witnessing an increase over the other quarters. These fluctuations could be due to the instability of economic and political situation when Hamas won the elections in 2006 consequently. Israel imposed restriction against the Palestinian economy as a result. Trade and economic activities especially industry was affected, this led to economic recession.

Since 2000 till now the Palestinian industrial sector still suffering in spite of attempts to make industrial advancements and efforts to adopt the new policies such as import substitution and increasing the investment in this sector

The obstacles that impeded the Palestinian industrial sector from playing a successful role during the Israeli occupation period and during the establishment of Palestinian authority are:

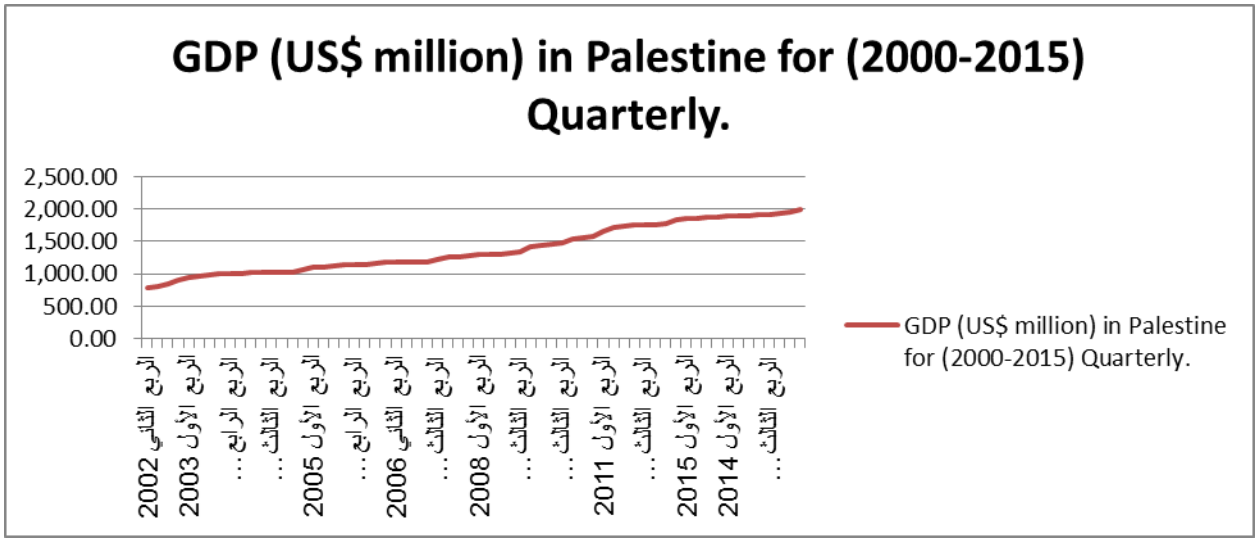
- The industrial sector suffered from structural matters that impeded its growth, resulted basically from Israeli occupation that aimed to foster the dependence of the Palestinian economy on the Israeli economy making it weak and simply affected by any changes in the Israeli economy hindered its growth as an indicator to this fact that approximately 85% of raw materials used in the production of Palestinian commodities is imported all the way

through Israel (2014 statistics), even after the establishment of Palestinian authority and even after signing several economic agreements and protocols and on top of them the Paris economy agreement which negatively affected the industrial sector due to the restrictions imposed on Palestinian exports and imports which resulted in the dwindling of investments, savings, profitability and productivity in Palestinian industrial sector.(Nasr, 2002)

- Most of Palestinian imports come from Israel market. Approximately 80% of Palestinian imports are from Israel. So the market share of local commodities is 20% which is affected negatively the industrial sector and weakened its competitive ability.
- Approximately 85% of raw materials used in the production of Palestinian commodities are imported entirely from Israel.

Despite these obstacles and despite the bad consequences that led to big losses and affected negatively the growth of industrial sector which affected also negatively the growth of economy as a whole (GDP) resulting from the Israeli aggression during the period of Al-Aqsa Intifada since 28 September 2000, many economists still believe that the Palestinian industrial sector is capable to play an substantial role in accomplishing the desired growth despite the Israeli siege and closure policies in the short run. It also plays a most important role in the Palestinian comprehensive economic development that serve the development of Palestinian industrial sector therefore it will increase the contribution of this sector to the GDP leading to growth in GDP in long run. (Nasr, 2002).

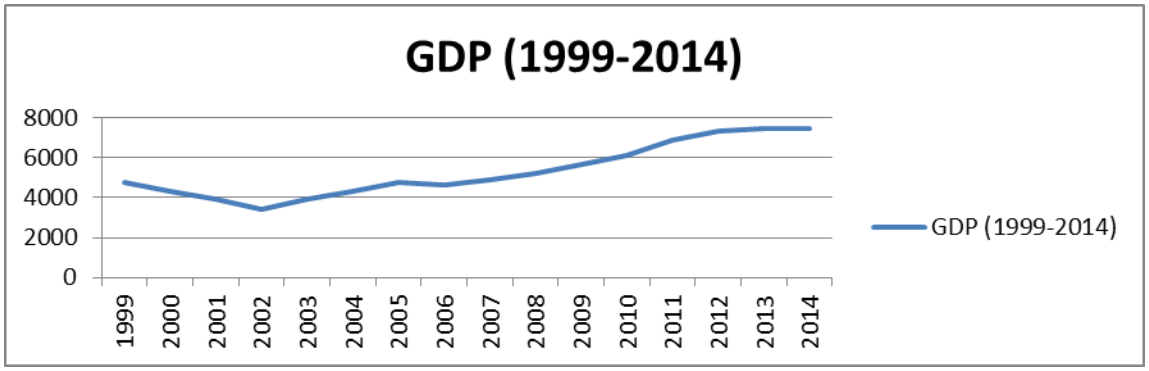
4.3 Gross Domestic Product (GDP)



Prepared: the researcher

Source Data of Real GDP: Palestinian Central of Statistics

Figure 4.3: GDP (US$ million) in Palestine for (2000-20115) Quarterly.



Prepared: the researcher

Source Data of Real GDP: Palestinian Central of Statistics

Figure 4.4: GDP (US$ million) in Palestine for (2000-20115) annually.

In this study, the indicator of economic growth is GDP. This section investigates the behavior of GDP in Palestine over the different quarters of the period 2000-2015. GDP, It reached its maximum in the fourth quarter of 2015 with US$ 1988.5 million and reached its minimum in the second quarter of 2002 with US$ 778.5 million. These fluctuations can be explained by Al-Aqsa Intifada on 2000 and the imposition the siege and closure policies by Israeli

occupation against the Palestinian areas and etc… the same reasons that have been previously mentioned.

Table (4.1): The growth of real GDP during 2000-2015

The growth of real GDP during 2000-2015		
year	**Palestinian gross domestic product (GDP) growth rates**	
1999-1995	8.41%	
2002-2000	-10.01%	
2005-2003	11.40%	
2006	-5.20%	
2010-2007	7.80%	

Prepared: the researcher

Source Data of Real GDP: Palestinian Central of Statistics

Due to the importance of the economic growth , From the beginning of its establishment since 1994 the Palestinian Authority worked hard to improve its growth rates so the early years (1994 – 1999) witnessed positive growth rates as the table above the average growth rates reached 8.41% as a results of the high rate of investment and capital accumulation. As this period witnessed the building of the Palestinian Authority's institutions at the beginning of its foundation accompanied with policies for human capital development, However the start of Al-Aqsa Intifada (2000-2002) come with hard restriction polices by the Israeli aggression and the imposition the siege and closure policies where the borders were closed for long time that impeded the mobility of persons and goods, preventing raw materials and factors of production from getting into Palestinian manufacturing firms so the average

growth rates declined to reach (-10.01%) This period is also characterized by high rates of unemployment and high rates of consumption accompanied with fall in investment.

