Islamic University – Gaza
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الجامعــة الإسلاميــة
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The Impact of Construction Industry on The Palestinian Economy

أثر صناعة التشييد على الاقتصاد الفلسطيني

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science in Civil Engineering /Construction Management

September, 2010

بسم الله الرحمن الرحيم

يقول الله تعالى جل جلاله:

" والَذين إذا ذكروا بآيات ربهم لم يخرُّوا عليها صُمًّاً وعُمياناً"

صدق الله العظيم

Dedication

To the memory of my father

Khaldan Radwan

Acknowledgement

It gives me great pleasure to thank all the people who helped to make this research possible to exist.

- My deepest thanks to my direct supervisor Dr. Kamalain Shaath for his continuous advice and valuable support. Without his considerable efforts, this thesis could not have been carried through completion. I thank him for being my mentor and for the friendship that he offered me.

- My thanks to the employees of the Palestinian Central Bureau of Statistics for supporting me with the required data and information, specially the department of economic survey

- It is always impossible to personally thank everyone who has facilitated successful completion of the work. For all of these people, I give my thanks for moving me towards my goal.

- Finally I would like to thank my mother, wife and lovely children for their love, support and for tolerating the time I spent working with my research.

Abstract

The construction sector has a significant impact on Palestinian economy, but its impact is not yet quantified, so there is a need to determine such impact due to its importance in understanding the relation between construction sector and economy.

The main aim of this study is to determine and document the impact of the construction industry on the economy of Palestine by assessing the weight of construction industry in the economy, its correlation with other economic sectors and GDP, its impact on job creation, its value added impact on GDP and trade balance, the impact of investment on construction on job creation and quantify the return of investment on it.

The objectives of the study have been approached through compiling data about value added, employment, payroll, intermediate consumption, number of enterprise and gross fixed capital formation for the Palestinian construction industry and other industries from the Palestinian Central Bureau of Statistics (PCBS). Then the researcher compares the data of construction with total activity in Palestine to determine the construction industry volume. Also regression analyses applied using time series data to calculate the impact of construction expenditure on job creation, the impact of value added of construction sector on GDP and trade balance, the impact of investment on construction on job creation and the return of investment on construction.

This study assumed the previous results of positive correlation between construction and GDP; it is found that if the value added of construction industry increases by one unit the GDP will increase by 1.416 units and the deficit in trade balance will be reduced by 2.021units. Also the increasing of construction intermediate consumption by one million dollars generates $0.951million in business activity and creates 36 additional jobs. Also it is found that for each million dollars invested in the construction industry it will create 50.03 new jobs and has a return equal to 1.411 million dollars. The income tax from construction industry in the West Bank and Gaza in the year 2007 was $22.391. Finally the study shows that the enterprises with high volume of employees contribute high percentage of the production of construction industry.

It is recommended that the construction industry should be planned in line with wider national development criteria; and, within this framework, the development of an efficient indigenous construction capacity should be allocated a high priority. Policy makers should not accept a ‘model process’ imported from or imposed by the industrialized countries. They can adjust the organization of the process to satisfy their key development criteria. The study also put some recommendations to develop the construction sector including law proposals and, establishing of professional association.

الملخص

على الرغم من اهميه اثر قطاع التشييد على الاقتصاد الفلسطيني ، الا انه ولهذه اللحظه، حسب علم الباحث، لم يتم قياس هذا الاثر. من هنا تظهر اهميه الحاجه لقياس مثل هذا الاثر لما له من فائده كبيره في فهم العلاقه بين قطاع التشييد والاقتصاد الفلسطيني.

تهدف هذه الدراسة إلى تحديد اثر صناعه التشييد على الاقتصاد الفلسطيني وذالك من خلال تحديد حجم هذه الصناعة ومدى مساهمتها في الاقتصاد الفلسطيني ومعامل ارتباطها مع الناتج الاجمالي المحلي والقطاعات الاقتصاديه الاخرى، بالاضافه الى حساب اثر هذه الصناعه على خلق فرص عمل و كذالك تحديد اثر القيمه المضافه لهذه الصناعه على الناتج الاجمالي المحلي والميزان التجاري. هذه الدراسه ايضا سوف تحسب العائد على الاستثمار في قطاع التشييد واثره على خلق فرص عمل.

لقد تم الوصول إلى هذه الأهداف من خلال جمع بيانات للمؤشرات الرئيسية لقطاع التشييد و القطاعات الأخرى من الجهاز المركزي للإحصاء الفلسطيني حول القيمه المضافه، الانتاج، العماله، كشوف الاجور، الاستهلاك الوسيط وعدد المؤسسات، حيث و من خلال هذه البيانات تم تحديد حجم صناعه التشييد ومدى مساهمتها في الاقتصاد وكذلك و بالاعتماد على سلاسل زمنيه من هذه البيانات تم استخدام تحليل الانحدار لاختبار اثر قطاع التشييد على خلق فرص عمل و الناتج الاجمالى المحلى والعجز في الميزان التجاري وكذالك العائد على الاستثمار في قطاع التشييد واثره على خلق فرص عمل، هذا بالاضافه إلى تصنيف مؤسسات التشييد إلي أربع مجموعات بهدف معرفه أي من هذه المجموعات أكثر كفاءة .

خلصت هذه الدراسة إلى أن صناعه التشييد ترتبط بعلاقة طرديه مع الناتج الإجمالي المحلي فكلما زادت القيمة المضافة في قطاع التشييد بمقدار وحده واحده زادت القيمة المضافة في الناتج الإجمالي المحلي بمقدار 1.416 وحده ، كذلك أظهرت الدراسة أن زيادة الاستهلاك الوسيط في قطاع التشييد بمقدار مليون دولار يؤدي إلي زيادة في النشاط التجاري بمقدار 0.951 مليون دولار ويخلق 36 فرصه عمل جديدة ، هذا بالاضافه إلى أن زيادة العاملين في قطاع التشييد بمقدار وحده واحده يؤدي إلي زيادة في العمالة الكلية بمقدار 0.7 وحده . أظهرت الدراسة أيضا أن العائد على الخزينة من ضريبة الدخل في قطاع الإنشاءات عام 2007 قد بلغ 22.391 مليون دولار ، أما بالنسبة للاستثمار فلقد أثبتت الدراسة أن كل مليون يستثمر في قطاع الإنشاءات يولد 50.03 فرصه عمل جديدة وأثبتت الدراسة أيضا أن أعلى عائد على الاستثمار من بين القطاعات الاقتصاديه المختلفه في الاقتصاد الفلسطيني، يكمن في الاستثمار في قطاع التشييد حيث بلغ مضاعف الاستثمار في قطاع الإنشاءات 1.411، أما بالنسبة للميزان التجاري فلقد أظهرت الدراسة أن زيادة الإنتاج في قطاع التشييد بمقدار وحده واحده يؤدي إلى خفض العجز في الميزان التجاري بمقدار 2.021 وحده ، وأخيرا أظهرت الدراسة أن مؤسسات التشييد ذات العمالة الكبيرة متوسط إنتاجيتها اكبر من تلك التي فيها اقل عماله هذا بالاضافه إلى أنها تساهم بنسبه أعلى في إنتاج قطاع التشييد.

أوصت الدراسة إلى أن صناعه التشييد ينبغي التخطيط لها وفقا لمعايير التنمية الوطنية الأوسع، وفي هذا الإطار فان تنميه صناعة تشييد محليه كفؤه وقويه وقادرة ينبغي أن تحظى باولويه قصوى، كما أوصت الدراسة صانعي السياسات ومتخذي القرارات بعدم القبول بالنماذج المستوردة أو المفروضة من قبل الدول المتقدمة، بل يمكن تعديلها لتلبيه المعايير الرئيسية للتنمية . كما وضعت الدراسة بعض التوصيات التي تهدف إلى تطوير قطاع التشييد شملت تقديم مقترح مشاريع قوانين وإنشاء اتحادات مهنيه.

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List of Abbreviations

AF	Agriculture and Fishing
EU	European Union
GDP	Gross Domestic Product
GNI	Gross national Income
GDI	Gross National Disposable Income
GNP	Gross National Product
GVA	Gross value added
HEM	Hypothetical Extraction Method
IDB	Islamic Development Bank
ISIC	International Standard Industrial Classification
ILO	International Labor Organization
M&R	Maintenance and Repair
MHPW	Ministry of Housing and Public Work
WRT	Wholesale and Retail Trade
NIE	New Institutional Economics
NGO	Non-Governmental Organizations
OECD	Organization for Economic Cooperation and Development
PCU	Palestinian Contractors Union
PECDAR	Palestinian Economic Council for Development and Reconstruction
PSU	Primary Sampling Unit
PCBS	Palestinian Central Bureau of Statistics
PSI	Palestinian Standards Institution
SNA	System of National Account
SPSS	Statistical Package for Social Science
RWBGS	Remaining West Bank and Gaza Strip
UNRWA	United Nations Relief and Work Agency
USAID	United States Agency for International Development
UNDP	United National Development Program
UNCHS	United Nations Centre for Human Settlements
VA	Value Added
VAT	Value Added Tax
WB	World Bank

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CHAPTER 1

Introduction

1.1 Generally.

Construction has a wide contribution to the economic output of a country; it generates employment and incomes for people (Field and Ofori, 1988)*. The effects of changes in the construction industry on the economy occur at all levels and in virtually all aspects of life (Hillebrandt, 1985, 2000). This implies that construction has a strong linkage with many economic activities, and whatever happens to the industry will directly and indirectly influence other industries and, ultimately, the wealth of a country (Bon, 1999; Pietroforte and Bon, 1999; Bon, 2000; Pietroforte, 2000). Hence, the construction industry is regarded as an essential and highly visible contributor to the process of growth (Field and Ofori, 1998). The importance of the construction industry stems from its strong linkages with other sectors of the economy (World Bank, 1984). Construction activities generate demand for raw, semi-processed and processed materials. There exists a close association between construction, the manufacturing sector and the commerce sector that supplies the materials and equipment required by the construction sector. As most construction projects are dependent upon financing loan, there is a close linkage between construction and the financial operations within the economy (Punwani, 1997). The construction industry also generates income through the sale of its products, the purchase of its inputs and the creation of jobs. Studies have shown that the interdependence between the construction sector and other economic sectors is not static but changes as the nation's economy grows and develops (Bon, 1988, 1992). Decline in the manufacturing sector and a growth of services will alter the state of the relationship as the industry depends less on the supply of inputs from the manufacturing sector, the old engine of growth, and channels more of its intermediate output to the service sector, the new engine of growth (Bon, 1992, 1998). In an advanced economy, due to the accumulation of older stock of constructed facilities, the maintenance and repair segment of the industry assumes growing importance, and the construction is expected to have a stronger relationship with the service sector (Bon, 1998).

1.2 General Palestinian Economic Performance.

The findings of the revised time series in current prices of the Palestinian economy throughout 2000-2005 show that the value of total indicators of the Gross Domestic Product (GDP),

* GDP in billion dollars at the year 2007 in Egypt, Jordan, Lebanon and Syria are 187.954, 25.113, 34.028 and 52.635 respectively. GNI per capita 2007 in Egypt $5400, in Jordan $5160 and Syria $4370. Source The World Bank: World Development Indicators database. World Bank 2009

the Gross national Income (GNI), and the Gross Disposable Income (GDI) have significant fluctuation, growth and decline caused by the political and economic situation throughout the years, as shown in Table 1.1.

Table 1:1 Major National Accounts Indicators in Gaza Strip and West Bank (GSWB) for the Years 2003-2008 at Current Prices (value in US$ million).

Indicator	2003	2004	2005	2006	2007	2008
Current Prices						
Gross Domestic Product (GDP)	3,840.9	4,198.4	4,634.4	4,619.1	5,182.4	6,108.2
Gross National Income (GNI)	4,093.8	4,430.4	4,992.2	5,047.0	5,708.8	6,708.5
Gross Disposable Income (GDI)	4,879.0	5,151.1	6,120.1	6,323.2	7,802.7	9,866.7
Saving	-171.2	-450.4	511.0	601.1	1,198.3	2,067.7

Source: Palestinian Central Bureau of Statistics, 2006 and the National Accounts Statistics 2000-2005

The revised contribution of the most prominent economic activities of the gross domestic product at current prices during 2000-2005, show the service nature of the Palestinian economy. Table 1.2 shows the contribution of various economic activities in the GDP. The service sector provided the highest contribution to the GDP followed by industrial activities in some years and public administration and defense in others. The activities of the financial intermediation registered the lowest contribution to the GDP.

Table 1.2: Percentage Contribution to GDP in GSWB by Economic Activity for the Years 2000-2005 at Current Prices.

Economic Activity	2003	2004	2005	2006	2007	2008
Agriculture and fishing	6.5	7.1	5.5	5.8	5.6	5.8
Mining, manufacturing, electr. and water	17.3	17.1	16.8	15.5	15.9	13.9
Construction	5.7	5.7	6.4	7.6	5.1	3.9
Wholesale and retail trade	10.2	9.8	9.9	10.6	13.0	14.4
Transport, Storage and Communications	6.4	6.1	5.6	6.0	7.2	9.4
Financial intermediation	3.8	3.6	4.3	4.0	6.3	5.6
services	23.7	22.8	22.6	21.6	20.5	21.2
Public administration and defense	15.0	14.3	13.5	13.4	12.1	12.0
Households with employed persons	0.2	0.1	0.0	0.1	0.1	0.1
Other	11.2	13.4	15.4	15.4	14.2	13.7
Total	100	100	100	100	100	100

Source: Palestinian Central Bureau of Statistics, 2006 and the National Accounts Statistics 2000-2005

Indicators of per capita GDP, GNI, and GDI in current and constant prices in 2000-2005 reflect the significant impact of net income of non resident and the net current transfers of them, as explained in Table 1.3 below.

Table 1.3: Per Capita of GDP, GNI, GNDI in RGSWB for the Years 2000-2005 (value in US$)

Indicator	2003	2004	2005	2006	2007	2008
Current Prices						
GDP Per Capita	1,240.4	1,317.0	1,410.0	1,363.0	1,483.0	1,698.3
GNI Per Capita	1,322.0	1,389.8	1,518.9	1,489.2	1,633.6	1,865.2
GNDI Per Capita	1,575.6	1,615.9	1,862.0	1,865.8	2,232.8	2,743.3
Constant Prices						
GDP Per Capita	1,210.9	1,317.0	1,387.2	1,275.4	1,303.2	1,340.4
GNI Per Capita	1,295.5	1,389.8	1,489.9	1,392.7	1,429.1	1,459.4
GNDI Per Capita	1,557.3	1,615.9	1,822.1	1,741.7	1,976.6	2,271.3

Source: Palestinian Central Bureau of Statistics, 2006 and the National Accounts Statistics -2000-2005

1.3 The Construction Sector in Palestine.

The construction sector is an important sector of the economy and contributes significantly to Gross Domestic Product (GDP). The United Nations Environment Programme has noted that about one-tenth of the global economy is dedicated to constructing and operating homes and offices. It is now widely recognized that construction activity plays a vital role in the process of economic growth and development, both through its products (infrastructure, buildings) and through the employment created in the process of construction itself. The development of an efficient industry is an objective of policy in most countries (Mitullah and Wachira, 2003).

Notwithstanding the constraints of occupation, construction and housing have evolved into a major sector of the Palestinian economy, playing an important role in the generation of the employment and income. The sector has also carried significant forward and backward linkages, ranging from simple furniture manufacturing plants to major construction materials production and processing industries (Abdul Hadi, 1994). Through a complementary process, several parties contribute to the construction sector. Such stakeholders are the public and private sectors, universities and institutes, donor countries, international financing institutions and banking sector. Construction sector contributes largely to different sectors of investment,

such as manufacturing of construction materials. In addition, it provides materials needed for construction, such as stone, marble, brick, floor tiles, etc. (PCU, 2003).

The construction value added had experienced a considerable growth in the period from 1994 to 1999. Its share of GDP increased from 8.9% in 1994 to 13.7% in 1999, then it decreased to reach 3.9% in 2002, after that it increased to reach 6.2% in 2007. The contribution of the construction value added to the GDP of the West Bank and Gaza Strip increased from $268.5 million in 1994 to $617.0 million in 1999, then it decreased to reach its minimum value added in 2002 by amount of $127.7 million, then it increased to reach $279.1 million in 2007. Table 1.4 illustrates construction output, construction value added and its share in GDP for the WBGS.

Table 1.4: Construction Share in GDP for the WBGS in (1994-2007).