During the period (2003-2005) the average growth rates increased to reach (11.40%) as this period witnessed the return of relative political stability in Palestinian territories.

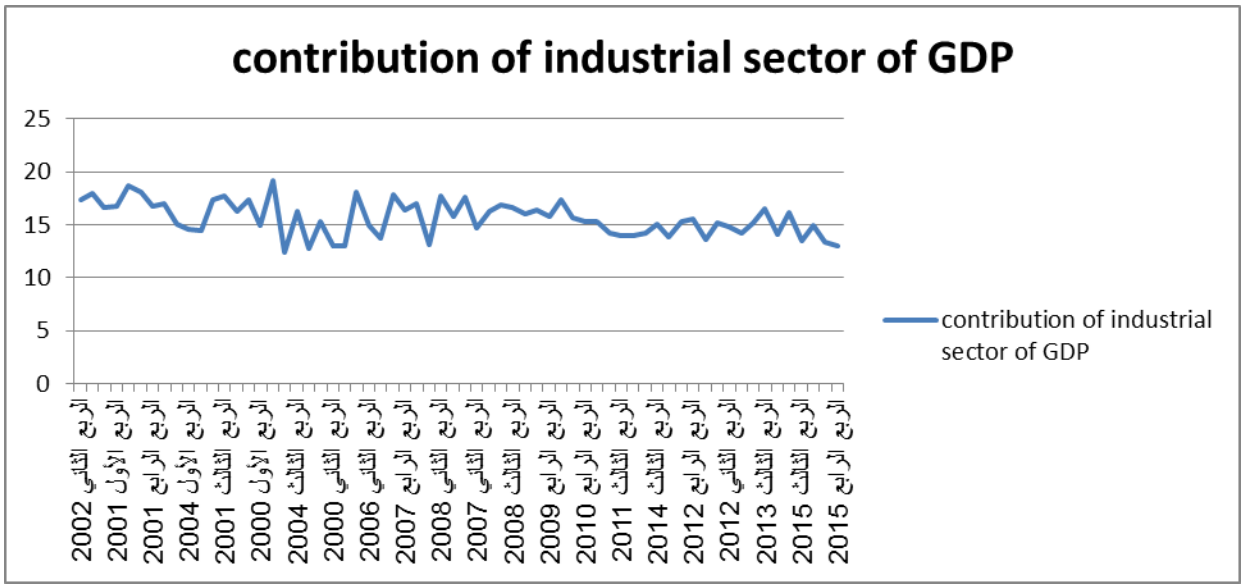
The average growth rates reached (-5.20%) in 2006 due to the instability of economic and political situation when Hamas won the elections in 2006 consequently. Israel imposed restriction against the Palestinian economy as a result, trade and economic activities especially industry were affected, which led to economic recession. During 2007 till 2015 this period witnessed relative political stability as Israel released the VAT tax, the return of international aid to Palestinian Authority (Abdelkrim, 2008).

The performance of the Palestinian economy depend on the political circumstances in the region, consequently, the fluctuations of GDP growth rate during the period 1995-2010 are due to these circumstances so the Palestinian economy suffered from many distortions and imbalances accordingly of the Israeli policies and practices and.

These affect the production structure led to decline in the contribution of the productive sectors to GDP which is considered very important to stimulate the economy and achieve growth, so Palestinian economy is characterized by high consumption, low savings, which reflected negatively on investment in Palestinian territories. Further, The Palestinian labor market witnessed also major distortions due to high wages derived from Palestinian workers in the Israeli labor market where the income increased accompanied with increase in demand for more without parallel increase in production, this has resulted in increased imports from abroad.

4.4 Manufacturing sector as Ratio of GDP in Palestine

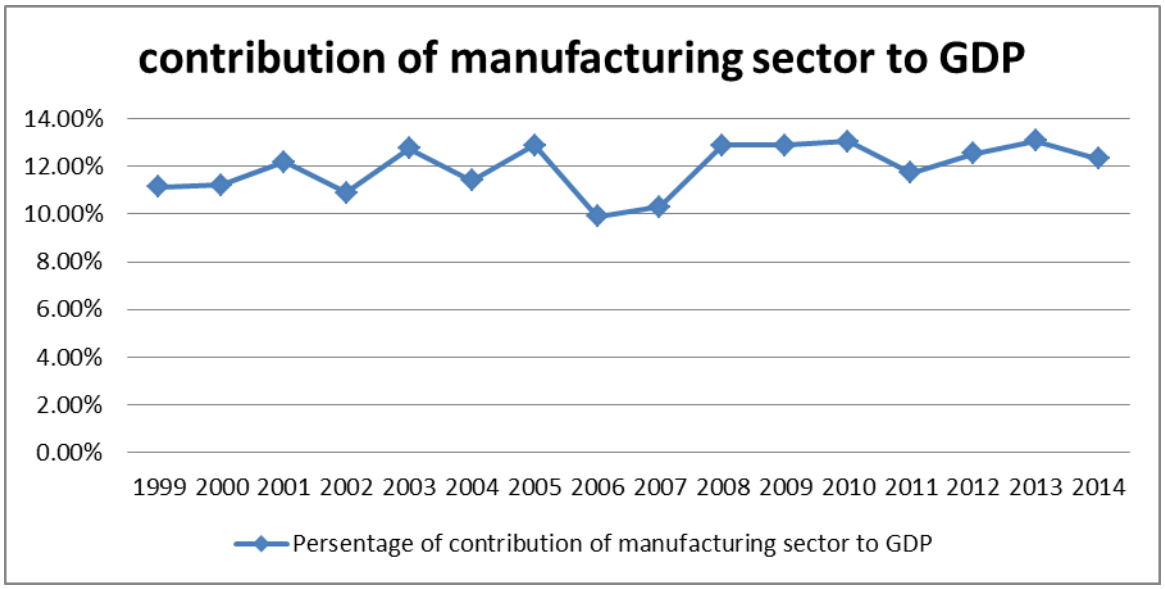
Another important indicator that should be explained is the ratio of the manufacturing sector to GDP, which is shown in figure 4.2.



Prepared: the researcher

Source Data of Real GDP and manufacturing output: Palestinian Central of Statistics

Figure 4.5: Manufacturing sector as Ratio of GDP in Palestine (2000-2014) Quarterly



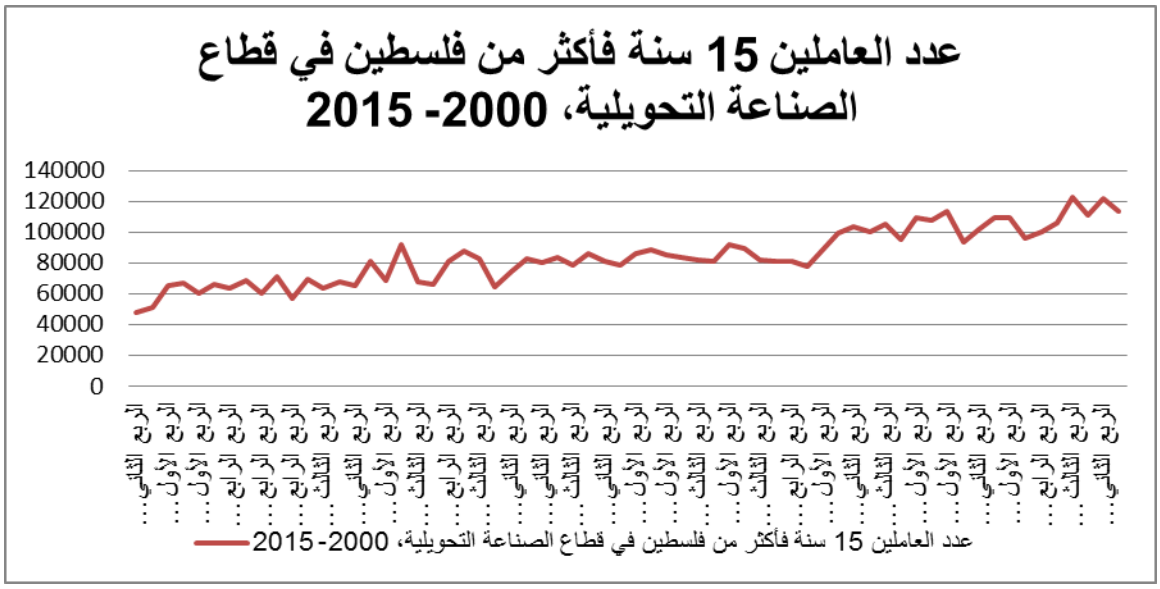
Prepared: the researcher

Source Data of Real GDP: Palestinian Central of Statistics

Figure 4.6: Manufacturing sector as Ratio of GDP in Palestine (2000-2014) Annually

It can be noticed from this figure that this ratio over all the quarters fluctuated between 11 % in 2000 to 12% in 2001 to 10% in 2002 then witnessed decrease to reach 12% in 2003 then the contribution of manufacturing sector to GDP witnessed the largest decrease in 2006 as this period witnessed the imposition of a comprehensive siege on the Palestinian territories. On the other side this contribution reached the highest rate in 2013, this period witnessed mitigation of restrictions on Palestinian territories.

4.5 Employment in the Palestinian Economy



Prepared: the researcher

Source Data: Palestinian Central of Statistics

Figure 4.7: Employed Labor (Thousands) in Palestine (2000-2015) Quarterly.

where labor absorptive capacity is 12% according to (2014 statistics), According to statistics published in 2014, the Palestinian industrial sector employs around 86,000 employees in 17,000 firms, Indicating that the sector operates with only 50% of its production capacity .

CHAPTER Five

5. Data Analysis and Empirical Results

This part illustrates and estimates the model regarding manufacturing industry growth to GDP growth in Palestine, using quarterly data (2000-2015). Data analysis will be done using STATA 12.

5.1 The Models, Empirical testing of Kaldor's laws

This study will use the following equations below to scrutinize the relationship between industrial and economic growth in Palestine from 2000-2015, thus the variables are growth rate of manufacturing output, GDP growth rate, and non-manufacturing and growth rate of employment in manufacturing sector.

5.1.1 Testing the first law

The first law of Kaldor will be tested by the equation below:

$$q_{GDPt} = a_1 + a_2 q_{mt+et} \ldots\ldots\ldots\ldots\ldots 1$$

Results of the Estimated Models

This section consists of two parts. The first part is an analysis of the first model that is estimated using the VAR model. The second is analysis of the second model that is estimated using the VAR model too. Along with detailed analysis for the steps that is needed before estimating VAR model such as ADF test , lag selection…etc

Testing kaldor's First law by equation below

$$q_{GDPt} = a_1 + a_2 q_{mt+et} \ldots\ldots\ldots\ldots\ldots 1$$

Due to statistical reasons the model is transformed into logarithm form as the below:

$$\log GDPt = a_1 + a_2 \log mt_{+et}, \quad a_2 > 0$$

Based on Kaldorian approach the growth of manufacturing output is expected to have positive influence on economic growth.

For the purpose of time-series analysis, vector autoregressive is used so it requires three Initial steps before estimating any model, these steps are:

- (ADF) Augmented Dickey Fuller Unit Root Test and to make sure that the time series variables are stationary at level or to be converted to stationary at first differences.
- Selection-order criteria to choose number of lags.
- Co- integration test is needed to forecast Equilibrium relation in the long run among the time series variables.
- Granger Causality Test so as to define the direction of the causal relation among the variables.

5.1.1.1 Augmented Dickey Unit Root Test

Table 5.1: Augmented Dickey Unit Root Test for variables in level and First Difference

Results of (ADF) Augmented Dickey Fuller Test (FOR THE FIRST MODEL (log GDPt = a_1 + a_2 log mt_+et)												
Variables	**Statistics**	**Critical value**			**Statistics**	**Critical value**			**Statistics**	**Critical value**		
	with intercept	**1%**	**5%**	**10%**	**with trend and intercept**	**1%**	**5%**	**10%**	**no intercept and no trend**	**1%**	**5%**	**10%**
LEVEL FORM												
log GDP												
log indu	**-1.382**	-3.57	**-2.92**	-2.6	**-3.127**	-4.126	**-3.49**	-3.17	**0.772**	-2.616	**-1.95**	-1.61
First Difference												
log GDP												
log induT	**-5.041**	-3.57	**-2.92**	-2.6	**-4.997**	-4.128	**-3.49**	-3.17	**-5.018**	-2.616	**-1.95**	-1.61

From the table above, it reports the outcomes of (ADF) Unit Root Test for the variables of equation one, the results showed that the variables are non- stationary in the level but became stationary at first difference.

5.1.1.2 Lag selection

Before running the VAR model or VECM model or Johansen Co-integration, the first thing to do is to determine how many lags should choose to run the mentioned models through lag selection criteria.

Table 5.2: Lag Length Selection for the model

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	44.2947				0.000837	-1.40982	-1.38252	-1.34001
1	139.714	**190.84***	4	0	**0.00004***	**-4.45712***	**-4.3752***	**-4.24769***
2	141.752	4.0771	4	0.396	0.000042	-4.39174	-4.2552	-4.04268
3	145.313	7.1223	4	0.13	0.000043	-4.37711	-4.18596	-3.88843
4	148.667	6.7073	4	0.152	0.000044	-4.35557	-4.1098	-3.72726

Results of Selection-order criteria

Table 5.2 shows that the best choice is to select lag one in order to run Johansen Co-integration.

5.1.1.3 Johansen Co-integration

After investigating for stationary and ensured that the variables are integrated of the same order and after determined the lag length then Johansen's (1990) test, which is one of the most common method of integration, which is used full information maximum likelihood (FIML) whose addressing all variables in the model as endogenous variables.