Years	G.D.P (Million US$)	Construction value added (Million US$)	Construction value added share %	Construction output (Million US$)
1994	3012.3	268.5	8.9	865.1
1995	3193.2	220.4	6.9	835.5
1996	3286.0	274.7	8.4	839.7
1997	3701.6	290.2	7.8	935.5
1998	4147.9	369.4	8.9	1,133.0
1999	4511.7	617.0	13.7	1,467.8
2000	4118.5	366.3	8.9	1,179.4
2001	3765.2	205.4	5.5	799.1
2002	3264.1	127.7	3.9	623.6
2003	3749.6	187.2	5	792.2
2004	4198.4	238.4	5.7	771.9
2005	4559.5	310.2	6.8	693.3
2006	4322.3	312.3	7.2	586.5
2007	4535.7	279.1	6.2	598.4

Source: Palestinian Central Bureau of Statistics, 2009 and the National Accounts Statistics -1994- 2007 (Unpublished data)

The building and construction industry is one of the leading economic sectors in the West Bank and Gaza Strip. Home building makes up the bulk of investment. Although spending in this sector has somewhat diminished over the period from 2001 to 2007, it is estimated that in 2006 total output in this sector amounted to $586.5 million which is the minimum output value through the time interval.

In 1994-2000, the grants offered to the construction sector in comparison with other sectors amounted to more than one billion US$; approximately 35% of the overall grants which reached 3 billion US$. 40% of the grants have been allotted to water and public health projects; 20% to construction projects; and approximately 10% to housing (PCU, 2003). The main international bodies and organizations offering grants to the construction sector are the Islamic Development Bank (IDB), the United Nations Relief and Work Agency (UNRWA), World Bank (WB), the U. S. Agency for international development (USAID), United Nations Development Program (UNDP), the European Union (EU), German and Japanese institutions.

Construction sector has played a crucial role in extending job opportunities for Palestinian labor force. Expansion of the construction activity in both the WBGS and Israel has generated a lot of jobs for skilled, semiskilled and unskilled construction workers. The absolute number of domestic construction labor has increased from 12.8 thousands in 1970 to reach 40.3 thousands in 1996 (PECDAR, 1997). Prior to the Israeli re-occupation of the Palestinian territories on September 28, 2000, construction sector used to employ an average of 22.3% of Palestinian labor force volume. By 2001, the sector employs 10.8% of the labor force volume only, thus constituting a decrease in the labor force volume as a direct consequence of the Israeli forces occupation (PCU, 2003).

1.4 Research Problem.

The construction sector has a significant impact on Palestinian economy, but its impact is not yet determined, the subject of the study is the total direct and indirect impact of construction industry on the economy of Palestine.

To the best knowledge of the researcher, it is the first study of its kind to provide empirical information about the total impact of construction industry on economy.

1.5 Research Aim.

The aim of the study is to determine and document the impact of the construction industry on the economy of Palestine by, investigating the magnitude of construction industry contribution to growth and the nature of its interactions with other sectors in the economy, determining the causal-chain effects among sectoral output changes, and to unveil the underlying mechanism that channels the effects from a change in output in the construction sector through a network of dependent industries to the national output as a whole.

1.6 Study Objectives.

1-Assess the impact of the construction industry on the economy of Palestine.

2-Construct a model to quantify the return of investment on construction industry and other economic sectors.

3-Construct a model to quantify and calculate the impact of the construction value added on GDP.

4-Construct a model to quantify and calculate the impact of construction output on the trade balance.

5-Construct a model to quantify and calculate the impact of construction expenditure on job creation and business activity.

6-Evaluate the impact of construction employees on total employment.

7–Evaluate the construction tax revenue generation.

8-Evaluate the impact of investment on construction industry on job creation and household earning.

9-Establish a correlation between the construction sector and other sectors in the economy.

1.7 Research Significance.

This study examines the impact of construction industry on the economic development of Palestine. The relations are important because of:

1- The vital contribution of the construction sector to national income, employment and economic stabilization.

2- Its potential role as an agent of development, modernization, entrepreneurship and sociopolitical stability within the formal and informal sectors and communities is also widely recognized.

3- This study may provide the macroeconomic policy maker with important signs about the investment in different economic sectors.

4- It may also provide construction economist with an overview about the relation between the construction establishment volume according to the number of employees and their efficiency.
5- This study also gives us the relation between construction industry and other economic sectors and GDP and how they react with each other.
The researcher hopes that this study urges policy makers in Palestine to rethink of exactly what roles the construction sector should play in economic development and use it as a public policy tool due to its magnitude in contribution to the growth and the nature of its interaction with other sectors on the economy.

1.8 Expected Output:

At the end of this study it is expected to have the following outputs:
1-The increase in the amount of GDP resulting from increasing the value added of construction industry by one unit.
2- The additional jobs and household earnings resulting from investing one million dollars in construction sector in Palestine.
3- The impact of construction output on the deficit trade balance.
4-The impact of construction employees on job creation.
5-The efficiency of the volume of construction establishments according to the number of their employees.
6-The impact of construction expenditure on the economy.
7-The statistical correlation between the construction industry, GDP and other sectors in the economy.
8-The weight of the construction industry in the economy and its weight with respect to other economic sectors.
9-The amount of tax income revenue from the construction industry.
10-The percentage of the total private sector workforce in Palestine employed in the construction industry, average monthly employment during the year, and the total construction payroll, and the percentage of construction industry to the total payroll for all industries in Palestine.

CHAPTER 2

Literature Review

2.1 Introduction.

Construction is a vital sector for any economy. It provides the necessary public infrastructure and private physical structures for many productive activities, such as industries, services, commerce, and utilities. Because the public sector is deeply involved in the direct or indirect financing, construction, and management of many networks and facilities, construction investment is an important public policy tool that is often used by central and local government officials to accelerate development and create employment during periods of recession or slow economic growth. An important issue regarding the use of construction investment as a public policy tool is the magnitude of its contribution to growth and the nature of its interactions with the other sectors in the economy. For about three decades there has been a debate in the field of construction economics on the role of the construction industry in socio-economic development. The relationship between construction activity and economic growth has been extensively investigated over the past few decades (Chang & Chung, 2004; Ball & Wood, 1996; Crosthwaite, 2000; Drewer, 1980; Strassmann, 1978; Wells, 1985).

Early studies looked at the simple correlation between these two variables, with some testing the construction activity–economic growth relationship by estimating various growth functions that included construction investment as an explanatory variable for cross-sections of developing countries (Akintoye & Skitmore, 1994). The association between construction activity and economic growth was merely assessed by looking at the sign and statistical significance of the coefficient of construction activity. Most previous studies found a positive correlation between GDP and various measures of construction activity. Although studies using this methodology may have proven to be somewhat useful in examining the construction activity–economic growth relationship, they have fully failed to provide any means with which to determine the direction of causality. More recent studies on the construction–growth relationship, however, have gone beyond those studies not only by looking at the significance of the coefficient of construction investment but also by addressing the issue of the direction of causation using techniques within the Granger (1969) framework. It was argued that, in early stages of economic development, the share of construction output in GDP increased but ultimately declined in industrially advanced countries. By means of input-output analysis, it was found that the interdependence of construction sector with other economic sectors changed with respect to economic growth. Cross-sectional analysis is often used for studying their

relationship. It compares data across different countries at a particular period of time. To the researchers knowledge there is no local research conducted to study relation and impact of construction activity on economic development. Internationally, the role of construction in economic development has been addressed by various writers and international bodies, many of whom focused on developing countries.

2.2 Construction an Overview.

Construction is classified in Division 4 of the International Standard Industrial Classification of all Economic Activities as: "Construction, repair and demolition of buildings, highways, streets and culverts; heavy construction of such projects as sewers and water mains, railway roadbeds, railroads, piers, tunnels, subways, elevated highways, bridges, viaducts, dams, drainage products, sanitation projects, aqueducts, irrigation and flood control projects, hydroelectric plants, water power projects, gas mains, pipe-lines and all other types of heavy construction; marine construction such as dredging, underwater rock removal, pile- driving, land drainage and reclamation, construction of harbors and water-ways; water wells; airports; athletic fields, golf courses; parking areas: communication systems such as telephone and telegraph lines; and all other construction whether undertaken by private bodies or governmental authorities. Special trade contractors in the field of construction, such as carpenters, plumbers, plasterers and electricians, are also included in this group. This division does not include construction, repair and demolition work undertaken as an ancillary activity by the staff and for the use of an establishment classified in any other division of the classification. Excavating, overburden removal, shaft sinking and dredging, when undertaken in connexion with mining, are classified in the appropriate group of Division I (mining and quarrying) (Drewer, 1990).

It is important to note that this classification does not include the design of construction projects, or the manufacture of building materials and components, both of which are essential to the realization of construction programmes. Because the range of outputs classified as construction are so varied, it follows that the resources required to produce specific projects are also varied. The range from "traditional" buildings to sophisticated civil engineering works makes it misleading to talk of a single construction industry. The input requirements and the organization of production of different types of construction project are so varied that it becomes more relevant -for analytical purposes -to consider construction as the outputs of a number of relatively discrete industries. Each "construction industry" can be defined by their similarity of input requirements - that is, where inputs are elastic in technical substitution between groups of construction outputs (Drewer, 1990).

2.3 A Structural Perspective of Construction Industry.

Possibly because of the large number of construction firms in the industrialized market economies, construction is commonly assumed to be highly price competitive -a close approximation to perfect competition. This is a gross simplification of reality (Drewer, 1980). In fact, the organization of supply and demand shows marked variations between countries, and neither public nor private sector clients allow unconstrained market forces to determine their strategies for selecting designers or contractors. The organization of the supply of design services is imperfect there is a deliberate use of administered pricing; and the production of building materials and components is oligopolistic on occasions monopolistic. There is no evidence to suggest that similar situations do not exist in most developing countries. It is the site production function that of the contractors which is however usually considered to be most highly price competitive. As a result, a variety of price competitive mechanisms are used to award contracts in both developed and developing countries (Turin, 1990).

Contractors have in reality different categories of construction which they identify as their market, their "preference profiles" are related to the size, technical, and locational characteristics of specific projects. Therefore, for any specific contract, the number of contractors who identify it as in their market is limited. Although the exact nature of the market will vary between sizes and types of work, locations, and whether a general or specialist contractors system is the norm, in all cases it will be imperfect and on occasions monopolistic (Drewer, 1975; Turin, 1990). This dispute is important to developing an understanding of methods used to award contracts, the relationships between design and production, the structural organization of the process, and the regulation of the formal environment in which construction outputs are realized. Their consideration is particularly important in developing countries where many of these arrangements were imposed by colonial administrations in order to understand the nature of the organizational constraints to the development of an efficient and relevant indigenous construction capacity (Drewer, 1980).

A major source of confusion is the definition of the product what clients are actually buying. It is evident that the 'product' changes depending upon the relative functions of the participants in the construction process and the structure of this process (Turin, 1990). Also these functions and the structure change through time due to the impact of technical, economic and environmental changes. A client buys the design, supervision, materials and components and on-site production, from a supply system which is conditioned by the relevant social, economic and legal environment of specific countries. This environment is well defined in the industrialized countries and the organizational structure of the process is relatively inert.

Incremental adjustments are continuously made for example, the growth of specialist contracting in the United Kingdom and general contracting in France but major changes in the organizational structure of the process involve cost penalties to one or more of the participants. There is a paradox in that this inert and conservative sector claims to be flexible in response to changes in the structure of demand, but this flexibility which clearly exists imposes cost penalties in part on the participants but also significantly on the national economy. Even in the industrialized countries there is no excuse for an uncritical acceptance of the existing organizational structure of the process; but in developing countries, where economic realities make imperative a flexible response to demand and an adaptive organizational structure of the process, positive steps should be taken to accommodate local conditions (Liu, 1997).

Limiting the analysis to the site assembly stage which is in line with both the 'common sense' and national accounting view of construction the design of the product and the production and distribution of materials and components stages of the process are exogenously determined. The product can be defined not in terms of specific buildings and civil works, but as a set of future services. Private contractors, specialist contractors, state building organizations, etc., each contract with a client -and in many cases with each other to deliver a set of future services, the nature of which are determined in advance by the client and his professional advisers. The functions of both clients and professional advisers are constrained by an institutional environment which is conditioned by many factors such as planning and building regulations and codes of practice. The contractors interact with this environment and the additional factors of employment and safety regulations, a dominant mode of economic organization, and the legal implications of contracts (Drewer, 1990).

2.4 Some Problems of the Construction Industry.

2.4.1 Structure of the industry.

The constructions industry in developing countries shares many of the problems of its counterpart in the developed countries, but they tend to be exacerbated by the economic environment. Typically, there are a small number of large companies, often foreign owned, which carry out most of the work, and a large number of small contractors. Unlike the situation in developed countries, however, there are virtually few medium-sized constructors. This generally results in a financial and technical gulf between the larger firms and the small constructor which it is almost impossible for the latter to bridge. The dominance of the larger firms was shown by an ILO study carried out in Kenya, which found that although only 154 of the 1,500 registered construction establishments had 50 or more employees, these accounted

for over 80 per cent of construction output (Capt & Edmond 1997). Furthermore, there are far fewer constructors in developing countries than in the developed ones. For example, the number of the construction enterprises in 14 of the most industrialized countries averages 777 per million, as against only 17 per million in 23 countries with a per capita GNP of less than $500, a ratio of 46:1. The industry also suffers from functional divisions. First foremost, the divided responsibility for design and production is a natural constraint to efficiency and innovation. Unlike a producer of goods in any other industry, the constructor has virtually no say in the design of the product he is to make and may therefore be unable to use the most economic techniques. He is, however, totally responsible for the product's performance and quality. Although this is not problem that is unique to the developing countries, the consequences can be particularly damaging to an infant industry (ILO, 1999).

Furthermore, the system of the competitive bidding does little or nothing to alleviate the constraints. In theory, the system of accepting the least-cost bid should encourage efficiency. However, contractors and particularly small ones have very little room for manoeuvre in pricing a tender. The design is fixed, the cost of the materials to be used is fixed and hire rates of equipment are fairy standard. A contractor therefore makes his profit in three ways: by limiting his over head costs, by rising labour productivity, and by rationalizing site organization. For the small contractor in a developing country this does not provide much choice. His overheads are probably already pared down to the minimum and he will generally draw on the same pool of labour as all other small constructors. This leaves only the possibility of more effectively his site operations. Moreover, a price for the contract will already have been calculated by the client, and its amount is often known to the contractors. Given the limited opportunities for contractors to influence the design in any way, the least-cost tender system does not, therefore, necessarily produce the most economic price for the job, while on the other hand it ensure that traditional methods are used and innovation is suppressed (ILO, 1999). The industry is often used as an economic regulator for it is easier to slow down programmers in construction than in, say, manufacturing. Consequently constructors rarely have continuity of work, which means not only that in general they are not prepared to deviate from their traditional methods but also that they continue to rely on the use of casual labour that can be laid off or taken on at will. The result is that there is little along-term employment in the sectors, which in turn reinforce the emphasis on the use of equipment and inhibits the emergence of a skilled and experienced labour force (Chao 1988).

2.4.2 Procedural constraints.

The above section highlighted the division of responsibility for design and construction and the tendering system as being in part responsible for the inefficiency and conservatism of the domestic construction sector. Unfortunately, these are not the only handicaps. In the industrialized countries the various procedures in force developed hand in hand with the growth of the viable construction industry. Indeed, in many cases they were developed precisely in order to regulate it. Most developing countries do not have a self-sufficient domestic industry. Moreover, the procedures used are generally scarcely modified copies of those in the developed countries. This, of course, works well for the large foreign-owned consultancy and contracting firms. For the small indigenous contractor it is a different story. There are two aspects to this. First, the procedures are often applied without adaptation to the different environment of a developing country. Thus may design specifications automatically exclude the use of labour-based methods wit which small contractors may be more conversant. Second, the procedure in question, particularly for the qualifications and registrations of contractors, are often excessively rigid. There is a need to make these procedures more flexible and more responsive to the needs of an infant domestic construction industry (ILO, 1999). For example, in many qualifications systems or as a requirement for registering with a government organization, contractors have to possess a minimum amount of equipment. This is generally held to be an indication of a contractor's ability to carry out work. It may be, however, that a contractor is particularly adept in the use of labour-based methods and, while this entails the use of some equipment, the amount may be insufficient to meet the standards laid down.

More fundamentally, small contractors often have difficulty in obtaining credit. As a contractor is generally paid he has completed the job, and sometimes not for a while after, he has a permanent cash flow problem and unless he can obtain adequate credit he will be unable to finance construction work. Furthermore, he is often obliged to post various bonds which guarantee that he will execute the work if given the contract, perform his work in accordance with the terms of the contract, pay his labourers and materials suppliers, and rectify any shortcoming in the finished work. In addition, a contractor will often have to take out insurance in order to cover his various liabilities. To a contractor with limited assets and financial expertise, not only is this a major procedural exercise but also he will often find it difficult to obtain the necessary funds. Naturally, some of the problems can be alleviated by training in financial management, but a certain amount of assistance from the government or from contractors organizations will be necessary (Capt, 1993).

2.4.3 The indigenous contractor.

The recent ILO survey of small contractors in Kenya (Capt & Edmond, op.cit.) provides a fairly typical picture of the problems facing small contractors in most developing countries. Essentially, they find themselves caught up in a succession of interlocking vicious circles:

1-To obtain a contract they need fixed assets, but to obtain these they need credit, which is not forthcoming unless they are on a government tender list or already have a contract.

2-To carry out contracts efficiently they need a reliable permanent labour force which they cannot afford unless they have some continuity of work. But they will only be awarded contracts if they can prove that they are efficient in the completion of jobs they have already done.