Table 5.3: Johansen Test For Co-integration

Null hypothesis	Trace test		Maximum Egen test		
The number of vectors joint integration	Trace Statistic	5% critical value	Max statistic	5% critical value	
0	21.6796	15.41	21.3912	14.07	
1	**0.2884***	3.76	**0.2884**	3.76	
2					
*** Refers to reject the null hypothesis at 5%**					

Results of Johansen Co-integration

What is obvious from the table is

The ranks (0, 1, 2) are the null hypothesis where:

Zero indicates that there is no Co-integration between the variables.

Null: there is no Co-integration among manufacturing and GDP

ALT: there is a Co-integration among the variables.

The guideline for this test is:

- When the trace statistic > critical value at 5%, then the null hypothesis is rejected means that there is no Co-integration among the variables, on the other side the alternative hypothesis is accepted indicates that there is co- integration between the variables.
- When the trace statistic < critical value at 5% then the null hypothesis is accepted implys that there is no Co-integration between the variables.
- One (1) means there is one co- integration among the variables.
- As long as the variables are co- integrated VECM model is preferred to run otherwise if the variables are not Co-integrated unrestricted VAR model is preferred to run.

From table 5.3,

Start with zero null hypotheses: there is no co integration between the (log manufacturing industry) and (log GDP).

We found from Maximum Egen test value and trace statistic test value , the estimated test statistics is not less than the critical value at 5% level of significant, this point to the existence of one Co-integration equation and the variables(growth of industrial output and GDP growth) have a long- run relationship means that in long run they move together. As long as the variables are co- integrated VECM model is preferred to run.

5.1.1.4 Vector Auto regression, VAR model Sims (1980) is considered one of the greatest flexible model for examination of multivariate time series, it also is a normal expansion of univariate autoregressive model to the "dynamic multivariate time series", the model has a wide benefits in explaining the dynamic behavior of financial and economic time series, in addition to prediction. Vector Auto regression is used to estimate the future value based on past values which assume that the past values have an impact on current values. The vector autoregressive addresses all variables of the study in symmetric way by including each variable in an equation, this variable can explained with its lag length and the lag length of the other variables. VAR model has assured to be useful to illustrate the linear relationship between the time series variables.

Table 5.4: Vector Autoregression VAR (lgdp lindus, lags(1/1)

Dependent variable	Independent variable	Coef	Std.Err.	z	P>|z|	5%
lgdp						
	lgdp |L1	0.906149	0.082806	10.94	**0.000**	< 0.05
	lindus |L1	0.07314	0.071514	1.022734	**0.306**	> 0.05
	_cons	0.317134	0.289862	1.094087	**0.274**	> 0.05
lindus						
	lgdp |L1	0.520071	0.15494	3.3566	**0.001**	< 0.05
	lindus |L1	0.495436	0.133812	3.70248	**0.000**	< 0.05
	_cons	-1.19597	0.542369	-2.20508	**0.027**	< 0.05

It was observed from the above table the effect of overlapping of variables with each other, all the coefficients are short run coefficients. Where:

When the Dependent variable is lgdp

- (lgdp L1); (Log GDP lag one) represent independent variable as this variable is significant P< 0.05 Because probability value is **0.000** which is less than 0.05 mean that Log GDP lag one variable is significant to explain the dependent variable which is lgdp(log GDP) in short run
- lindus L1: represent independent variable as this variable is not significant P> 0.05 Because probability value is **0.306** which is more than 0.05 mean that log industrial lag one is not significant to explain the dependent variable which is lgdp (log GDP) in short run.

When the dependent variable is lindus:

- lgdp |L1(Log GDP lag one) represent independent variable as this variable is significant P< 0.05 Because probability value is **0.001**which is less than 0.05 mean that Log GDP lag one variable is significant to explain the dependent variable which is lindus (log industrial) in short run
- lindus |L1: represent independent variable as this variable is significant Because probability value is **0.027** which is less than 0.05 mean that log industrial lag one is significant to explain the dependent variable which is lindus (log industrial) in short run.

5.1.1.5 Granger causality Wald tests

In order determine the short run causal relation among the variables, Granger causality test should be conducted as the causal relationship run from independent variable to dependent variable, to examine if the lags jointly significant in explaining the variation in dependent variable.

Null hypothesis : all(lindus= log industry) lages variables does not cause GDP(lgdp).

ALT: all (lindus= log industry) lages variables does cause GDP (lgdp).

Null hypothesis : all(lgdp=GDP) lages variables does not cause lindus (log industry).

ALT: all(lgdp) lages variables does not cause lindus.

Table 5.5: Wald Tests, Granger Causality

Equation	Excluded	Prob > chi2		
lgdp	lindus	0.306	>	0.05
lgdp	ALL	0.306	>	0.05
lindus	lgdp	0.001	<	0.05
lindus	ALL	0.001	<	0.05

From the table above as long as probability value > 0.05 the null hypothesis cannot rejected but accepted, so there is no short-run causal relation move from growth in manufacturing output to growth in GDP .

On the other side the probability value is less than 0.05 refer to importance of the outcome and rejection of the null hypothesis, meaning that there is a short run causal relation move from growth in GDP to growth in manufacturing output in short-run.

So growth in manufacturing output is found insignificant to stimulate economic growth in the short run. Such result must be expected due to weak and unsteady economy in Palestine where most of its Government budget depends on donors who determine the aspects where such fund should be spent, without any future benefits and returns and without any contribution to its economic growth and on the other side most the Palestinian budget spent on current expenditure (salaries) and the remaining is not enough to make any development in any sector especially industrial sector ,in addition the restrictions imposed by Israeli measures during the second intifada that is affected the Palestinian economy as a whole especially the industrial sector

5.1.1.6 Vector error-correction model

Granger and Engle 1983 examined that" if the variables are integrated of order one and co-integrated then there exists the Error correction term"

The stationary and con-integration among time series variables are considered the base to run the Error Correction Model, this entails that Error Correction Model is related with the co - integration test where the adjusted coefficient of the error correction term indicate the long-run causality among variables so causality test is to capture the long -run relation between variables are stands on error correction with first difference.

Table 5.6: Vector error-correction Test

	Coef.	Std. Err.	z	P>|z|
D_lgdp				
_ce1 | L1.	-.0771289	.0778935	-0.99	0.322
_cons	.0108251	.0078504	1.38	0.168
D_lindus				
_ce1 | L1.	.5412157	.1455751	3.72	0.000
_cons	.0015427	.0146715	0.11	0.916

Based on the above table where:

_ce1 is the co-integration equation # one that mean we have one co- integration equation or we have one error term and the coefficient of error correction term are the speed of adjustment for the short run fluctuations, so the error correction term coefficient is significant when ($P < 0.05$) and have a negative sign meaning that there is a long-run causality among variables so from the table above there is no long-run causality relationship run from growth in manufacturing output to GDP growth.

5.1.2 Testing kaldor's second law by equation below:

$$P_m = b_1 + b_2 q_m \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Due to statistical reasons the model is transformed into logarithm form as the below:

$$\log Pm = b_1 + b_2 \log q_m \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where:

P_m = (Dependent variable) represent the growth rate of labor productivity in manufacturing.

q_m = (Independent variable) represent the growth rate of manufacturing output.

b_2 Is represent the "Verdoorn coefficient"

For the purpose of time-series analysis by vector autoregressive it requires three Initial steps before estimating any model, these steps are:

- (ADF) Augmented Dickey Fuller Unit Root Test and to make sure that the time series variables are stationary at level or to be converted to stationary at first differences.
- Selection-order criteria to choose number of lags.
- Co- integration test is needed to forecast Equilibrium relation in the long run among the time series variables.
- Granger Causality Test so as to define the direction of the causal relation among the variables.

5.1.2.1 Lag selection

Before running the VAR model or VECM model or Johansen Co-integration, the first thing to do is to determine how many lags should choose to run the mentioned models through lag selection criteria

Table 5.7: Lag Length Selection

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	22.3065				0.02878	-0.710217	-0.69656	-0.675311
1	37.4187	30.224	1	0	0.01798	-1.18062	-1.15332	-1.11081
2	40.5254	**6.2135***	1	0.013	**.016762***	**-1.25085***	**-1.20989***	**-1.14613***
3	40.5743	0.09771	1	0.755	0.017304	-1.21914	-1.16453	-1.07952
4	40.6631	0.17762	1	0.673	0.017841	-1.18877	-1.1205	-1.01424

Results of Selection-order criteria

Table 5.7, show that the best choice is to select lag two in order to run Johansen Co-integration.

5.1.2.2 Augmented Dickey Fuller Unit Root Test for variables in level and First Difference

Table 5.8: Augmented Dickey Fuller Unit Root Test for variables, in level and First Difference

Results of Augmented Dickey Fuller												
Variables	**Statistics**	**Critical value**			**Statistics**	**Critical value**			**Statistics**	**Critical value**		
	With intercept	**1%**	**5%**	**10%**	**With trend and intercept**	**1%**	**5%**	**10%**	**no intercept and no trend**	**1%**	**5%**	**10%**
LEVEL FORM												
log gdp												
log Productivity	**-3.232**	-3.565	**-2.921**	-2.596	**-3.005**	-4.126	**-3.49**	-3.17	**-0.569**	-2.616	**-1.95**	-1.61
First Difference												
log gdp												
log Productivity	**-5.82**	-3.566	**-2.922**	-2.596	**-5.712**	-4.128	**-3.49**	-3.17	**-5.888**	-2.616	**-1.95**	-1.61

Results of Augmented Dickey Fuller Unit Root Test

Table (5.8) reports the outcomes of (ADF) Unit Root Test for the variables of equation 2, the results showed that the variables are non- stationary in levels but became stationary at first difference.

5.1.2.3 Lag Length Selection

Table 5.9: Lag Length Selection								
lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0								
1	114.507	**165.95***		**0**	**.000092***	**-3.61691***	**-3.53499***	**-3.40748***
2	117.148	5.2819			.000096	-3.57161	-3.43507	-3.22255
3	119.591	4.8851			.000102	-3.51969	-3.32854	-3.03101
4	122.317	5.4524			.000106	-3.47723	-3.23147	-2.84893

Results of Selection-order criteria

Based on table 5.9, the best choice is to select lag one in order to run Johansen Co-integration.

5.1.2.4 Johansen t For Co-integration.

Table 5.10: Johansen t For Co-integration.

Null hypothesis	**Trace Test**		**Maximum Egen test**		
The number of vectors joint integration	**Trace statistic**	**5% critical value**	**Max statistic**	**5% critical value**	
0	**14.1577***	15.41	**13.3058**	14.07	
1		3.76		3.76	
2					

The ranks (0, 1, 2) are the null hypothesis where:

Zero (0) indicates there is no Co-integration between variables.

Null: there is no Co-integration between manufacturing industry and productivity in manufacturing

The guideline for this test as mentioned earlier

Results of Johansen Co-integration

What is obvious from the table is

The ranks (0, 1, 2) are the null hypothesis where:

Zero means that there is no co-integration between the variables.

Null: there is no Co-integration between manufacturing industry and productivity in manufacturing.

ALT: there is a Co-integration among the variables.

The guideline for this test is:

- When the trace statistic > critical value at 5%, then the null hypothesis is unacceptable so it rejected, means that there is no Co-integration among the variables, on the other side the alternative hypothesis is accepted indicates that there is co- integration between the variables.
- When the trace statistic < critical value at 5% then the null hypothesis is accepted implies that there is no Co-integration among the variables.
- One (1) means there is one co- integration between the variables.
- As long as the variables are co- integrated VECM model is preferred to run otherwise if the variables are not Co-integrated unrestricted VAR model is preferred to run.

From table above:

Start with zero null hypotheses: there is no co- integration between the (log manufacturing industry) and (log productivity).

We found from Maximum Egen test value and trace statistic test value , the estimated test statistics is not lesser than the critical value at 5% level of significant this point to the no existence of one co -integration equation and the variables(growing rate of manufacturing output and the growing rate of productivity in manufacturing) didn't have a long run relationship means that they are not move together in the long run . As long as there are no co-integration among variables VAR model is preferred to run.

5.1.2.5 Vector Autoregression VAR Test

Table 5.11: Vector Autoregression VAR Test

Dependent variable	**Independent variable**	**Coef.**	**Std. Err.**	**z**	**P>|z|**	**5%**
lproductivity	**lproductivity |L1**	**.4255929**	**.1964711**	**2.17**	**0.030**	**less than 5%**
	Lproductivity /L2	**.0604033**	**.1926853**	**0.31**	**0.754**	**More than5%**
	lindus/L1	**-.0888576**	**.2395379**	**-0.37**	**0.711**	**More than5%**
	lindus /L2	**.2151362**	**.2399485**	**0.90**	**0.370**	**more than 5%**
lindus	***lproductivity |L1***	***-.2018698***	***.1626617***	***-1.24***	***0.215***	***more than 5%***
	L2.	***.0428648***	***.1595273***	***0.27***	***0.788***	***more than 5%***
	lindus/L1	***.7985222***	***.1983175***	***4.03***	***0.000***	***Less than 5%***
	/L2	***2040258***	***.1986574***	***1.03***	***0.304***	***more than 5%***

It was observed from the above table the effect of overlapping of variables with each other, all the coefficients are short run coefficients. Where:

When the Dependent variable is log productivity

- (l productivity |L1); (Log productivity lag one) represent independent variable as this variable is significant P<0.05 Because probability value is **0.030** which is less than 0.05 mean that Log productivity lag one variable is significant to explain the dependent variable which is (dl pro |L1); (Log productivity lag one) in short run
- (l productivity |L2); (Log productivity lag two) represent independent variable as this variable is insignificant P>0.05 Because probability value is **0.754** which is less than 0.05

mean that Log productivity lag one variable is insignificant to explain the dependent variable which is (dl pro |L1); (Log productivity lag one) in short run

- lindus L1: represent independent variable as this variable is insignificant P> 0.05 Because probability value is **0.711** which is more than 0.05 mean that log industrial lag one is insignificant to explain the dependent variable which is (dl pro |L1): (Log productivity lag one) in short run.
- lindus |L2: represent independent variable as this variable is insignificant P> 0.05 Because probability value is **0.370** which is more than 0.05 mean that log industrial lag one is insignificant to explain the dependent variable which is (dl pro |L1): (Log productivity lag one) in short run.