3-To become viable and stable they must increase their fixed assets, and this can only be done if they have sufficient profits to reinvest in the business. But because they have no continuity of work and no assurance that jobs will become available, the retained profits are diverted to fixed overheads and not invested in plant and equipment.

4-The smaller the firm the greater its reliance on casual labour and hence the higher the probability that its standard of workmanship will be inadequate, thus damaging its prospects of obtaining further work.

5-The contractor has to pay his materials suppliers, employees and plant hire companies promptly, whereas there can be long delays in payments due to him. The cash flow deficit has to be covered from the firm's resources, again limiting the amount that can be reserved for fixed assets.

6-Small contractors cannot afford, or obtain credit for, the purchase of plant and equipment. As a result they are often trapped in a sequence of inefficient technology leading to low productivity leading to low income leading back full circle to inefficient technology.

In contrast, the large contracting firms, which are often foreign-owned, are well versed in the procedures governing the industry and also have little difficulty in providing the necessary bonds and guarantees. It is perhaps not surprising, therefore, that they obtain the major of construction work (Edmonds, 1999).

2.4.4 Training in the construction industry.

It follows quite naturally from the above discussion that, while there is a need to rationalize the procedures used in the constructions industry, it is also necessary to provide training for small contractors, particularly in the area of financial management. There is, however, a major obstacle here created by very nature of the industry. The small contractors is often a sole

proprietor, he may also be the firm's accountant and the only qualified member of the firm. To set up training courses of two or three week's duration and expect that small contractors will come to them ignores the fact that many of them cannot afford to be away from their business for that length of time. The selection of contractors for training could be refined by choosing those who had successfully tendered for a contract and providing them with the training prior to its execution. The question of training is related to construction planning. It has already been argued that little thought is given to developing the production capacity of the construction sector. One of the results of this is that either most of the work goes to foreign-owned contracting firms which have the resources to carry it out, or too many small contractors are in competition for a small number of jobs. If appropriate policies were adopted with regard to development of the domestic sector, it would then be possible to identify not only which projects could be executed by indigenous contractors but also what level of training was required over the plan period to ensure their effective implementation (Edmonds, 1999).

2.5 Theories about Construction and Economic Development.

Early studies of the relation between construction and economic development were implicitly or explicitly based on Keynesian economic philosophy. Strassmann (1970) and Turin (1978) provided statistical correlations between measures of construction output (such as value added in construction (VA(c)) and employment) and per capita national income (y). A stylized account is given in Figure 2.1. In low income countries (L), construction output is low. As industrialization proceeds, factories, offices, infrastructure and houses are required, and construction output as a percentage of gross domestic product (GDP) reaches a peak in middle income countries (M). It then tapers off in high income countries (H) as the infrastructure becomes more developed and housing shortages are less severe or are eliminated. A related and more recent approach is to highlight significant multiplier effects of construction investment via forward and backward linkages using input–output tables (Kirmani, 1987, 1988; McDavid, 1997; Bon, 2000). The implication is that construction is a ‘potential’ agent of economic development in the Keynesian sense. The idea is to accelerate construction projects and investment that, in turn, generate further growth. Although constraints to raising construction output were recognized in these studies, often they were not well developed.

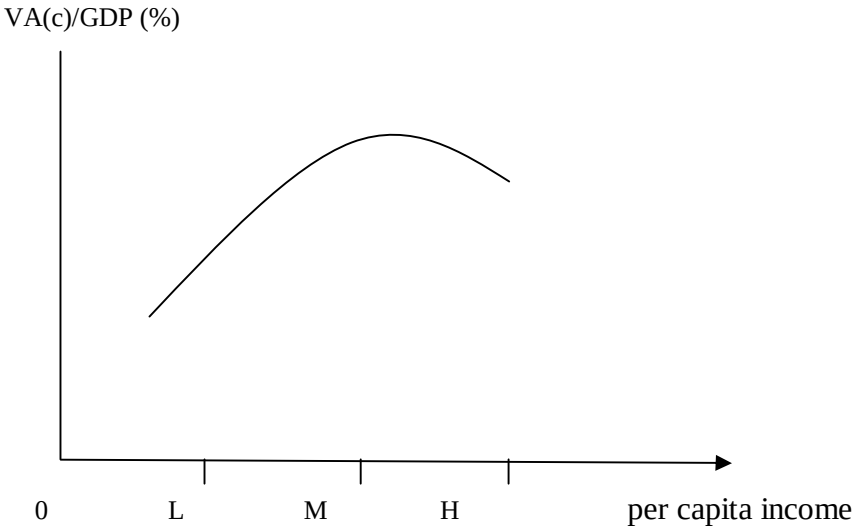


Figure 2.1Value added (VA) in construction and per capita income

Sources: Tan, Construction and economic development in selected LDCs: past, present and future (2002) 20, 593–599

2.5.1 Structuralists.

For structuralists, the superficiality of the early studies is not difficult to find. It is well known that statistical correlations do not imply causation, and there is a need to differentiate 'growth-initiating' construction output such as factories and infrastructure from 'growth dependent' construction output such as social amenities and housing (Drewer, 1980). From this viewpoint, scarce resources should be allocated to growth initiating projects in the initial stages of development and subsequently to growth dependent construction output. Structuralists argued that the main problem lies not in raising construction output but how this should be done (Chao, 1968; Moavenzadeh, 1978; Edmonds, 1979; Riedel, 1981; Bhalla and Edmonds, 1983; Edmonds and Miles, 1984; Wells, 1984; ILO, 1987; Kirmani, 1987; Wang, 1987; Ofori, 1993; RCRG, 1993; McDavid, 1997). The early studies assumed construction output may be raised without too much hassle. By contrast these problems included (Tan, 2002):

1- High import content of capital, labour, and materials that worsens the balance of payments.

2- Overvalued exchange rates, exemption from import duties and low interest rate policy.

3- Skills and materials shortage, including management and entrepreneurial skills.

4- Inadequate finance and delays in payments.

5- Weak planning and administrative machinery.

6-Dominance of foreign contractors and inadequate local capacity.

7-Inappropriate output targets set by planning authorities in socialist economies resulting in irregular work flow, inefficiencies, and poor quality of output; separation of design and construction that provides little incentive to reduce cost (since professionals are paid a

percentage of cost) or innovate because the contractor has no control over design where key decisions over technology are made.

8-Inappropriate regulatory framework (such as rigid qualifications and registration of contractors and uncertain property rights).

The key policy recommendations follow from the above diagnoses and they include.

1- The formation of state enterprises or strong links between the state and large local firms to develop local resources, linkages, and capacity to compete with foreign contractors or fill up 'missing' middle size firms.

2-Demand stabilization to reduce risk and provide continuity of demand to encourage mechanization and training of unskilled temporary labour.

3- Setting up of financial institutions (such as cooperatives), grants or loans to help small contractors upgrade their businesses. This is often suggested in countries where capital markets are not well developed and such informal credit institutions are seen to partially compensate for the weaknesses.

4- Strengthening institutions, such as the formation of a 'construction industry development, board contractors association', and a 'national construction council' to provide technical, advisory, and training services, external representation, registration, a code of conduct, and to regularly meet to discuss the industry's problems

5-Demand and supply planning at the macro level: this is carried out to the fullest in socialist countries

6- Structuring demand in favour of local firms such as preferential pricing and prequalification systems; using design and build contracts , standardizing designs improving tendering procedures such as online submissions and lower retention fees and establishing a proper regulatory framework .

2.5.2 Neoclassical perspective.

By the early 1980s, the World Bank (1984) was advocating market reforms within the construction sector in line with the neoclassical revival against large scale state intervention. The recommendations included:

1- Eliminating factor price distortions so that prices reflect relative scarcity

2- Recasting or privatizing state-owned firms to make them competitive

3-Deregulating the private sector.

4-Reforming monopolistic control of materials supplies.

At the core of neoclassical economics is the idea that social welfare is maximized if markets are left to work by themselves. Prices alone are sufficient to signal relative scarcity and influence consumption and investment decisions. Supply and demand adjust towards equilibrium prices (Tan, 2002).

2.5.3 Political economic approach.

The political economy perspective focuses on class structure, the manner in which the economy is integrated into global capitalism, and the articulation between formal and informal sectors of the economy. Its roots may be found in the works of Marx (1976), who emphasized class structure. Finally articulation theory occupies an intermediate position between classical Marxism and dependence theory by considering the links between large and small subcontracting firms. From this viewpoint, subcontracting exists because (Tan, 2002):

1- Small firms provide large firms with relatively cheaper inputs.

2- It increases the flexibility of large firms.

3- Small firms provide employment and hence socio-political stability as well as relieving the state of labour reproduction costs.

4-The informal sector acts as a 'reserve army' of workers for the formal sector in tandem with cyclical demand.

The strength of the political economy approach lies in directing attention to the importance of class structure and the diversity of employer–worker strategies as a basis for accumulation or a 'deep structure' from which rises other structural problems identified by structuralists. The weaknesses are the tendency to argue in abstract or general terms with little concern for important institutional details and its functionalist explanations (Booth, 1985).

2.5.4 Institutional approach.

Institutional approach is based on neoclassical theory but extends it by relaxing the assumption of zero transaction cost (Williamson, 1985; North, 1990). It is costly to transact because of opportunism. It may arise in many instances, such as:

1-Asset specificity, where one party may be held to ransom because its assets are of no use to anyone other than the contracting party.

2- Time specificity, where a subcontractor can deliberately impose substantial costs on the main contractor by delaying an entire project.

3-Where one party can partially conceal the quality of work or materials.

4- Delaying progress payments.

If information is perfect, these problems disappear. However, because of bounded rationality or imperfect information, it is costly to monitor the other party. Thus, from the new institutional economics (NIE) perspective, there is a potential role for the state to develop institutions and enforce property rights to reduce transaction costs. The other theme of NIE is the development of institutions or institutional capability not in the sense of rules, laws and social norms or customs but institutions as organizations (North, 1990). The strength of this approach lies in its ability to appreciate the value of industry-wide organizations in spearheading construction industry development. The limitations of this approach include excessive focus on the role of national institutes or boards at the expense of other institutions, the neglect of class structure, and silence on the roles of institutions in rules, laws, customs and norms. In conclusion the early studies (Strassmann, 1970; Turin, 1978; Kirmani,1987,1988; McDavid,1997) tend to be optimistic about raising construction output without giving clear reasons, while structuralists are unduly pessimistic about supply constraints. The political economy neoclassical and institutional perspectives take the middle ground. In the political economy approach, class structure is primary in conditioning state autonomy and action. Dependence theorists stress external relations and articulation theorists are interested in the links between formal and informal modes of production. The neoclassical approach highlights the problems of excessive or poor quality state intervention for efficiency. Finally, the institutional approach stresses the importance of building institutions in rules, laws, customs, norms and organizations**.**

2.6 Construction and Economic Growth.

The construction product is essentially an investment good. It requires a long period of gestation and is expected to supply services through an extended period of time - longer than most other types of investment. These services range from "living space" in domestic dwellings, to the provision of electrical generating capacity, irrigation, communications etc. For many if not most construction products these services are difficult to quantify. As an investment good, construction generates incomes which - through the multiplier effect stimulate an increase in demand. The extent to which this results in an increase in gross domestic output depends upon a number of factors, such as the savings/consumption and domestic/import propensities for specific economies, as well as the general level of demand in relation to capacity (Drewer, 1990). Construction can therefore be considered as a growth-initiating activity, but only insofar as its consumption of resources does not impose supply constraints-and, as a consequence, inflationary pressures on the total economy. This presents a static view of the construction sector in a national economy; in reality, conflicting demands are

made for scarce resources, such as savings, foreign exchange, skilled labour, etc., and these conflicts have to be resolved in one way or another. Resources are allocated inter-sectorally and intra- sectorally by some mechanism: that is, a proportion of national resources are available for construction work and these in turn are allocated between different types of construction work. The extent to which this allocation of resources is 'best' for an economy depends upon a variety of factors. However it should be self-evident that the degrees of freedom to expand and/or contract construction output, without there being significant 'knock-on' effects on the total economy, are limited. The relationship between construction and economic growth and development is therefore complex. Using an international comparative method - particularly with respect to assumed differences in levels of development can lead to the conclusion that the data indicating variations between countries at different levels of development are an indicator of changes within a specific country which is passing through different 'stages of development (Drewer, 1990).

2.7 Linkages in the Construction Sector.

Construction is a vital sector for any economy, because it provides the necessary public infrastructure and private physical structures for many productive activities, such as industries, services, commerce, and utilities. An important issue regarding the use of construction investment as a public policy tool is the magnitude of its contribution to growth and the nature of its interactions with the other sectors in the economy. For more than 30 years, development planners have used Hirschman's (1958) important concepts of backward and forward linkages to examine these interactions.

2.7.1 Concept of linkages.

Hirschman (1958) developed the concepts of backward and forward linkages as a means of identifying "key sectors" for industrial investment strategies and determining which sector(s) of the economy should be expanded or contracted. Backward linkages show the relationship of interindustry purchases to total purchases, while forward linkages show the relationship of interindustry sales to total output. Because in most developing countries, there are imperfections in product and factor markets and shortages of entrepreneurial talent, Hirschman noted that important investment opportunities were frequently missed and that increases in demand were often met by increases in imports, creating balance-of- payment problems. He therefore proposed an unbalanced growth strategy to help alleviate these difficulties, maintaining that investments in directly productive activities provided sizeable markets for

other firms that can be readily exploited. In addition, he suggested that if firms purchase large amounts of intermediate products from other sectors, planners should encourage industries to provide these inputs locally (Polenske & Sivitanides, 1999). Analysts have to be careful when using backward and forward linkages for selecting sectors in which to make investments. In the case of backward linkages, inputs are economically linked to the firm supplying the product. Development is then supposed to occur through import substitution, where producers use local suppliers rather than international suppliers. Thus, backward linkages induce growth through the process of derived demand.

For a particular country, however, it is needed to determine the import content of the construction sector inputs and the feasibility of substituting local for imported inputs. If substitution cannot occur or can occur only to a limited extent and if the amount of imports must be reduced, officials can discourage new construction and/or shift investment to those construction subsectors using the smallest amounts of imported inputs. This rationale has clear implications regarding the types of backward linkage measures economic planners should use for assessing whether construction is or can be a key policy sector. In particular, it suggests that they should examine the value of the backward linkage measure both net of imports and with imports. The former measure will indicate whether the construction sector has strong linkages with the domestic industries, while the latter will show whether the construction sector can develop strong linkages with domestic industries, if import substitution is possible. Thus, both measures are useful. The impetus for development can also come from the supply side through forward linkages. When a firm produces an output that serves as an input into another sector, this may induce the firm to produce the final product locally rather than to export the input for transformation abroad. For construction outputs, the product is generally nontradeable and must therefore be used locally (Batten, 1989).

2.7.2 Linkage measures.

Analysts differ as to how to measure these linkages. Of the proposed linkage measures, eight measures are most commonly used by analysts (Polenske & Sivitanides, 1999):

1-Direct backward linkage, showing the proportion of total inputs of a sector accounted for by its intermediate inputs.

2-Direct forward linkage, showing the amount of total output of a sector accounted for by sales to intermediate sectors.

3-Total backward linkage, measuring the total direct and indirect effects associated with a change in final demand for the given sector.

4-Total forward linkage, measuring the total direct and indirect effects associated with a change in value added for the sector.

5-Power of dispersion, showing the relative extent to which increases in final demand for products of a sector are dispersed throughout the system of sectors.

6-Sensitivity of dispersion, showing the extent to which the system of sectors draws upon the given sector.

7-Coefficient of variation for backward linkages, measuring the extent to which a given sector draws evenly from the other sectors.

8-Coefficient of variation for forward linkages, measuring the extent to which the system of industries draws evenly upon the given sector.

Existing methods for measuring linkages are rooted in the input–output tables and may be classified under two main categories. One refers to the traditional methods and the other is the Hypothetical Extraction Method (HEM) (Song, Liu & Langston, 2006).

2.7.2.1 The traditional methods.

The traditional methods mainly focus on the calculations of the Leontief model (Leontief, 1966) and the Ghosh model proposed by Ghosh (1958). Rasmussen (1956) adopted the concept of a multiplier to measure the backward linkages. The Leontief model can be shown as: $X= (I–A) Y$, where X denotes a vector of gross output, A denotes the matrix of technical coefficients and Y denotes a vector of final demand, I denotes the identity matrix and (I–A) denotes the Leontief inverse matrix.

The backward linkage, based on the Leontief inverse matrix, can be defined as the column sums of the inverse matrix, namely, bLij, where b is a summation column vector and Lij is the ijth element of the Leontief inverse matrix. This backward linkage measures the extent to which a unit changes in the final demand for the product of sector j on overall output.

Similarly, the Ghosh price model can be used to measure the total forward linkage and the model can be rearranged as: $X=V (I–B)$, where B denotes the direct output coefficients matrix, V denotes a vector of value added and (I–B) refers to the Ghosh inverse matrix.