When the dependent variable is lindus(log industrial lag one)

- l pro L1 (Log productivity lag one) represent independent variable as this variable is insignificant P> 0.05 Because probability value is **0.215** which is more than 0.05 mean that Log productivity lag one variable is insignificant to explain the dependent variable which is dlindus (log industrial) in short run
- l pro L2 (Log productivity lag two) represent independent variable as this variable is insignificant P> 0.05 Because probability value is **0.788** which is more than 0.05 mean that Log productivity lag two variable is insignificant to explain the dependent variable which is dlindus (log industrial) in short run
- lindus L1: represent independent variable as this variable is significant Because probability value is **0.000** which is less than 0.05 mean that log industrial lag one is significant to explain the dependent variable which is dlindus (log industrial) in short run

5.1.2.6 Wald Test, Granger causality

In order to determine the short run causal relation among the variables, Granger causality test should be conducted as the causal relationship run from independent variable to dependent variable, to examine if the lags jointly significant in explaining the variation in dependent variable.

Null hypothesis : all(d lindus) lages variables does not cause growth of productivity in manufacturing (dLproductivity)

ALT: all (lindus) lages variables does cause (dLproductivity)

Null hypothesis : all(dLproductivity) lages variables does not cause lindus

ALT: all (dLproductivity) lages variables does not cause lindus

Table 5.12: Wald Test, Granger causality

Equation	Excluded	Prob > chi2		
lproductivity	lindus	0.313	>	0.05
lproductivity	ALL	0.313	>	0.05
lindus	lproductivity	0.365	>	0.05
lindus	ALL	0.365	>	0.05

From the table above as long as probability value > 0.05 the null hypothesis cannot rejected but accepted so there is no short -run causality run from growth in manufacturing output to growth in labor productivity in manufacturing in short -run.

On the other side the probability value is more than 0.05 refer to insignificance of the outcome and rejection of the null hypothesis meaning that there is no short- run causality run from growth in labor productivity to growth in manufacturing output in short run

This is due the special circumstances in Palestine resulting from the unstable of political situation and the Israeli measures which has a direct effect on Palestinian workers and may be due to lack of experience of the workers in the short-run.

This is due to the restrictions imposed on the movement of labor and capital where Technology moves across them, since the Palestinian production does not depend on modern technology, consequently, efforts should be directed to modern technology and The need to focus on investment in new technology and human capital in order to qualify skilled labor with ability to deal with technology to enhance their productivity and eventually achieve the desired growth .

5.1.3 Testing third equation below

Growth of Employment in manufacturing sector

$e_m = c_1 + c_2 q_m$ ..... (3)

Where**:**

q_m= Is the manufacturing output growth rate.

Em= is the employment growth rate in manufacturing.

Due to statistical reasons the model is transformed into logarithm form as the below:

Log em= c1 = c2 logqm..... (3)

For the purpose of time-series analysis by vector autoregressive it requires three Initial steps before estimating any model, these steps are:

- (ADF) Augmented Dickey Fuller Unit Root Test and to make sure that the time series variables are stationary at level or to be converted to stationary at first differences.
- Selection-order criteria to choose number of lags.

- Co- integration test is needed to forecast Equilibrium relation in the long run among the time series variables.
- Granger Causality Test so as to define the direction of the causal relation among the variables.

5.1.3.1 Lag selection

Before running the VAR model or VECM model or Johansen Co-integration, the first thing to do is to determine how many lags should choose to run the mentioned models through lag selection criteria

Table 5.13: Lag Length Selection

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0								
1								
2	40.5254						**20.3743***	**20.4168***
3		**4.7098***			**3.9e+07***	**20.3213***		

Results of Selection-order criteria

Based on table 5.13, the best choice is to select lag two in order to run Augmented Dickey - Fuller Unit Root Test.

5.1.3.2 Augmented Dicky Fuller nit Root Test for variables

Table 5.14: Augmented icky Fuller nit Root Test for variables in level and First Difference

Results of Augmented Dickey Fuller Unit Root Test for the third equation				
Variables	**Statistics**	**Critical value**		
	no intercept and no trend	**1%**	**5%**	**10%**
LEVEL FORM				
log employment	**1.62**	-2.616	**-1.95**	-1.61
First Difference				
d log Productivity	**-5.044**	-2.616	**-1.95**	-1.61

Results of Augmented Dickey Fuller Unit Root Test

Table (5.14) reports the outcomes of (ADF) Unit Root Test for the variables of equation 3, the results showed that the variables are non- stationary in levels but became stationary at first difference.

5.1.3.3 Lag Length Selection

Table 5.15: Lag Length Selection								
lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0								
1		**187.15***		0	**1.1e+10***	**28.797***	**28.879***	**29.0065* |**
2								

Results of Selection-order criteria

Based on table 5.3, the best choice is to select lag one in order to run Johansen Co-integration.

5.1.3.4 Johansen test for Co-integration

***Table 5.16**: Johansen test for Co-integration*

Null hypothesis	Trace test		Maximum Egen test		
The number of vectors joint integration	Trace statistic	5% critical value	Max statistic	5% critical value	
0	**13.1506***	**15.41**	**13.3058**	**14.07**	
1					

The ranks (0, 1, 2) are the null hypothesis where:

Zero(0) means that there is no Co-integration among the variables .

Null: there is no Co-integration between growth in manufacturing industry and growth in employment in manufacturing.

The guideline for this test as mentioned earlier

Results of Johansen Co-integration

From table 5.17,

Start with zero null hypothesis (0) : there is no co- integration between the(log manufacturing industry) and (log employment)

We found that Maximum Egen test value and trace statistic test value, the estimated test statistics is lower than the critical value at 5% level of significant, this point to no existence of one co- integration equation and the variable (growing rate of manufacturing output and growing rate of employment in manufacturing) didn't have a long run relationship means that they are not moving together in the long run. As long as there are no co- integrated among the variables VAR model is preferred to run.

5.1.3.5 Wald tests, Granger causality test

Table 5.17: Granger causality Wald tests

Equation	Excluded	Prob > chi2		
employment in manufacturing	**Industrial output**	0.022		
Industrial output	**employment in manufacturing**	0.165		

From the table above as long as probability value less than 0.05 the null hypothesis is rejected so there is a short -run causality run from growth in manufacturing output to growth in of employment in manufacturing in short -run.

On the other side the probability value is more than 0.05 refer to insignificance of the outcome and rejection of the null hypothesis meaning that there is no short- run causality run from growth of employment in manufacturing to growth in manufacturing output in short-run.

CHAPTER SIX:

6. Conclusions and Recommendations

6.1 Conclusions

This paper scrutinized the contribution of industrial sector to economic growth in Palestine based on Kaldorian approach by using quarterly time series data from 2000 to 2015 the results indicated that industrial sector is still very important sector for economic growth .

6.1.1 The most important results of statistical analysis:

Manufacturing sector play an important role in enhancing economic growth in developing countries as in Yongbok J eon(2008) concerning China, where manufacturing sector is found to play a major and important role in achieving GDP growth in China. Nevertheless, the role of manufacturing in achieving growth was insignificant as in Abdul Razzaq (2013) concerning Pakistan, Rioba Martin (2014) regarding Kenya where manufacturing sector is found to have no impact on achieving GDP growth there.

Growth in manufacturing sector play an important role in enhancing the productivity in manufacturing sector and eventually achieve economic growth in developed countries as in Concetta Castiglione(2011) concerning the united states where growth in manufacturing sector is found to play a major role on growth of Productivity in manufacturing sector.