The forward linkage, derived from the Ghosh inverse matrix, can be defined as the row sums of the inverse matrix, namely, bGij, where b is a summation row vector and Gij is the ijth element of the Ghosh inverse matrix. The forward linkage indicates the impacts on output of a unit increase in value added of i sector (Song, Liu & Langston, 2006).

2.7.2.2 The HEM method.

An alternative linkage measure method is the HEM. The original idea of HEM was that it tried to extract a sector hypothetically from an economic system and examine the influence of this extraction on other sectors in the economy. In light of the basic idea of HEM, it was assumed that the n-sector input–output technical coefficient A had been partitioned into two groups: group one (g1) being a sector that was to be extracted from the economy and group two (g2, g1+g2=n) was all the remaining sectors of the economy. Now, if g1 was extracted hypothetically from the economy, using the same final demand vector the Leontief model can be rewritten as: $X^*=(I–A^*)Y$,

Where:

X^* is the output after extraction

A^* is a reduced technical coefficients matrix ((n–1)*(n–1)).

The reduction in output can be expressed as $X–X^*$, which reflects the linkage between g1 and g2 given that the technical production process is held constant. The linkage can be decomposed into backward and forward linkages according to different transformations.

2.7.2.3 The linkage measures of the construction sector.

Ranko Bon and his colleague Roberto Pietroforte applied the linkage concept to the construction sector (Bon, 1988; Bon and Pietroforte, 1990). Bon and his colleagues discussed the linkages of construction in Italy, Japan, Turkey and the United States (Bon, 2000). They concluded that the construction sector has low forward linkage because only the maintenance and repair construction sub-sector produces intermediate goods. They also observed that the construction sector has high backward linkages because the sector needs a large amount of national resources through direct purchases from other sectors. Recent studies on construction linkages can still be found. Pietroforte and Gregori (1999, 2003) used the organization for economic cooperation and development (OECD) input–output tables to conduct a linkage analysis of the construction sector in highly developed economies. Su et al. (2003) examined the backward and forward linkages of the Taiwanese construction section using 12 input–output tables compiled between 1964 and 1999. Previous studies have demonstrated the decreasing role of the construction sector with economic maturity. However, these relevant studies were based on the standard input–output model and did not involve the effect of capital (Bon, 2000). In other words, previous construction linkage research has treated capital as a primary factor of production because the capital goods are classified as final goods in most national income accounts and a standard input–output table therefore does not include the

information about the sectoral distribution of capital goods produced in a given year (Bon, 2000). More importantly, based on an approach which treats capital as a primary factor of production, previous research tends to underestimate the rate of technical progress of production (Rymes, 1971; Peterson, 1979) and their linkages. In a more dynamic input–output model the problem seems capable of resolution, but in a comparative-static model the problem is not satisfactorily settled (Bon, 2000). In highly developed countries, capital plays a significant role in the construction process, and hence the consideration of capital in construction linkage research is urgently needed.

2.7.3 Construction backward linkages.

Because the economic structure varies significantly from country to country, it is expected that backward linkages to differ also. Theoretically, differences in backward linkages among countries and over time may be attributable to variations in three factors: product mix, relative prices, and technologies. The first factor is the variation of product mixes (subsectoral composition) of the construction sector both between countries and within the same country. In some countries, for example, new construction output may consist of residential buildings, while in others it may consist of highways and utilities. If the backward linkages for the different construction subsectors vary widely, then a variation in the product mix between countries or over time will be associated with a variation in the overall linkage measure for the construction sector. The second factor is variation in the relative prices of construction inputs. The prices of inputs will differ, reflecting, among other things, a variation in relative scarcities of the inputs in different countries and over time. Such a variation results in different cost structures even if the product mix and technologies are the same. Finally, the third factor is variation in construction technologies, which contributes to different input structures. Construction technologies for residential housing, for instance, will differ markedly, reflecting different technological processes employed by countries at alternative levels of development. Labor- intensive construction technologies, for example, are often used in developing countries, while capital-intensive technologies are more often used in industrialized countries (Polenske & Sivitanides, 1999).

2.7.4 Construction forward linkages.

The forward linkage of a sector reflects the dependence of the remaining sectors in the economy on this sector’s supplies that occur within the production process. A weak forward linkage shows a strong sectoral independence and a weak economic push of the construction

sector. In fact, in the context of the input–output table, the intermediate demand of the construction sector contains only the maintenance and repair flows to the remaining sectors and most of the production of the construction sector goes to the final demand, which represents new construction. This explains why the forward linkage of the construction sector has a lower value**.** However, it should be noted that maintenance and repair construction is not as well covered as new construction by official statistics due to do-it-yourself activities and the black economy (Pietroforte and Gregori, 2003).

2.8 Pull Effect and Push Effect of Construction Sector.

2.8.1 Pull effect.

Generally, when a house is built, as many as 2500 types of materials are consumed, which mainly come from the industry of construction materials, metallurgy, chemistry, forest, machinery, etc. (Zhang, 1996). These materials consumed by the construction sector are its intermediate input from other sectors. Due to the consumption of large amount of intermediate input, the pull effect is induced. The pull effect between sectors is measured quantitatively by the total input coefficient For example; the total input coefficient of Sector A to Sector B is 2, meaning that for 1 unit produced by Sector B, Sector A has to produce 2 units to support. The larger the coefficient, the greater the pull effect. Two parameters are usually used to measure quantitatively the pull effect from a specific sector to the whole economy: the output multiplier and influence coefficient. The output multiplier reflects a type of leverage e.g. the output multiplier of the construction sector is 3.2, meaning that the whole economy will be induced to generate the value of 3.2 unit if the construction sector produces 1 unit. The influence coefficient is defined as the ratio of the total input coefficient of one sector to the average total input coefficient of all sectors. If one sector's influence coefficient is larger than one, its pull effect to the whole economy is larger than the average pull effect. Previous studies (O'Conner and Henry, 1975; Li and Xue,1998) showed that the output multiplier and influence coefficient of the construction sector in developing country were 3.152 and 1.262, respectively. Thereby, it is seen that the construction sector has a rather great pull effect on the whole economy**.**

2.8.2 Push effect.

The construction sector can be divided into two sub sectors: the maintenance and repair (M&R) and the new construction (Bon and Pietroforte, 1993). The output of the M&R sub sector mainly goes into other sectors as the intermediate use, and that of the new construction mostly forms the fixed capital. This part of the output is much more than the other. Corresponding to

the pull effect related with the intermediate input, the push effect is related with the intermediate use. Since the intermediate use is from the M&R sub sector, the push effect of the construction sector is actually a type of effect caused by this sub sector. The push effect between sectors is measured by the total output coefficient. For example, the total output coefficient of Sector B to Sector A is 0.05, meaning that within per unit output from Sector B, 0.05 units will flow into Sector A, so a push effect is induced from Sector B to Sector A. The larger the coefficient, the greater the push effect. Previous studies (SSBS, 1998,2001,2003; Bon & Pietroforte 1990,1993) showed that the major consumers of the construction sector were service sectors. This indicates that the activities of maintenance and repair mainly happened in the service rather than other sectors. The push effect from one sector to the whole economy is usually measured by the input multiplier and induce coefficient, which correspond to the output multiplier and influence coefficient. Previous studies (Bon, 1999; Valadkhani, 2003) in developing countries showed that, the input multiplier and induce coefficient of construction were about 1.143 and 0.071, respectively—much smaller than its output multiplier and influence coefficient. In fact, the push effect of the construction sector was the smallest among the economic sectors. The construction sector's push effect is much smaller than its pull effect, for most output of the construction sector directly becomes the final fixed capital. However, it must be noted that the activities of M&R are often carried out by unregistered small companies and self-employed workers, which are usually not covered by statistics.

Previous studies showed that the construction's input multipliers in developed countries are usually in the range between 1.2 and 1.5 and output multiplier between 1.7 and 2.7 (Bon and Pietroforte, 1990, 1993; Pietroforte and Bon, 1995; Bon and Yashiro, 1996; Bon et al., 1999). Experience show that the input multipliers of construction sector in developing country are comparatively smaller, while its output multipliers are much larger. Generally, construction maintenance and repair activities are more prevalent in developed countries while the new construction activities are more predominant in developing countries (Bon and Pietroforte, 1993). It can be seen that both the pull effect and push effect of the construction sector to the whole economy increased. This means that the intensive investment and increased construction activity induced a large amount of materials and components production. Also, the wide use of construction machineries and equipments in the sector is another expeditor. On the other hand, the rise of the push effect indicates that the M&R services are becoming more important and can not be neglected. The gradual increases of the output multipliers and input multipliers indicate that the construction sector is still a power engine of the national economy (Wu & Zhang, 2005).

2.9 Indicators for Measuring Construction Industry.

The United Nations Centre for Human Settlements (UNCHS) (1997) succinctly described indicators as follows: Indicators are not data, rather they are 'models' simplifying a complex subject to a few numbers which can be easily grasped and understood by policy makers and the general public. Indicators are statistics directed specifically towards policy concerns and which point towards successful outcomes and conclusions for policy. They are required to be user driven, and are generally highly aggregated and have easily recognizable purposes. In addition, the (UNCHS) (1995) suggests that indicators should be measurable using immediately available data, and should not normally require special surveys or studies. They should be related to the interests of one or more stakeholders; be cost-effective; and be independent, with each indicator measuring a different outcome. The indicators of construction industry should relate to a wide range of issues at the level of the economy as a whole; the industry; projects; companies; and individuals and material inputs. The following are some possible indicators.

2.9.1 Macro-level indicators.

It is important to measure and track the size of each nation's construction industry. Moreover, construction should be related to its socio-economic environment, given its key role in national development (Ofori, 1990; Wells, 1986); the linkages between the industry and other sectors (Hillebrandt, 1984); and thus, the potential of a dynamic construction industry to generate activity in other sectors. Some indicators are now outlined.

2.9.1.1 The construction industry:

A growing construction industry would signify success in the industry's development. Thus, the overall size of the nation's construction industry should be measured. The indicators include (Ofori, 2001):

1-Construction output; value added in construction; construction output and value added per capita of population; construction output and value added per worker.

2- Construction export volume; construction export volume as a proportion of total output.

3- Employment in construction; employment in construction as a proportion of total employment.

4- Number of jobs created in construction during the year.

2.9.1.2 Construction in the economy.

An important aspect of construction industry development is to ensure that the industry contributes to the economy and stimulates activities in other relevant sectors. Possible measures of the role of the industry in the economy include (Ofori, 2001):

1- Percentage contribution of construction to gross domestic product (GDP).

2- Percentage proportion of construction to gross domestic fixed capital formation.

3- Summary of input/output data relating to construction.

2.9.2 Sectoral level indicators.

The construction process requires a variety of inputs, some of which may be imported. The extent of development of effective and cost-competitive local inputs indicates success in the construction industry development effort (Ofori, 1990).

2.9.2.1 Volume of material inputs.

The volume of key materials used should be monitored, and also related to the absolute output of construction work, as measured in construction industry above. Such measures would guide programmers for expanding the productive capacity of materials manufacturers. The relative data (comparison of volume of materials consumed with construction output) would also help in efforts to conserve resources. The relevant indicators are (Ofori, 2001):

1- Absolute volumes of key inputs (such as cement and steel) which are used.

2- Volumes of these inputs used per capita.

3- Volumes of each input per unit of relevant output (such as amount per square meter of buildings or kilometer of roads).

2.9.2.2 Level of imports.

It would be pertinent to measure the extent of foreign inputs into construction and to gauge the nation's competitiveness in providing construction resources. A set of indicators should present the proportion of imported construction inputs which could have been obtained locally (i.e. for which adequate natural resources, skills and technology are available within the nation, or could be made available in a relatively short period of time, say within one year). Two sets of indicators would be presented under this heading (Ofori, 2001): (1) total imports; and (2) 'substitutable' imports. The imports categorized under:

1- Labour (skilled, unskilled, supervisory and professional).

2- Materials (same key items as in volume of material inputs).

2.9.2.3 Human resource development.

Education and training of adequate numbers of personnel at all levels is an important component of construction industry development programmes. Some indicators of progress in these activities are (Ofori, 2001):

1- Total number of qualified professionals and technicians by category (professional or technician) and by specialization; and number of graduates from professional and technician courses that year.

2- Total number of skilled site personnel by type of skill (such as carpenter, bricklayer); number of persons trained that year (1) in formal courses; and (2) in apprenticeships; number of persons trade tested.

3- Total number of unskilled personnel**.**

2.9.3 Project level indicators.

Construction work is realized in projects, which are undertaken to meet the requirements of clients, and are subject to the approval of statutory bodies. The performance on each project contributes towards the overall achievements of the industry; it is more tangible, and easier to assess, using indicators now outlined (Ofori, 2001).

2.9.3.1 Construction productivity.

Construction labour productivity is important to developing countries despite the abundance of human resources in most of them (Ofori, 2001). Productivity may be measured at the levels of the:

1- Industry (total construction output per worker engaged).

2- Project (time taken to complete a unit area of various types of buildings and works).

3- Individual trades (output constants, i.e. output per person, for various work items).

2.9.3.2 Cost.

Tracking basic overall construction cost data will show the extent of improvement in the industry over time (Ofori, 2001). Appropriate indicators are:

1- Unit construction costs for various types of buildings

2- Unit construction costs for other construction items.

2.9.3.3 Safety.

The construction industry should consider the health and welfare of its workers in order to improve its image. A set of indicators should track the industry's safety record (Ofori, 2001). These are:

1- Construction accidents frequency rate (number of accidents per million man-hours worked).

2- Severity rate of accidents (number of man-days lost per million hours worked).

3- Injuries (number of persons suffering minor injury, permanent disability, fatality).

4- Enforcement action or sanctions for non- compliance such as fines, suspensions or de-registration.

2.9.3.4 Sustainability.

Progress towards attaining sustainable construction on current projects should be monitored. Indicators in this area would supplement those on the urban environment which, for example, indicate energy and water use in completed facilities (Lawrence, 1997). They include:

1- Usage of utilities – volume of water and energy used on construction sites.

2- Usage of resources (extension of volume of material inputs) – ratio of renewable to non-renewable resources used.

3- Production of wastes – quantity and quality of wastes produced on site; proportion deposited in landfills; proportion recycled.

4- Environmental management – proportion of companies with certified environmental management systems such as the ISO 14000 series.

5- Acoustic quality – exposure of workers to noise above mandatory level (if applicable).

6- Non-compliance and enforcement – number of infringements of environmental regulations; extent of punitive actions such as fines or suspensions.

2.10 Some Macro Consideration- A Basis for Planning.

In any country there will be a gap between identified needs and realized construction. This is because needs are a function of the level of economic development, expectations, the national and international demonstration effects, and demographic change; and realised construction is a function of the level of economic development, the socio-political environment, local construction capacity, and the extent to which the economy can absorb new construction (Drewer, 1990). The structure of identified needs will differ depending on the level of development of each country. For example, low-income countries will probably manifest a bias towards infrastructural work, and medium-income countries towards housing. Similarly, the

structure of realised construction will differ -reflecting in part development imperatives, but in addition social, political and economic relationships within each country and between themselves and the industrialized countries. Some of this output will be growth-initiating, some will be growth-dependent, while some will be analogous to conspicuous consumption. The absolute difference and structural misfit between identified needs and realised construction is an indicator of the misallocation of national resources to construction, and the misallocation of construction resources between construction alternatives. The problem for any country is not simply realizing a specific volume of construction, but what is constructed, why it is constructed, by whom it is constructed, and for whom it is constructed. There are limits to an economy's capacity to absorb an increasing volume of new construction at lower levels of development; this is because of supply constraints on indigenous resources, and foreign exchange constraints which limit the importing of resources. Therefore, a positive contribution from the construction sector to economic and social development requires resources to be allocated to growth-initiating projects, improvement in the efficiency of resource utilization, and an increase in the supply and quality of indigenous construction resources: i.e. planned output, increased efficiency of the total process, and the development of indigenous construction capacity.

The maximization of the contribution of the construction sector to economic and social development involves the development of a strategy which is based upon an understanding of the complexity of the sector, the main constraints on its development, and the awareness of the intra-sectoral and international linkages which condition its operation. Any plan for economic and social development will imply a specific structure and volume of construction output. However, most plans stop at this point (Drewer, 1990): it is rare for the construction resource implications to be analyzed in any detail. As a consequence, construction often seems to be a Cinderella sector - a fairy godmother is necessary for it to go to the 'development ball'. As many developing countries have found out to their cost, fairy godmothers come in various guises - frequently with little long-term concern for Cinderella's well-being. Construction for construction's sake is likely to cause more problems than it solves. Among these will be the generation of inflationary pressures, excessive consumption of foreign exchange, and a misallocation of resources between sectors, and within the construction sector itself. A development plan which gave serious consideration to construction would:

1- Specifically state the volume of resources which can be allocated to the sector:

2- Define the split between domestic and expatriate resources which can be accommodated by the development strategy.

3- Identify the construction projects implied by the development plan, and allocate priorities among them.
4- Define the split between public and private savings to be allocated to construction, and that between the formal and informal sectors; and
5- Include -as part of the development plan -a strategy for the longer term development of indigenous construction capacity.

2.11 The Outline of a Development Strategy

Given the construction needs of any society, irrespective of its general development philosophy, an efficient indigenous construction capacity is an important component of economic and social development. This applies to design, production of materials and components, and the direct production of buildings and civil works. in most developing countries the problem is a weak local construction capacity and inefficiency -at all levels because of a lack of skilled manpower, an appropriate institutional environment, and the use of inappropriate construction techniques. This allows expatriate organizations to penetrate local markets to a degree in excess of that required by development criteria, and impedes the development of local resources (Veen, 1980; Drewer, 1990). Those countries often referred to as 'developing', 'less developed', etc., possess the technologies and skills required to construct many of the buildings and infrastructural works they require. These technologies are not only adequate to realize a variety of construction projects but are compatible with local social and economic practices - in many cases involving cooperative action from the local community. The problem is not that there is a technological vacuum in these countries, but rather that 'modern' technologies are introduced as a consequence of the way demand is fed into their economies - and this is exacerbated by the role of a growing 'market economy' in disturbing traditional economic and social relationships (Drewer, 1990). In some instances 'modern' technologies will be appropriate to the needs of specific countries. However, where the skill base of a community is more appropriate to the realization of a construction programme geared to 'traditional' technologies, the introduction -or imposition -of imported technologies without the serious consideration of 'traditional' alternatives, will impede economic and social development. Where the development of an efficient indigenous construction capacity is identified as a policy objective, the technology variable can be used to redefine many projects in order to facilitate the maximum use of local human and physical resources. This is also likely to be consistent with the objectives of reducing the foreign exchange component of construction programmes, developing local small-scale manufacturing and extractive industry,

and improving the maintenance of new buildings and civi1 engineering works. In addition, by raising the status of traditional designs and techniques, the negative impact of development programmes on local cultures will be reduced. Governments which accept this objective can operate on “the technological variable” as a major client for construction, as the authority responsible for allocating various scarce resources - such as foreign exchange-and as the authority responsible for defining the legal and environmental framework in which buildings etc. are produced (Drewer, 1990).

CHAPTER 3

Methodology

3.1. Introduction.

This chapter defines the methods used in assessing the impact of the construction industry on the Palestinian economy. It also shows how the researcher could prove or not prove his hypothesis based on the objectives defined earlier. Information about the indicators and measurements, which will be used in assessing the role of construction industry in economy, is introduced and information about the models which are used in this study is also introduced. Information about the raw data and its reliability and validity is discussed. Moreover, the components of the economy and the activity which are included in each sector is stated.

3.2. Research Stages.

In general, this study has been developed through three stages. In the first stage, the researcher reviewed literature related to the thesis topic which supports the thesis hypothesis and strengthens the selection of the raw data. In the second stage the researcher gathers the required data, applies some statistical tests in order to investigate the reliability of the data, investigates the proposed hypothesis, builds the required models, and determines the required indicators and measurements. The third stage of the study constitutes applying regression analysis using time series. Discussion of the results is a part of this stage. In this research, the researcher used both the descriptive and analytical analysis through which the researcher attempts to describe the case, analyze the data, show regression and correlation between the construction industry and different economic sectors.

3.3 The Research Strategy.

The research strategy can be defined as the way in which the researcher objectives can be questioned. The strategy of this research is built upon using tables to describe the weight of construction industry in the economy and its weight with respect to other economic sectors, furthermore applying regression analyses to calculate the impact of construction industry on the Palestinian economy using time series data.

3.4 The Research Design.

The term research design refers to the plan or the organization of scientific investigation. Designing of research study involves the development of the plan or strategy that will guide to

obtain the suitable and required data and analyze it (Polit & Hungler, 1999). Burns and Grove (1997) defined the term research design as "the entrance strategy for the study, from identifying the problem to find the plan to obtain the necessary data".

In this research, data are obtained from Palestinian Central Bureau of Statistics (PCBS). The questionnaire used by (PCBS) in obtaining this data is structural questioners for their advantages. The PCBS field worker distributed this questioner to about 8100 establishments. The structural questionnaire is the most widely used data collection techniques for conducting surveys. Questionnaires have been widely used for descriptive and analytical surveys in order to find out facts, opinions and views, enhancing confidentiality, supporting internal and external validity, facilitating analysis and saving resources (Pilot and Hunger, 1999). There are some limitations of the questionnaires like; it must contain simple questions: no control over respondents and respondents may answer generally (Naoum, 1998). Figure 3.1 shows the research flow chart.

3.5 The Data.

The methodology used in conducting the study was to obtain data from PCBS. This data is time series from 1994 -2007 for the main economic indicators for the Palestinian economy which consists of five industries according to International Standard Industry Classification (ISIC-3). They are:

- Industry.
- Construction.
- Internal Trade.
- Services.
- Transport, Storage and Communication.

The required data is derived from the National Accounts and mainly the economic survey series which is annually conducted in Palestinian territories. All economic surveys series use the same questionnaire except for a few characteristics for each survey. In designing the questionnaires PCBS takes into account the major economic variables pertaining to the examined phenomenon, and the needs of compiling the National Accounts for Palestine.

3.6 Coverage and Sampling.

3.6.1 Coverage.

All the economic survey series executed depend on the establishment census in 1994, 1997, and 2004. The economic surveys series cover activities in accordance with (ISIC-3).

3.6.2 Sample design.

The sample of the economic surveys series taken by PCBS is a single-stage stratified random-systematic sample in which the enterprise constitutes the primary sampling unit (PSU). Three levels of strata were used to draw up an efficient representative sample (i.e. economic activity, size of employment and geographical levels). For example, the eleventh round of the Economic Survey Series sample size amounted to (8,176) establishments out of the (83,158) establishments comprising the survey frame.

3.6.3 Accuracy of the data.

In every survey there may exist two types of errors, statistical errors and non statistical errors. The test of quality of the data is conducted by PCBS and the required adjustments, if there exist any errors, were done. In the following sub sections an example is illustrated.

3.6.3.1 Statistical errors.

Referring to Tables 3.1, 3.2 and 3.3, the findings of the survey are affected by statistical errors due to using sampling in conducting the survey for the units of the target population. This increases the chances of having variances from the actual values we expect to obtain from the data which we had conducted the survey using comprehensive enumeration. The variance of the key goods in the survey was computed and dissemination was carried out on the level of Remaining West Bank and Gaza Strip for reasons related to sample design and computation of the variance of the different indicators. Tables 3.1, 3.2 and 3.3 shows the variation of the most distinct variables, where it indicates to institutions with activities that have withdrawn sample for the rest of the West Bank and Gaza Strip, which is the activities of industry, domestic trade and services. While construction activities and transport, storage and communications have no variation because of a comprehensive survey.

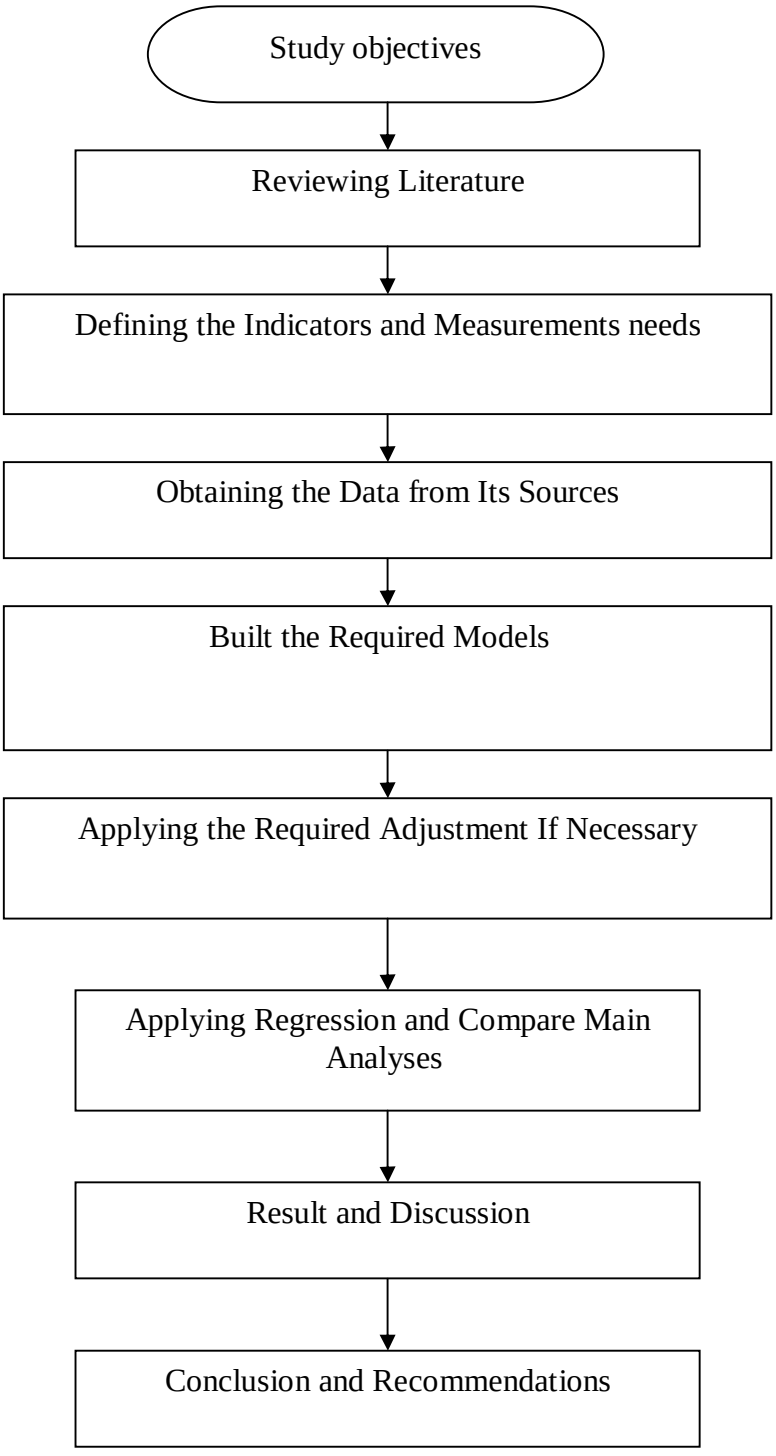


Figure 3.1 Flow Chart of the Methodology.

Table 3.1: Variance Account of Industry Survey at Remaining West Bank and Gaza Strip

Variable	Estimate		Standard Error	CV%	95% Confidence interval	
	Unit	Value			Lower	Upper
Number of Persons	Number	49,990	776	o.o15	48,824	51,870
Output	US$ 1,000	1,474,364.	94,085	0.064	1,289,840	1,658,887
Gross Value Added	US$ 1,000	666,601.3	74,287	0.111	520,906	812,295
Intermediate Consumption	US$ 1,000	807,762.0	40,952	0,051	727,443	888,082

Source: The Economic Survey Series 2006, Palestinian Central Bureau of Statistics. (Unpublished data).

Table 3.2: Variance Account of Domestic Trade Survey at Remaining WBGS

Variable	Estimate		Standard Error	CV%	95% Confidence interval	
	Unit	Value			Lower	Upper
Number of Persons	Number	83,312	1,356	0.016	80,648	85,968
Output	US$ 1,000	761,570	19,754	0.026	722,824	800,317
Gross Value Added	US$ 1,000	577,620	16,781	0.029	544,705	610,536
Intermediate Consumption	US$ 1,000	183,950	6,022	0.033	172,138	195,762

Source: The Economic Survey Series 2006, Palestinian Central Bureau of Statistics. (Unpublished data).

Table 3.3: Variance Account of Services Survey Trade at Remaining WBGS

Variable	Estimate		Standard Error	CV%	95% Confidence interval	
	Unit	Value			Lower	Upper
Number of Persons	Number	53,754	930	0.017	51,930	55,580
Output	US$ 1,000	486,678	17,516	0.036	452,319	521,036
Gross Value Added	US$ 1,000	331,884	14,347	0.043	303,741	360,027
Intermediate Consumption	US$ 1,000	154,793	5,964	0.039	143,094	166,492

Source: The Economic Survey Series 2006, Palestinian Central Bureau of Statistics. (Unpublished data).

3.6.3.2 Non-statistical errors.

These types of errors could appear in all the survey stages that include data collection and data entry. For example the response errors are related to responders, fieldworkers and data entry of personnels. To avoid mistakes and reduce the impact of the errors, series of action have been done by PCBS (like fore example used will trained field worker, used simple question, etc) to enhance the accuracy of the data through a process of data collection from the field and the data processing.

3.7 Concepts and Definitions.

In this section it is necessary to introduce the definitions of the concepts used in the study. These concepts and their definitions are based on international recommendations in the fields of economic statistics and national accounts while PCBS taking into account the particular aspects of the Palestinian Territories (System of National Accounts 1993, SNA 1993).

3.7.1 Employees.

Employees include all males and females working in the establishments including owners, self-employed, unpaid family members, or waged workers who receive their compensations in cash during a specific reference period. However, this term does not include trainees or those on assignments outside the establishment or in long unpaid leaves.

3.7.2 Compensations of employees.

Compensations of employees include salaries, wages and other cash or in-kind benefits during the survey period.

3.7.3 Production.

Production is measured during a certain period of time by the value of the final products of goods and services produced by a certain establishment that is capable of providing the other units, though they can be self-consumed or for the purposes of self gross fixed capital formation. Production includes two categories: Final products and the so called (under operating products), which means products that take a long time to be produced, such as livestock and establishment works. The value of the majority of goods can be estimated at the moment the production process is completed. However, the production of some goods may exceed the accounting period (such as the case of under operating products). The value of such

products is estimated and registered during that accounting period, such as the case of establishment works on winter crops.

3.7.4 Intermediate consumption.

Intermediate consumption refers to the value of production inputs, i.e. inputs used in the production of goods and services. Henceforth, intermediate consumption equals the value of raw material plus other production expenses.

3.7.5 Value added.

Value added is a central concept of production. It refers to the generated value of any production unit that carries out any productive activity. Gross value added is defined as the value of gross production less the value of the intermediate consumption. The net value added is defined as the gross value less the value of the fixed capital consumption. The net value added reflects the performance of the economy in a better way; however, since it is difficult to measure the fixed capital consumption accurately, the concept of gross value added is more used. Value added at producers' price is the difference between the output at basic prices and the value of the intermediate consumption at the purchase price plus taxes (less subsidies) on production. However, if taxes and subsidies are excluded, value added will be obtained in basic prices.

3.7.6 Principal economic activity.

The principal economic activity is the activity that contributes to the largest value added in establishments practicing more than one activity.

3.7.7 Establishment.

An establishment is an enterprise or part of an enterprise in which one group of goods and services is produced (with the possibility of having secondary activities).

3.7.8 Gross capital formation.

Gross capital formation can be divided into three components: gross fixed capital formation, change in inventory and net acquisitions of valuables. Henceforth, gross capital formation (or investment) can be defined as the total value of the three afore mentioned components. It is measured at purchase price as of the case with measuring consumption. Gross capital formation is the value of what producers own less what they spend on new and used capital goods

(including households' expenditure on accommodation, where households are in this sense producers of accommodation services). Capital goods can be tangible like houses, equipment, machinery…etc. or intangible like copyrights, trademarks, computer programs etc. Change in the inventory can be measured by the value of the goods entering the inventory less the value of the goods leaving the inventory. Goods must be valued at current prices i.e. their prices at the time they enter or leave the inventory in order to avoid calculating unreal earnings of ownership. Change in the inventory also includes "under operating products". Valuables are assets that do not become worn out as time goes by. They are not originally used as basis for production or consumption but kept as a valuable inventory; this includes gold, diamonds, jewelry, paintings…etc. This has not been taken into consideration in the capital formation in the current accounts.

3.7.9 Remaining West Bank.

Remaining West Bank is West Bank excluding that part of Jerusalem, which was annexed after the 1967 occupation by Israel.

3.7.10 Jerusalem.

Jerusalem is that part of Jerusalem, which was annexed after the 1967 occupation by Israel.

3.7.11 Industry.

Industry is defined as a group of establishments engaged in the same or similar kinds of activity. This definition is in agreement with the International Standard Industrial Classification of All Economic Activities (ISIC). The highest level of aggregation is called the classification group, and the lowest level is called division. The various groups are determined in accordance with the nature of production, its use and its structure of inputs.

3.7.12 Gross domestic product (GDP).

Gross Domestic Product or GDP is the summary measure of the output or production during a certain period of time. Estimate of GDP, like the output and the value added, can vary according to taxes and subsidies taken into consideration. GDP is usually estimated at market prices, producers' prices, or basic prices. There are three approaches to estimate the GDP: Output or Production approach, Expenditure approach, and Income approach. Output or Production approach measures the GDP as the sum of value added of all economic activities. Since supply is one of the components of the value added of all goods and services, it must

equal the sum of money spent on same goods and services. Therefore, the following must apply:

Gross Domestic Product at market prices equals final consumption plus gross fixed capital formation plus change in the inventory plus exports (goods and services) minus imports (goods and services). Also, since income is totally linked to the production process, the gross value added is used as an income on the capital (operating surplus) and employment (compensation of employees) plus paid taxes linked to the production processes less subsidies. Henceforth, the following applies:

GDP at market prices equals the compensation of employees (paid by resident producers to resident and non-resident employees) plus net operating surplus (paid by institutional units that carry out production activities; residents by definition) plus fixed capital consumption plus taxes (less subsidies) on production and imports. However, the current Palestinian National Accounts was unable to provide independent estimates on the fixed capital consumption, which required projecting the operating surplus in its gross value i.e. including fixed capital consumption (SNA 1993).