Manufacturing sector and the productivity in manufacturing sector in Palestine show insignificant impact on achieving economic growth in long run.

6.1.2 The statistical analysis of time series:

Stationarity of the time series variables as the variables expressed in logarithms has been tested by Augmented Dickey-Fuller. The variables became stationary at the first difference,

as the (ADF) test fail to reject the null hypothesis of non-stationary for both variables. Then, Co- integration of order (1, 1) was tested by Johansen test for Co-integration. The results show

- The existence of Co-integration among the growth of industrial output and growth of GDP.
- There are no Co-integration among manufacturing output and labor productivity in the manufacturing sector.
- There are no Co-integration between manufacturing output and growth in employment in manufacturing.

Then further step involves appreciation of the Vector Auto regression model followed by Granger causality Wald tests to test for short run correlation among the variables .The results showed that there is a unidirectional causal relation among growth in manufacturing output and growth in GDP in short run as:

- There is no short- run causal relation run from growth in manufacturing output to growth in GDP in short- run.
- There is a short run causality running from growth in GDP to growth in manufacturing output in short-run.

On the other hand results showed that there is an independent case meaning that there is no causality relationship among growth in industrial output and labor productivity in manufacturing in short-run as:

- There is no short- run causality (in both direction) running from growth in manufacturing output to growth in labor productivity in manufacturing in short run, and no short run causality running from growth in labor productivity to growth in manufacturing output in short- run.

There is a unidirectional causal relation among growth in manufacturing output and growth in employment in manufacturing in short -run as:

- There is a short- run Granger causality (in one direction) running from growth in manufacturing output to growth in employment in manufacturing in short run, and no short- run Granger causality running from employment in manufacturing to growth in manufacturing output in short- run.

The final step was the estimation of the error correction models regarding the first equation only because it was there co- integration between the variables, the results didn't show a long run positive relationship between the manufacturing output and GDP.

- The results verify that the Kaldor's first law (manufacturing sector is the engine of economic growth), does hold in Palestine during the period 2000-2015. But the growth in industrial sector per se is not sufficient and adequate to achieve long- run growth, unless done by attainment of exceptional revenues through strict policy, to empower import substitution and consolidate moving toward increasing manufacturing production instead of importing, and encouraging exports, because the current productivity of industrial sector will not lead and be a cause in achieving economic growth in long run. Thus this sector should be given priority in Palestinian development policies. In addition the government should put strategies to attract foreign investment in industrial sector which in turn will increase the industrial sector contribution to GDP, which in turn will increase and enhance the growth productivity and employment in manufacturing sector.

The results verify that the Kaldor's Verdoorn law does not hold in Palestine for the period of the period 2000-2015.

6.1.3 The most important results of descriptive analysis:

1. There is a fluctuation in real GDP growth rate in Palestine through the period of the study (2000-20115).
2. The performance of the Palestinian economy depend on the political circumstances in the region, consequently, the fluctuations of GDP growth rate during the period 1995-2010 are due to these circumstances so the Palestinian economy suffered from many distortions and imbalances accordingly of the Israeli policies , measures and practices.
3. The industrial sector contribution ratio to GDP has dropped from 28% in 1995 to 12.9% in 2010 and it reached its minimum during the second Intifada in 2000 due to Israeli measures causing the destruction of industrial sector, where the borders were closed for long time that impeded the mobility of persons and goods, preventing raw materials and factors of production from getting into Palestinian manufacturing firms.
4. According to statistics published in 2014, the Palestinian industrial sector employs around 86,000 employees in 17,000 firms with labor absorptive capacity is 12% .

6.2 Recommendations

In the light of findings and according to the many studies in numerous countries concerning industrial sector and growth, and based on the experiences of the newly industrialized countries show that create and taking up of suitable industrial strategies and polices that boost the competitive capacity of this very important sector achieve high growth rates. So in Palestine

High hopefulness is placed on the industrial sector.

The first step for Palestinian industry is to formulate an obvious strategy that takes into account the obstacles that impede the Palestinian industrial sector , taking into account the political atmosphere, the natural resources and human capital that is needed for industry

these are so important to stimulate development of the Palestinian industrial sector in order to reduce its dependence on the Israeli economy, and domestic product should take its share within local, regional, and international markets and the most important requirements is to create strategies to promote loyalty among Palestinian people toward their domestic goods consequently this will lead to more and more economic growth.

- The results of the study give a positive causal relationship between growth in manufacturing and the growth in GDP in the short- run, but the growth in industrial sector per se is not sufficient and adequate to achieve long run growth unless done by achievement of exceptional revenues through strict policy to empower import substitution and consolidate moving toward increasing manufacturing production instead of importing and encouraging exports because the current productivity of industrial sector will not lead and be a cause in achieving economic growth in the long run. Thus this sector should be given priority in Palestinian development strategies. Additionally the government should put policies to attract foreign investment in industrial sector which in turn will increase the industrial sector contribution to GDP which in turn will increase and enhance the growth productivity and employment in manufacturing sector.

References

Ahluwalia, M. S. (2000). Economic performance of states in post-reforms period. *Economic and Political weekly*, 1637-1648.

Alessandrini, M. (2009). Jobless growth in Indian manufacturing: A Kaldorian approach. *University of Roma Department of Economics. 99. Roma Italy*.

Bairam, E. I. (1987). The Verdoorn law, returns to scale and industrial growth: a review of the literature. *Australian Economic Papers*, *26*(48), 20-42.

Bernat, G. A. (1996). Does manufacturing matter? A spatial econometric view of Kaldor's laws. Journal of regional science, 36(3), 463-477.

Castiglione, C. (2011). Verdoorn-Kaldor's Law: an empirical analysis with time series data in the United States. *Advances in Management and Applied Economics*, *1*(3), 159.

Cantore, Clara.(2014). Manufacturing as an engine of growth: Which is the best fuel? Research, *Statistics and Industrial Policy Branch Research and Industrial Policy Advice Unit UNIDO*

Chenery, H.(1982). Industrialization and Growth The Experience of Large Countries'. *WORLD BANK STAFF WORKING PAPERS*

Dasgupta, S., & Singh, A. (2007). Manufacturing, services and premature deindustrialization in developing countries: A Kaldorian analysis. In Advancing Development (pp. 435-454). Palgrave Macmillan UK.

Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: Journal of the Econometric Society*, 1057-1072.

Dong, G. U. O. (2007). The leading role of manufacture in regional economic growth in China: A spatial econometric view of Kaldor's law.

Engle, R. F., & Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica: journal of the Econometric Society*, 251-276.

Jeon, Y. (2006). Manufacturing, increasing returns and economic development in China, 1979-2004: a Kaldorian approach. *University of Utah Department of Economics* Working Paper Series, (2006-08).

Iqbal, A. (2013). Impact of agriculture, manufacturing and serve industry on the GDP growth of Pakistan. Interdisciplinary journal of contemporary research in business ,vol 5, no 4

Khaleel, S.(2004). An econometric study of dynamic models with application on forecasting labor in Egypt. Agriculture Economic Research Institute.

Kaldorian Theory of Economic Growth: The importance of the Open Economy. J.S.L. McCombie. Centre for Economic and Public Policy,. University of Cambridge

Libanio, G., & Moro, S. (2006). Manufacturing industry and economic growth in Latin America: A Kaldorian approach. In *Second Annual Conference for Development and Change Campos Do Jordão, Brazil*.