3.7.13 Property income.

Property income is the income receivable by the owner of a financial asset or a tangible non-produced asset (such as land) in return for providing funds to, or putting the tangible non-produced asset at the disposal of another institutional unit.

3.7.14 Gross national income (GNI).

Gross national income measures the gross value of the initial earned income of residents. It is the income incurred by carrying out production activities or by owning financial assets or land or subsoil assets.

3.7.15 Gross disposable income.

Gross disposable income measures available income of residents, which can be spent on consumption of goods and services (locally produced or imported goods and services) or for savings.

3.8 The Sectors of the Economy.

According to the international standard of industry classification (ISIC), each economy consists of five sectors which are: industry, construction, internal trade, services and transport, storage and communication.

3.8.1 Construction industry.

According to the international standard of industry classification (ISIC), the construction industry consists of the following five subsectors, site preparation, building of complete constructions, building installations, building completion and renting of equipment with operator.

3.8.1.1 Site preparation.

This industry group includes the demolition and destruction of existing construction, cleaning sites and sales the materials left over from the site. It also includes excavation, filling and transferring of dirt, digging tunnels and the removal of the upper layers and other work related to the preparation of project sites.

3.8.1.2 Building of complete constructions.

This industry group includes all civil engineering projects including the construction of roads, streets, alleys, public sidewalks, airports, bridges, tunnels water and sewer marine, pipelines, communications and power lines, marine structures, dams, flood control structures, drainage system, single homes, residential buildings, warehouse and industrial, commercial institutional, religious, and amusement buildings. In general all civil engineering construction regardless of the materials used in construction. It also includes additions, amendments and reforms on the existing construction, in addition to the installation of prefabricated buildings on the site.

3.8.1.3 Building installations.

This category includes installations in the building which leading to make the building able to do its functions, such as plumbing, water supply, heating and air conditioning and alarm systems.

3.8.1.4 Building completion.

This category includes many activities that contribute to the completion of any establishment such as; plastering, painting, paper hanging, electrical work, carpentry, roofing, masonry and tile setting.

3.8.1.5 Renting of equipment with operator.

This industry group includes establishments that are primary engaged in renting construction equipment with an operator.

The other major sectors that will be selected for comparison with the construction industry are briefly described as the following:

3.8.2 Industry sector.

This sector includes establishments engaged in the mechanical or chemical transformation of material or substances into a new product including assembling component parts of manufactured product. The sector contains the following activities: Mining and quarrying, Manufacture of food and beverages, Manufacture of tobacco products, Manufacture of textiles, Manufacture of wearing apparel, Tanning of leather; manufacture of bags, Manufacture of wood and its products, Manufacture of paper and its products, Publishing; printing and reproduction, Manufacture of coke; refined petroleum product, Manufacture of chemicals and their products, Manufacture of rubber and plastic, Manufacture of non-metallic products, Manufacture of basic metals, Manufacture of metal products, Manufacture of machinery and equipment, Manufacture of electrical machinery, Manufacture of radio and TV equipment, Manufacture of medical and optical equipment, Manufacture of motor vehicles, trailers and other transport equipment and Manufacture of furniture.

3.8.3 Services.

This sector includes establishments primary engaged in providing wide variety of services for individuals, business, and government establishments and other organizations. This industry sector contains the following activities: Real estate activities, Renting of machinery without operator, Computer and related activities, Research and Development, Other business activities, Education, Health and social work, Banking, Insurance, Restaurants, and Hotels.

3.8.4 Internal trade.

This sector includes establishments primary engaged in sales of merchandise to the public for personal or household consumption or to other businesses. This sector contains the following activities: Sale and repair of motor vehicles, Wholesale trade and commission trade, Retail trade, Repair of personal goods.

3.8.5 Transport, storage and communication.

This sector includes establishments providing passenger or freight transportation communication and storage. This sector includes the following activities: Land transport, Supporting and auxiliary transport, Post and telecommunications.

3.9 Assessing the Impact of Construction Industry on the Economy.

In order to determine and document the impact of construction industry on the economy of Palestine, the researcher goes through three steps using both, the descriptive and analytical statistics to achieve this goal by using a time series data from PCBS for the years from 1994 to 2007. The first step is to determine the construction industry volume and its contribution to economy. In the second step, several hypotheses are investigated and several models are constructed in order to quantify and calculate the impact of construction industry on GDP, the impact of construction expenditure on business activity, job creation and tax revenue generation, the impact of construction investment on business activity, job creation and household earning, the return of investment on construction and other sectors, and finally the impact of construction production and other sectors on the trade balance. In the third step, the researcher classifies the construction establishment in four groups, according to the number of employees in each establishment, in order to asses which group is more efficient than the others, and what policy regarding to this could be made.

3.9.1 Determination of construction industry volume and its contribution in Palestinian economy.

In this step the researcher uses descriptive statistics to achieve the goal of determining the volume of construction sector and its contribution in Palestinian economy. The researcher compiles data about value added, employment, payroll, intermediate consumption, number of enterprise and gross fixed capital formation for the Palestinian construction industry and other industries during year's from1994 to 2007 from the economic survey series conducted by the PCBS and data from national account. Then the researcher compares the data of the

construction industry with other major industries and the total activity in Palestine. After that the researcher assesses the impact of the construction industry on the economy of Palestine.

3.9.2 The impact of construction industry on the economy.

In order to identify and estimate the total economic contribution and impact the construction industry made to the economy, one has to look beyond the direct expenditure made by the industry itself. There is a ripple effect of the expenditure made for goods and services supplied to the industry. Furthermore, wages paid to construction industry workers are spent by the employees in housing, food, clothing, entertainment, etc. Likewise, business revenues generated from supplying goods and services to the construction industry are paid out in wages and material cost, which in turn are spent in living costs. This multiplier effect enlarges the economic impact of the initial construction industry expenditures.

The multiplier effect refers to the recurrent economic activity generated by an initial expenditure. For example, $100 spent directly in construction will cycle through the economy again as wages to the tradesmen, purchases of construction material such as lumber, tools and nails, gasoline for machinery and worker transportation. The initial wave of spending generates a second and third wave of spending as wages paid and profit made in direct construction spending spin through the economy in several cycles. Thus, the original direct expenditure yields a greater economic impact than just the $100 initially spends.

Since a long time series of data about the main indicators of construction industry and other industries for the years from 1994 to 2007 is available in Palestinian Central Bureau of Statistics (PCBS), the researcher quantifies, calculates and investigates the role of construction industry in the economy of Palestine and its relationship with other sectors of the economy by using regression analysis.

The indicators are compiled from the data taken from the PCBS which is collected from stratified random sample of Palestinian establishments depending on the census of 1997and census of 2004. The counting area is determined form different areas in the north and the south from which random sample is withdrawn. The necessary statistical test is applied to special economic indicators in order to ensure the quality and accuracy of the data. At the end of this step, several hypotheses are tested. The followings are the main research hypotheses which are analyzed and studied.

3.9.2.1 The impact of construction sector on GDP.

The researcher examines the impact of the construction sector and other sectors on GDP and builds a model to examine the relations. First null hypothesis says that: "there is no significant statistical relation between the output of construction industry and other sectors of economy on the output of the GDP".

3.9.2.2 The impact of construction sector on the deficit of trade balance.

Because the exports and imports are of the most important components of GDP where they are used in the calculation of the value of GDP, the researcher examines if there is any significant role of the production of construction sector and other sectors on the deficit of trade balance by investigating the following null hypothesis "there is no significant statistical relation between the production of all economic sectors and the deficit on the trade balance (net export and import)".

3.9.2.3 The impact of compensation of construction employees on business activity.

The researcher examines if there is any significant statistical relationship between the compensation of employees and business activity by investigating the following null hypothesis: "there is no significant statistical relation between the expenditure of the construction employees payroll and the business activity".

3.9.2.4 The impact of non payroll expenditure of construction on economy.

The researcher also studies the impact of non payroll expenditure on Palestinian economy by investigating the following hypothesis "there is no significant statistical relation between the non payroll expenditure of the construction industry and the business activity".

3.9.2.5 The impact of intermediate consumption of construction on total employees in Palestine.

Also the following hypothesis is investigated "there is no significant statistical relation between the intermediate consumption of the construction industry and the total employees in Palestine"

3.9.2.6 The impact of construction employees on the total employment.

The researcher studies the impact of construction employees on the total employment by investigating the following hypothesis "there is no significant statistical relation between the employment in construction industry and the total employment in Palestine"

3.9.2.7 The impact of compensation of construction employees on total employment.

Also the impact of the compensation of construction employees on the total employment is studied by investigating the following hypothesis "there is no significant statistical relation between the compensation of the construction employee and the total employment".

3.9.2.8 Total income tax of construction sector.

The researcher estimates the total income tax only for the year 2007, but the researcher can not estimate the sales tax due to the shortage of the required data. Palestine income tax revenues are compiled from construction industry value added income taxes, industry employee income tax withholding, plus the product of the number of jobs the construction industry spending creates times their average income times the Palestinian income tax rate.

3.9.2.9 The impact of construction investment on job creation.

Here the researcher estimates the impact of construction investment on job creation by investigating the following hypothesis "there is no significant statistical relation between the investment on construction industry and the total employment in Palestine". The object of this model is to predict the number of jobs created per million dollars invested in construction.

3.9.2.10 The impact of construction investment on compensation of total employees.

The researcher predicts the dollar increase in household earnings (compensation of total employees) per dollar invested in construction. In order to achieve this object and since the required data is available the following null hypothesis is tested "there is no significant statistical relation between the investment in construction industry and the household earning in Palestine".

3.9.2.11 The return of investment on the economic sectors.

The researcher calculates the return of investment on the following sectors "construction, agriculture and fishing, mining and manufacturing, trade, transportation, services" by using regression analysis depending on available time series data from PCBS.

3.9.3 The effect of the size of construction establishments.

The researcher investigates the efficiency of the construction establishment with respect to its size in order to explain the Palestinian construction enterprise character. So the researcher classifies the construction establishment according to the number of the employees working in it and since their is a big variation in productivity between enterprise according to the number of employees working on it and in order to reduce this variation, the researcher grouping the construction enterprise in four groups. The first group is the small establishments, which have from one to four employees. The second group is that group that has from five to nine workers, the third group is that group which works in its establishment from 10 to 19 workers and the fourth group is that group which more than 19 workers work in it. From the raw data available in the PCBS the population of all construction establishments in the year 2007 is 566 establishments. The researcher takes a weighted random sample and then calculates the main productivity of each group and its weight with respect to the production of all construction sectors. After that the researcher investigates if there are any statistical differences between the main productivity of each group. To answer this question the researcher investigates the following null hypothesis "there are no significant statistical differences between the mean productivity of small enterprise (1-4), medium ((5-9), (10-19)) and the large (more than 20)". In order to investigate this hypothesis the researcher needs to examine the arithmetic mean of the sample by taking a represented random sample from each group and then applying the compared main analysis.

CHAPTER 4

Data Analyses

4.1 Introduction.

In this chapter the researcher uses both the descriptive and analytical statistics to assess, calculate, and evaluate the impact of construction industry on the Palestinian economy. The raw data that is used in this study is obtained from the Palestinian Central Bureau of Statistics (PCBS). It is a raw data compiled from economic survey series conducted every year from 1994 to 2007 and raw data from national account. Data from economic survey series is obtained through conducting annually field survey on a representative sample, which is a single -stage stratified random-systematic sample in which the enterprise constitutes the primary sampling unit (PSU). Three levels of strata were used to draw up efficient representative sample (i.e. economic activity, size of employment and geographical levels). The sample size is approximately 10% of the statistical population. As an example, the sample size in 2006 survey amounted to 8,176 establishments out of the 83,158 establishments comprising the survey frame.

All economic surveys series use the same questionnaire except for a few characteristics for each survey. The economic survey series implemented in the remaining of West Bank and Gaza Strip cover activities in accordance with (ISIC-3): Industry, Construction, Internal Trade, Services and Transport, Storage and Communication. The national account raw data is compiled from administrative records. By using the descriptive statistics, the researcher describes the role and the impact of construction on the economy through three steps: first; the contribution of the construction industry to the gross domestic product, second; comparing the construction industry with other sectors using different measurements as employment, value added, intermediate consumption, compensation of employees, business activity, output, etc, third; make comparison between the formal and informal construction sectors. By using the analytical statistics the researcher calculates and quantifies the impact of the construction industry on the economy through testing some hypotheses using regression analyses.

4.2 The Contribution of the Construction Industry to the GDP.

Table 4-1 shows that the value added of construction industry fluctuates in the time interval from 1994-2007. The main trend of construction value added from 1994 to 2000 is the increase. It increased from US$268.5 million in 1994 to 366.3 million in 2000 (The abnormal values of construction value added in the year 1999 offload). The GDP increased by 36.7% in 7 years consisting with the increase of construction value added which increased by 36.4% in the same period. In terms of increase in value added, the construction's rank is the second after the transport, storage and communication, but due to its strong pull effect on economic sectors the construction seems to be the prime engine of increasing the GDP. The increase of construction value added during this period refers to stable and optimistic political situation which follows the peace agreement. The table also shows that the construction value added decreased sharply in the year 2001 by 44% to reach US$205.4 million due to the Israeli measures on the Palestinian economy and life after Al-Aqsa uprising. The construction value added continued to decrease until 2002 to reach US$127.7 million, which consumed 34% of the construction value added in 2000. In the same period GDP decreased from US$4118.5 million in 2000 to US$3264.1 million in 2002. The construction value added through the period from 2000 to 2002 decreased more than any other sector. It seems as the prime engine in decreasing the GDP. The construction value added returned to increase from 2002 to 2007 to reach 297.1 million dollars. However, this increase represents 76% of its value added in 2000.

The previous discussion reflects the relationship between the economic growth and construction value added. From Figure 4.1 it appears that although the change of the value added of construction experiences an increase through the time from 1994 to 2000 to reach approximately its peak consistent with GDP, the services, industry, and internal trade experiences a decrease from 1994 to 1996 in opposite with characteristics of GDP, then the three sectors increased to reach small peak in 1999 except services which reached its small peak in 2000. The transport sector experienced a constant value added until 1996 then it increased to reach small peak in 1999. Figure 4.1 shows sharp decrease in construction until 2002 which coincides with GDP character while the other sectors experienced decrease and increase through the same period except the transport which shows approximately a constant value added until 2003 which is also different from GDP character.

Table 4.1: Value Added by Economic Activity for the Years 1994-2007 at Constant Prices in Remaining West Bank and Gaza Strip (Base year 2004).(Value in Million US$)

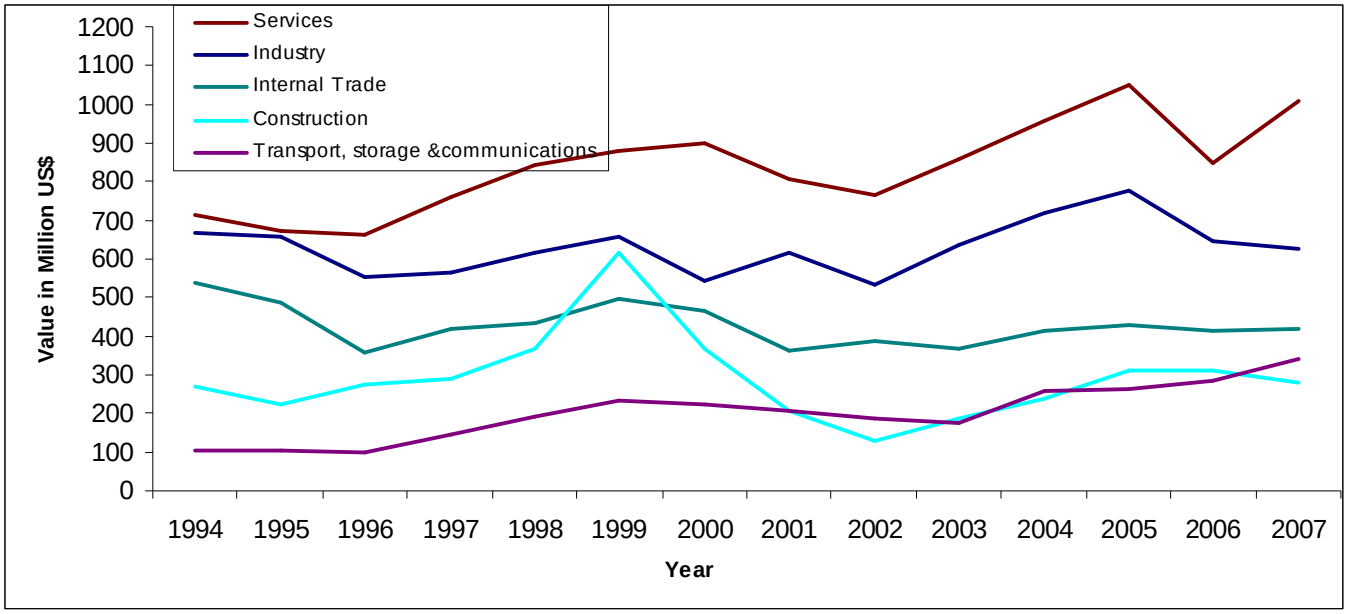
Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Agriculture and fishing	398.4	414.5	481.9	429.3	482.9	470.7	403.6	340.8	251.3	297.6	296.7	236.2	240.3	252.2
Industry	665.0	654.8	552.2	565.9	614.8	655.4	545.6	616.8	534.7	635.4	719.0	774.9	648.6	626.4
Construction	268.5	220.4	274.7	290.2	369.4	617.0	366.3	205.4	127.7	187.2	238.4	310.2	312.3	279.1
Internal Trade	539.3	485.1	357.6	421.0	434.3	495.1	464.4	362.6	386.8	366.1	412.4	427.5	415.0	417.2
Transport, storage &communications	102.9	100.9	98.6	144.3	191.2	231.0	221.0	209.4	183.9	173.9	256.4	265.2	285.5	341.1
Financial intermediation	35.3	65.2	72.5	101.6	133.5	168.0	180.7	134.4	136.3	154.2	150.2	200.5	184.8	235.2
Services	712.8	671.9	661.8	759.6	843.4	877.7	898.0	809.0	767.3	856.3	957.2	1,047.5	849.3	1,007.9
Public administration and defense	284.0	363.5	414.3	441.8	452.9	497.8	518.4	663.7	545.6	633.6	598.7	641.5	679.1	632.4
Households with employed persons	5.0	5.4	5.2	7.0	8.4	8.6	9.3	7.5	7.4	8.2	2.9	1.8	2.9	3.6
Public owned enterprises	0.0	0.0	32.0	89.9	117.5	156.5	193.9	107.3	117.4	169.3	153.7	157.1	196.5	263.7
Less: FISIM	-20.6	-37.8	-64.5	-85.1	-106.9	-129.2	-154.3	-114.3	-99.6	-114.3	-114.3	-116.5	-128.9	-257.1
Plus: Customs duties	0.0	55.0	190.8	263.0	300.4	208.6	196.7	170.0	87.4	166.5	204.0	265.9	286.0	283.9
Plus: VAT on imports, net	21.7	194.3	208.9	273.1	306.1	254.5	274.9	252.6	217.9	215.6	323.1	347.7	350.9	450.1
GDP	3,012.3	3,193.2	3,286.0	3,701.6	4,147.9	4,511.7	4,118.5	3,765.2	3,264.1	3,749.6	4,198.4	4,559.5	4,322.3	4,535.7

Source: The National Accounts Statistics 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

From 2002 to 2007, consistent with GDP, construction value added increased except in 2006 it decreased slightly. In this period the service sector approximately experiences the same things, but the remaining sectors show different pattern of growth. Table 4.2 shows the contribution percentage of all economic sectors to the GDP. From the table it is shown that, when the percentage of the contribution of construction to the GDP increases, the output of GDP increases and when it decreases the output of GDP decreases. This reflects the strong correlation of construction with GDP which is more obvious than other sectors. It is also observed that through the time interval from 1994 to 2007 the contribution of construction to GDP fluctuates from a low value of 3.9% in 2002, corresponding approximately to the minimum output of the GDP, to a high value of 8.9% in 2000, corresponding approximately to the maximum output of the GDP.

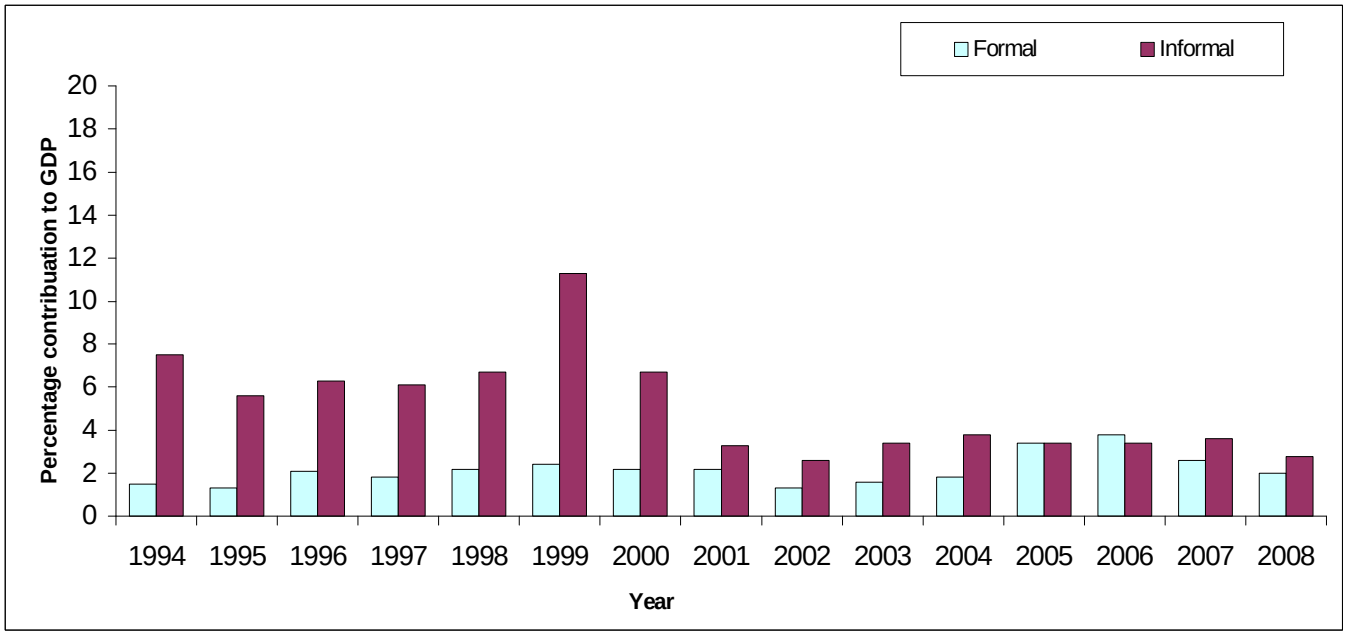
Figure 4.2 shows the contribution percentage of the formal and the informal construction sectors to the GDP. From that figure, it is found that through the time interval from 1994 to 2007 the contribution percentage of the formal construction to the GDP fluctuates from a low value of approximately 1.2% in 2002 to a high value of 3.7 approximately in 2006, while the percentage of contribution of the informal sector to the GDP reaches approximately as high as 11% in 1999 and as low as 2% approximately in 2002. Additionally, it is seen that through the time interval from 1994 to 2000 the percentage of contribution of the informal sector is more than the formal one by a low value of 400% in the year 1995 to a high value of 500% in 1999. The time interval from 2001 to 2008 shows that the informal sector dropped down due to Israeli restrictions on Palestinian Territories after AL-Aqsa Uprising in 2000. Since the informal sector is mainly based on household sector "house constructions", and because the populations are suffering from depression, the household sector also dropped down, and therefore the output of the informal sector decreased in value. In 2005, the contribution percentage of informal and formal sectors to the GDP is equal. However, in 2006, the contribution percentage of formal sector is greater than the informal sector for the first time through the period.

Figure 4.1: Distribution of Value Added in the Remaining of West Bank and Gaza Strip by Economic Activity1994 - 2007



Source: The National Accounts Statistics 1994-2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Figure 4.2: Percentage Contribution to GDP by Formal and Informal Construction Sectors for the Years 1994-2007 at Constant Prices in Remaining West Bank and Gaza.



Source: The National Accounts Statistics 1994-2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Table 4.2: Percentage Contribution to GDP by Economic Activity for the Years 1994-2007 at Constant Prices in Remaining West Bank and Gaza Strip.

Main activity	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Agriculture and fishing	13.2	13.0	14.7	11.6	11.6	10.4	9.8	9.1	7.7	7.9	7.1	5.2	5.6	5.6
Industry	22.1	20.5	16.8	15.3	14.8	14.6	13.2	16.4	16.4	17.0	17.1	17.0	15.0	13.8
Construction	8.9	6.9	8.4	7.8	8.9	13.7	8.9	5.5	3.9	5.0	5.7	6.8	7.2	6.2
Internal Trade	17.9	15.2	10.9	11.4	10.5	11.0	11.3	9.6	11.9	9.8	9.8	9.4	9.6	9.2
Transport, storage &communications	3.4	3.2	3.0	3.9	4.6	5.1	5.4	5.6	5.6	4.6	6.1	5.8	6.6	7.5
Financial intermediation	1.2	2.0	2.2	2.7	3.2	3.7	4.4	3.6	4.2	4.1	3.6	4.4	4.3	5.2
Services	23.7	21.0	20.1	20.6	20.3	19.5	21.8	21.5	23.5	22.8	22.8	23.0	19.6	22.2
Public administration and defense	9.4	11.4	12.6	11.9	10.9	11.0	12.6	17.6	16.7	16.9	14.3	14.1	15.7	13.9
Households with employed persons	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.1
Public owned enterprises	0.0	0.0	1.0	2.4	2.8	3.5	4.7	2.8	3.6	4.5	3.7	3.4	4.5	5.8
Less: FISIM	-0.7	-1.2	-2.0	-2.3	-2.5	-2.9	-3.8	-3.1	-3.1	-3.0	-2.8	-2.6	-3.0	-5.7
Plus: Customs duties	0.0	1.7	5.7	7.1	7.3	4.6	4.8	4.5	2.7	4.4	4.8	5.9	6.7	6.3
Plus: VAT on imports, net	0.7	6.1	6.4	7.4	7.4	5.6	6.7	6.7	6.7	5.8	7.7	7.6	8.1	9.9
GDP	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source**:** The National Accounts Statistics1994-2007, Palestinian Central Bureau of Statistics, 2009. **(**Unpublished data).

4.3 Comparison Between the Construction Sector And Other Sectors.

The researcher assesses the weight and size of the construction sector with respect to other sectors by using the following measurements: employment, compensation of employees, output, number of establishments, intermediate consumption, and gross fixed capital formation.

4.3.1 Employment.

Table 4.3 shows the number of persons engaged in each sector through time interval between 1994 and 2007. From the table it is found that the minimum number of persons engaged in construction was 3,362 in 2001, and the maximum was 5,911 in 1998. The general trend of number of construction employees is the increase from the year 1994 to 2000, and the decrease in 2001 by the amount of 43% with respect to year 2000, reaching 3,362 persons then it continued to increase generally from 2001 to 2007 reaching 5,359 persons. It is observed also that the number of persons engaged in construction is quite few compared to the service, industry and trade. From Table 4.4, the percentage of persons engaged in construction, as a percentage of total formal employment, ranged from a low value of 1.7% to a high value of 3.3 %, while in internal trade, it varies from a low value of 36.2 % to a high value of 43.9 %, in industry from a low value of 25.3 % to a high value of 35.6 %, in services from a low value of 21.4 % to a high value of 27.3 % and in transport from a low value of 1.5 % to a high value of 3.4 %. From Figure 4.3 it is shown that the gap between the percentage of persons engaged in the construction and internal trade, industry and service, is great.

Table 4.5 shows the number of persons engaged by economic activity in construction with an average of 4,693 through the time interval. Out of this number, only an average of 3,856 persons are engaged in building of complete construction, 427 in building installations, 258 in building completion, 125 in site preparation and 27 in renting of equipments with operators. The last one may indicate the low level of technology used in Palestinian construction. Also from Figure 4.4, it is noticed that the activity of building complete construction as one of the five components of construction, has the greatest percent of the number of employees engaged in construction, which reaches 90% approximately in the year 1998 as maximum, and 75% as minimum in 2006, with an average of 82.3% through the time interval. The building installation subsector has the second rank of percentage of employees engaged with 9% in average through the time interval, and the third rank is for building completion with an average of 5.4 %. The fourth rank is for site preparation with an average of 2.6 % and the last rank with an average of 0.7 % is for renting of equipments with operators. Figure 4.4 also shows the great gap between building completion subsector and the remaining subsectors.

Table 4.3: Number of Persons Engaged by Economic Activity in Remaining West Bank and Gaza Strip, 1994-2007.

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Services	33,721	32,638	37,640	40,725	41,974	46,195	49,556	43,427	44,399	41,153	58,627	55,423	53,754	64,323
Industry	52,768	49,259	50,690	61,776	63,748	71,063	76,918	69,569	65,526	60,185	58,979	58,242	49,990	61,690
Internal Trade	62,496	54,781	59,860	68,518	68,484	75,207	78,172	82,488	76,874	77,476	100,852	91,598	83,312	99,680
Construction	4,665	4,743	51,69	5,538	5,911	4,153	5,864	3,362	3,505	3,693	5,661	4,600	3,908	5,359
Transport, storage &communications	N.A*	2,080	2,269	3,630	4,482	5,813	5,352	4,161	3,720	4,329	5,860	6,002	6,239	8,105

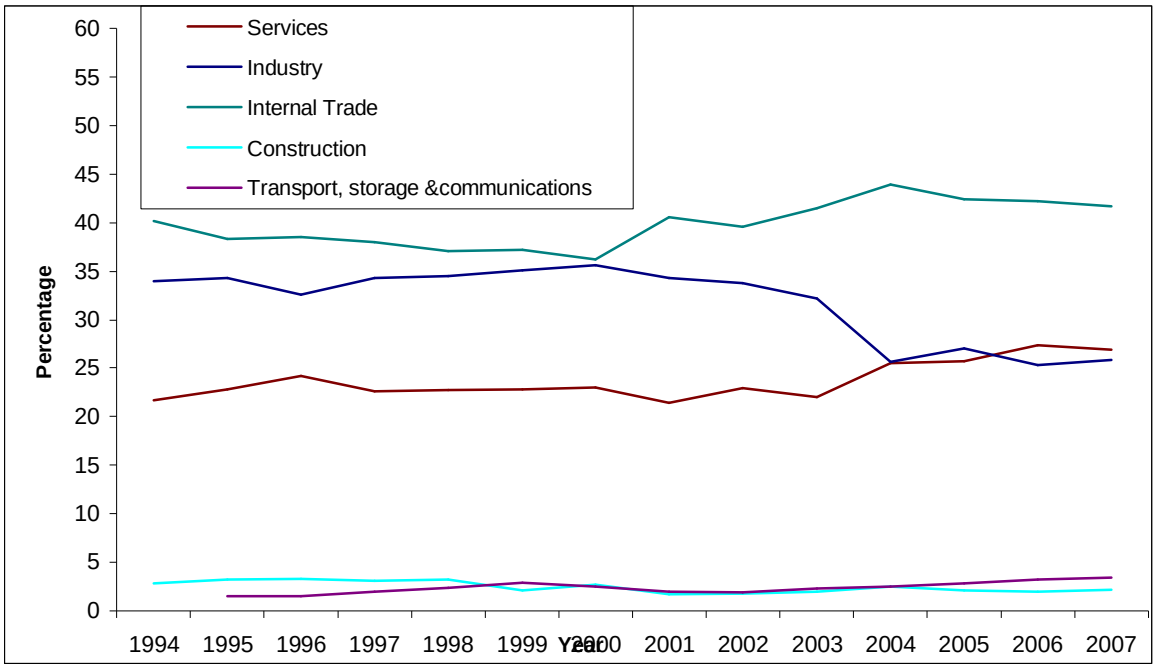
Source: The Economic Survey Series1994-2007, Palestinian Central Bureau of Statistics, 2009. (Published data).
*N.A = not available.

Table 4.4: Percentages of Persons Engaged by Economic Activity in Remaining West Bank and Gaza Strip, 1994-2007.