Mazzarol T.(2012). Manufacturing matters: why it is important for an economy to have a manufacturing base. *THE CONVERSATION.*

Nasr, M. (2002). The Role of Industrial Sector in Palestinian Economic Development. *Palestine Economic Policy Research Institute*.

Rioba, E. M. (2015). Manufacturing Industry and Economic Development in Eastern Africa: A Test of Kaldor's First Law.

Rioba, M. E. (2014). *Manufacturing industry and economic growth in Kenya: a Kaldorian approach for (1971-2013)* (Doctoral dissertation, University of Nairobi).

Salvadori, neri. The Theory Of Economic Growth Aclassical, per spective, Edward elgar publishing. INC,136wesst street suitezoz 202 north ampaton massachuesttsolors, USA

Setterfield, M. (2010). Endogenous growth: a Kaldorian approach.

Shapiro, H. (2007). Industrial policy and growth. Jose Antonio Ocampo, Jomo KS and rob Vos, Growth Divergences, new york: Zed Books.

Singh, A., & Dasgupta, S. (2005). Will services be the new engine of economic growth in India?. *ESRC Centre for Business Research, Working Paper*, *310*.

Stigler M.(2008)," Stationarity: Denition, meaning and consequences"

المراجع العربية

عبدالكريم، نصر (2008). تقييم وأداء الاقتصاد الفلسطيني في الفترة ما بين (1994-2007)، مجلة اوراق الفلسطينية، العدد الاول.

العمرو،(2004)،"اثر القطاع الصناعي على النمو الاقتصادي في ظل تطبيق برامج التصحيح الاقتصادي في الاردن للفترة (1989–2001)" رسالة ماجستير، جامعة مؤتة، 2004 .

عجمية، محمد، وناصف، إيمان، ونجا، علي (2006).التنمية الاقتصادية دراسات نظرية وتطبيقية، الدار الجامعية، الاسكندرية، مصر.

عطية، عبد القادر.(2003) اتجاهات حديثة في التنمية، الطبعة الثانية، الدار الجامعية للنشر والتوزيع، الإسكندرية، مصر .

Appendices

Appendix A: Raw Data

Table 1: Some Important Economic Indicators in Palestine (2000-2015).

Year	Manufacturing industry	services	Agriculture	GDP	The number of workers the manufacturing sector
الربع الأول 2000	123.4	281.6	76.3	1,065.00	81300
الربع الثاني 2000	114.6	290.4	83.8	1,143.60	87300
الربع الثالث 2000	104.6	298	81.3	1,112.80	92000
الربع الرابع 2000	132.2	301	114.7	1,014.50	56800
الربع الأول 2001	104	228.4	69.7	909.90	67200
الربع الثاني 2001	121.3	241.8	95.3	1,020.00	65500
الربع الثالث 2001	122.8	258.6	61.7	1,015.70	63500
الربع الرابع 2001	119.4	273.2	70.4	986.60	63700
الربع الأول 2002	88.5	200.6	52.9	855.20	65000
الربع الثاني 2002	84.5	220.7	54.5	778.50	47400
الربع الثالث 2002	91.1	222.7	46.8	806.10	51300
الربع الرابع 2002	92.1	261.3	90.5	1,001.30	60200
الربع الأول 2003	123.8	245.1	57.3	953.60	60400
الربع الثاني 2003	120.9	239.5	79.4	959.00	65900
الربع الثالث 2003	122.5	257.6	63.8	1,015.30	69100
الربع الرابع 2003	113.8	260.3	75.8	995.50	68200
الربع الأول 2004	100.4	261.1	70.6	1,008.30	70900
الربع الثاني 2004	118.6	251.9	64.9	1,017.90	67300
الربع الثالث 2004	119.7	270	65	1,129.90	68000
الربع الرابع 2004	138.4	271.2	99.5	1,173.10	64000
الربع الأول 2005	151.5	273.2	53.2	1,098.20	68500
الربع الثاني 2005	153.9	270.4	62.7	1,185.40	80100
الربع الثالث 2005	150.9	291.4	60.7	1,226.10	78900
الربع الرابع 2005	143	300.6	59.5	1,287.00	78400
الربع الأول 2006	96.1	238.5	49.3	1,134.40	66400
الربع الثاني 2006	121.9	235.7	59.3	1,176.40	74700
الربع الثالث 2006	102.8	243.8	49.5	1,161.40	83000
الربع الرابع 2006	119.2	210.5	82.3	1,137.40	81000
الربع الأول 2007	111.8	223.8	70.6	1,176.40	82500
الربع الثاني 2007	135.7	267.7	83.1	1,296.50	88100
الربع الثالث 2007	110.9	275.4	67.8	1,252.90	86000
الربع الرابع 2007	136	234.9	78.1	1,187.60	83300

الربع الأول 2008	165.6	272.4	79.6	1,291.70	85700
الربع الثاني 2008	161.3	279.3	88.9	1,268.40	80700
الربع الثالث 2008	167.7	302.9	83.2	1,334.10	81900
الربع الرابع 2008	160.6	293.4	85.2	1,317.90	83800
الربع الأول 2009	160.4	269	86.5	1,309.40	85000
الربع الثاني 2009	166.2	291.9	85.7	1,414.50	81300
الربع الثالث 2009	205.1	299.3	70.4	1,478.20	81700
الربع الرابع 2009	175.8	281.5	104.9	1,461.50	89300
الربع الأول 2010	192.5	256.7	86.1	1,447.90	92200
الربع الثاني 2010	195.4	264.5	85.8	1,545.90	80600
الربع الثالث 2010	195.5	288	71	1,570.20	78100
الربع الرابع 2010	192.4	270.7	90	1,558.30	80800
الربع الأول 2011	187.6	299.3	98.2	1,656.40	88500
الربع الثاني 2011	198.5	309.8	102.9	1,741.60	103100
الربع الثالث 2011	185.2	310	82.7	1,724.00	99500
الربع الرابع 2011	186.2	307.9	124.9	1,760.30	95500
الربع الأول 2012	203.4	357.2	72.2	1,753.30	100000
الربع الثاني 2012	225.4	354.9	91.5	1,869.30	101700
الربع الثالث 2012	229.1	349	75.1	1,859.70	93900
الربع الرابع 2012	233.00	355.8	100.3	1,832.50	107800
الربع الأول 2013	213.90	346	67.1	1,770.90	109600
الربع الثاني 2013	249.40	383.2	81.4	1,907.90	106100
الربع الثالث 2013	247.30	367.8	75.2	1,897.80	95700
الربع الرابع 2013	218.50	380.5	86.2	1,900.40	100500
الربع الأول 2014	224.40	396.7	70.10	1,892.10	109500
الربع الثاني 2014	228.30	410.1	81.40	1,942.40	111100
الربع الثالث 2014	212.40	371.1	52.20	1,754.10	105500
الربع الرابع 2014	213.40	371.7	82.70	1,874.80	109600
الربع الأول 2015	197.40	371.8	61.50	1,852.00	113200
الربع الثاني 2015	207.90	385	68.80	1,959.30	121700
الربع الثالث 2015	201.60	390.2	57.70	1,921.90	122600
الربع الرابع 2015	203.70	391.3	65.80	1,988.50	113700