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Services	21.7	22.8	24.2	22.6	22.7	22.8	23.0	21.4	22.9	22.0	25.5	25.7	27.3	26.9
Industry	34.0	34.3	32.6	34.3	34.5	35.1	35.6	34.3	33.8	32.2	25.6	27.0	25.3	25.8
Internal Trade	40.2	38.3	38.5	38.0	37.1	37.2	36.2	40.6	39.6	41.5	43.9	42.4	42.2	41.7
Construction	2.8	3.2	3.3	3.1	3.2	2.1	2.7	1.7	1.8	2.0	2.5	2.1	2.0	2.2
Transport, storage &communications	N.A*	1.5	1.5	2.0	2.4	2.9	2.5	2.0	1.9	2.3	2.5	2.8	3.2	3.4

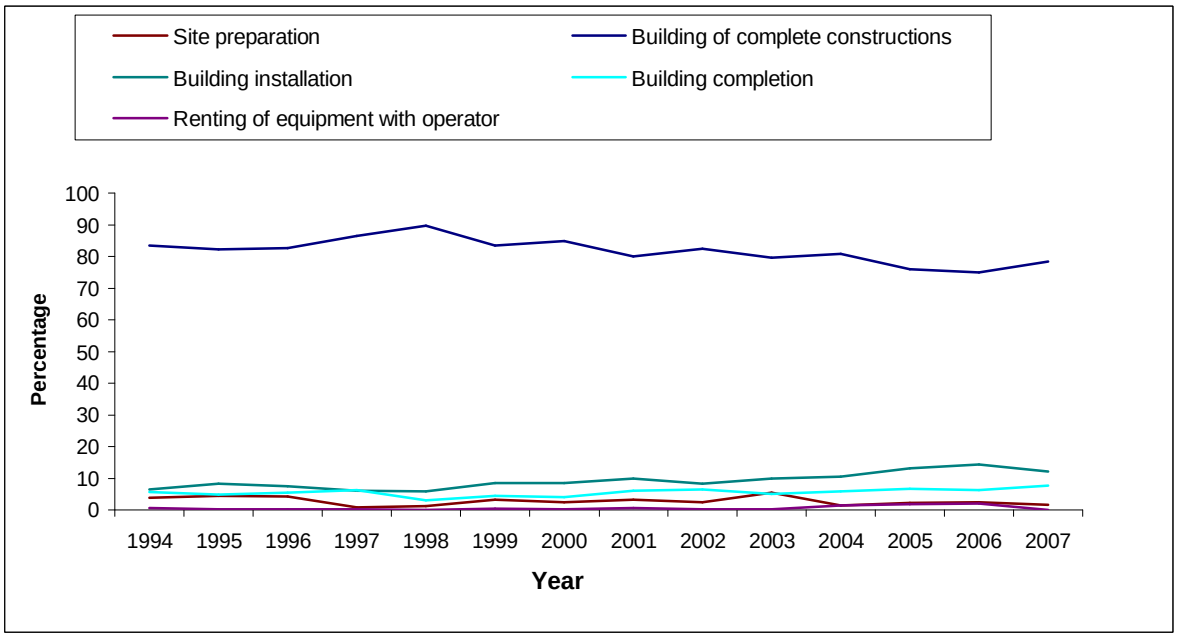
Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Figure 4.3: Distribution of Percentage of Persons Engaged by Economic Activity in Remaining West Bank and Gaza Strip, 1994-2007.



Source: The Economic Survey Series1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Figure 4.4: Percentage of Persons Engaged by Economic Activity in Construction.



Source: The Economic Survey Series 1994-2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Table 4.5: Number of Persons Engaged by Economic Activity in Construction in Remaining West Bank and Gaza Strip, 1994-2007

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Construction	4,665	4,743	5,169	5,538	5,911	4,153	5,864	3,362	3,505	3,693	5,662	4,600	3,908	5,359
Site preparation	210	241	222	44	69	134	140	111	88	203	80	105	99	91
Building of complete constructions	3,890	3,893	4,269	4,792	5,305	3,466	4,973	2,693	2,888	2,938	4,574	3,497	2,932	4,205
Building installation	287	372	386	338	348	353	498	332	289	361	599	607	557	653
Building completion	253	223	278	349	183	183	240	201	229	183	328	304	241	411
Renting of equipment with operator	25	14	14	15	6	17	13	25	11	8	82	87	78	0

Source: The Economic Survey Series 1994- 200, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

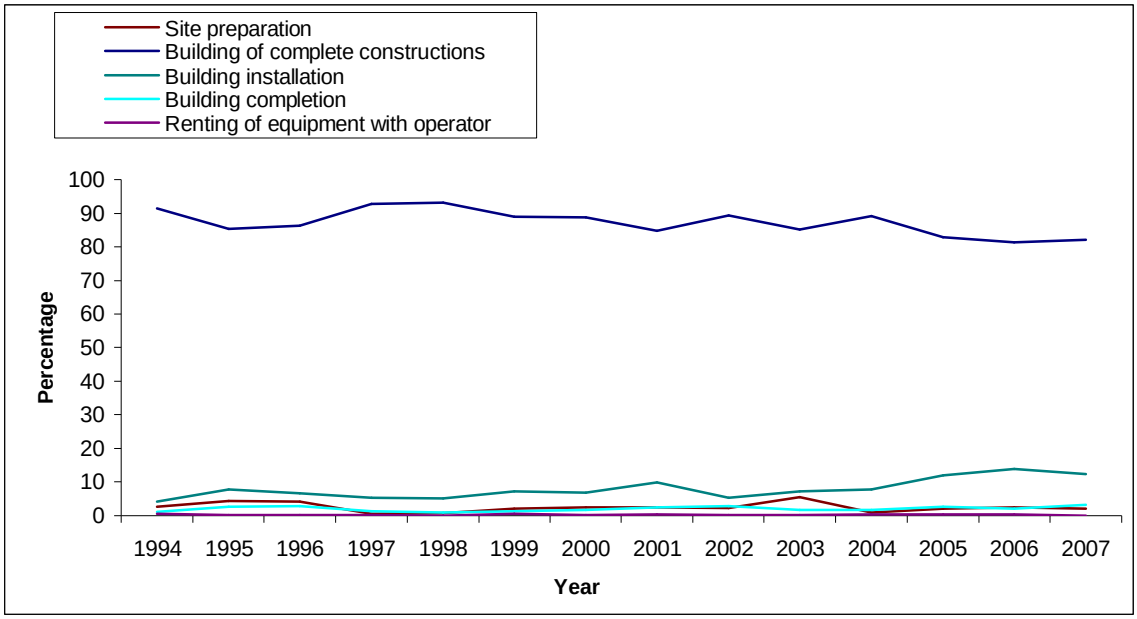
4.3.2 Compensation of employees.

Table 4.6 shows that the compensation of construction employees decreased from the time interval 1994 to 1998 by an amount of 3.922 million dollars, although the number of the persons engaged through the same interval increased by 1,487 persons. In general, through the time interval from 1994 to 2007, the compensation of construction employees decreased, while the number of persons engaged increased. This reflects decreasing of the average salary through the time interval, maybe due to Israeli restrictions which prevent thousands of workers from reaching their work in Israel which caused a high unemployment rate and lower wages of construction workers. Furthermore, the intensity of competition between the construction companies causes a great depression on the contract value. Although the figure in Table 4.6 includes both, the paid and unpaid employees, the researcher takes this figure as an indication of the average salary. From Tables 4.3 and 4.6, it is shown that in 1995, the average compensation per employee in construction was $4,197 while in the service, industry, internal trade and transport storage and communication; the values were $3,581, $2,477, $907 and $427 respectively. The average compensation per employee in the year 1995 was 2,211. In 1995 the highest average income per employee was in construction, which was above the average by 190%. In 1998 the average income in construction, services, industry, internal trade, and transport, was $5,147, $3,121, $2,550, $908, $4,744 respectively. The average construction income displays increasing by an amount of $950, and stills the highest average income with the amount of 233% above the average income through 1998. The year 2007 experienced drop in the average income of construction with respect to year 1998 reaching $4,295, but it is still above the average income by an amount of 167%.

Table 4.7 shows the percentage of compensation of employees by economic activity through time interval from 1994 to 2007. It is seen that the construction percentage increased from 1994 to 1997 then dropped after that by an amount of 36.6%, and continued to decrease until the year 2000 reaching an amount of 3.4%. Generally from 2001 to 2007 the percentage increased reaching the amount of 7.7 %. Although the percentage of persons engaged in construction in 2007 was 2.2% (see Table 4.4) their compensation was 7.7 % reflecting their high average income. From Table 4.8, it is shown that in average 94% of compensation of construction employees goes to subsector building of complete construction. The average compensation of the employees of subsector building of complete construction in 1994 was $8,744 decreasing by the amount of $4,691 in 2006, but still has the highest average income through the time interval from 1994 to 2006. The average compensation per employee for the subsector site preparation, building installation, and building completion displays positive

increment by the amount of $291, $689 and $300 respectively. Figure 4.5 shows that the compensation trend of building of complete construction through the time interval from 1994 to 2007 decreases, but this trend increases in the building installation subsector during the same period. With respect to the remaining three subsectors, it fluctuates between zero and 3%, as seen from the figure. The gap between building of complete construction and the remaining subsectors is very big.

Figure4.5: Percentage of Compensations of Employees by Economic Activity in Construction in Remaining West Bank and Gaza Strip, 1994-2007.



Source: The Economic Survey Series 1994-2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

4.3.3 Intermediate consumption.

From Table 4.9 the second largest consumer of the intermediate consumption after industry is construction. The value of construction intermediate consumption increases approximately through the years from 1994 to 2000, indicating an increase of the construction output. From years 2001 to 2007, the value of consumption decreases indicating decrease of construction output. This is due to the Israeli restrictions after Al-Aqsa intifada. Maximum value of intermediate construction consumption was in the year 1999, where the GDP approximately reaches its maximum through the time interval. Table 4.10 shows that construction consumed between 14.8% and 37.3% of the total intermediate consumption through the time interval from 1994 to 2007, most of them are final products of other sectors.

Table 4.6: Compensations of Employees in Remaining West Bank and Gaza Strip by Economic Activity, 1994-2007 (Value in US $ 1000).

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Services	108,590.6	116,889.3	141,357.2	130,243.5	131,009.4	157,255.0	159,944.5	107,861	113,640.8	132,697.0	167,488.3	178,239.9	187,410.5	204,470.3
Industry	123,715.7	122,002.7	134,786.8	156,712.2	162,529.5	212,505.7	236,755.8	177,013.5	137,967.2	134,800.5	161,184.4	150,738.9	138,282.9	191,463.2
Internal Trade	58,631.4	49,701.1	55,033.8	39,329.0	62,206.6	96,273.3	101,538.7	78,201.8	87,529.7	67,192.2	92,814.3	84,195.6	90,118.4	116,312.8
Construction	34,348.6	19,905.6	26,510.2	27,987.2	30,426.7	27,005.0	32,230.0	13,857.8	11,780.0	14,694.7	29,477.9	19,861.6	16,934.5	26,719.6
Transport, storage &communications	N.A*	8,890.7	10,651.2	20,436.8	21,265.5	33,812.7	35,356.8	26,810.0	26,170.2	33,171.5	37,943.3	51,049.6	62,789.8	77,216.6

Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Published data).
***N.**A = not available

Table 4.7: Percentage of Compensations of Employees in Remaining West Bank and Gaza Strip by Economic Activity, 1994-2007

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Services	33.4	37.8	36.8	34.3	34.7	30.1	26.7	28.3	29.8	32.2	34.8	38.5	37.0	34.4
Industry	31.3	27.9	31.1	33.0	35.2	36.6	43.8	41.8	40.3	39.9	41.8	36.8	38.6	39.2
Internal Trade	19.0	18.2	17.4	19.0	17.6	23.2	19.4	17.9	18.3	15.3	10.5	15.0	15.7	18.6
Construction	3.8	3.4	4.1	6.0	3.8	3.1	3.4	5.7	5.1	7.5	7.5	6.8	5.9	7.7
Transport, storage &communications	12.6	12.7	10.5	7.8	8.7	6.9	6.6	6.2	6.4	5.2	5.5	2.9	2.8	N.A

Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data)

Table 4.8: Compensations of Employees by Economic Activity in Construction in Remaining West Bank and Gaza Strip, 1994-2007
(Value in US$ 1000).

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Construction	34,348.6	19,905.6	26,410.2	27,987.2	30,426.7	27,005.0	32,230.0	13,857.8	11,780.0	14,694.7	29,477.9	19,861.6	16,934.5	26,719.6
Site preparation	652.9	793.7	1,011.9	154.3	222.1	535.8	819.5	346.4	266.7	823.9	301.1	425.9	411.3	730
Building of complete constructions	32,268.1	15,779.7	21,511.8	25,945.8	28,319.2	24,022.8	28,597.6	11,732.9	10,525.8	12,523.6	26,295.4	16,446.7	13,781.4	18,723
Building installation	1,011.0	1,425.5	1,676.1	1,471.2	1,576.8	1,939.6	2,209.2	1,369.1	637.2	1,078.1	2,284.1	2,380.1	2,345.9	2,851
Building completion	293.6	489.0	697.8	400.6	305.7	363.0	576.0	347.9	328.7	256.2	521.1	539.0	351.8	705

Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Table 4.9: Value of Consumption by Economic Activity at Constant Prices in Remaining West Bank and Gaza,1994-2007 (Value in million $).

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Services	141.8	144.9	149.8	178.7	187.8	194.1	195.5	156.6	119.6	159.8	184.3	263.0	196.9	168.6
Industry	651.5	731.8	649.4	738.0	853.9	909.3	1,308.3	1,078.3	973.4	894.6	962.1	1,044.8	1,043.9	808.6
Internal Trade	151.3	130.9	124.1	126.0	160.1	180.3	163.8	169.6	146.4	185.4	221.3	238.5	215.6	192.3
Construction	596.6	615.1	565.0	645.3	763.6	850.8	813.1	593.7	495.9	605.0	533.5	383.1	274.2	319.3
Transportation	71.1	80.1	72.8	97.8	107.5	103.7	135.2	73.5	65.5	75.2	91.2	148.8	138.2	113.2

Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

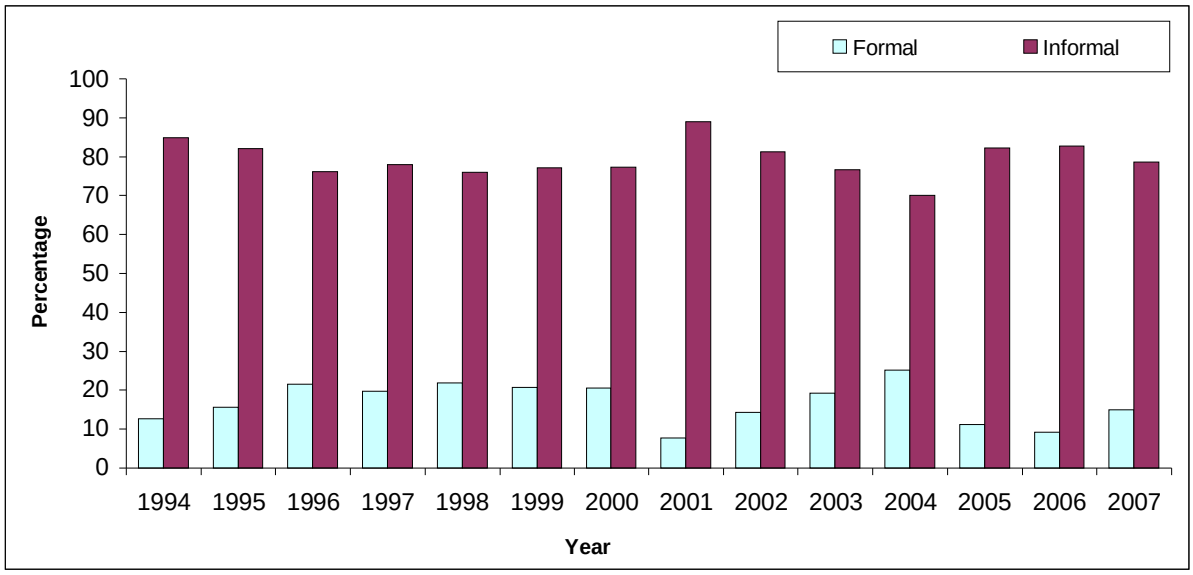
Table 4.10: Percentage of Consumption by Economic Activity at Constant Prices in Remaining West Bank and Gaza Strip, 1994-2007.

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Services	8.8	8	9.6	10	9	8.6	7.4	7.5	6.6	8.3	9.3	12.6	10.5	10.2
Industry	40.4	43	41.6	41.3	41.2	40.6	50	52	54	46.5	48.3	50.3	55.8	50.5
Internal Trade	9	7.6	7.9	7	7.7	8.9	6.2	8.2	8.3	9.6	11	11.5	11.5	12
Construction	37	36.7	36.3	36.2	36.8	37.3	31	28.8	27.5	31.7	26.8	18.5	14.8	20.3
Transportation	4.5	4.7	4.6	5.5	5.3	4.6	5.4	3.5	3.6	3.9	4.6	7.1	7.4	7

Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

This reflects the strength of the backward linkage of the construction industry, which induces other sectors to grow causing an economic growth. From Figure 4.6 the informal sectors consumed the majority of the construction sectors consumption by a value fluctuated between approximately 90% in the year 2001 and 73% in the year 2004. The figure also displays an increase of the consumption of formal sector from 1994 to 2000 then it dropped in 2001 and after that it continued to increase until year 2004 then dropped again in 2005. The reason behind this character is that in the period from 1994 to 2000 many relatively huge projects carried out by donor countries and Palestinian authority which were carried out by registered contractors. In the year 2000 there was Al-Aqsa intifada and many projects stopped in Palestinian territories due to Israeli restrictions. In addition to that, in the year 2006 where the Palestinian election took off, the elected government was boycotted by donors.

Figure4.6: Percentage of Consumption by construction Formal and Informal sectors for the years 1994-2007 in Remaining West Bank and Gaza Strip.

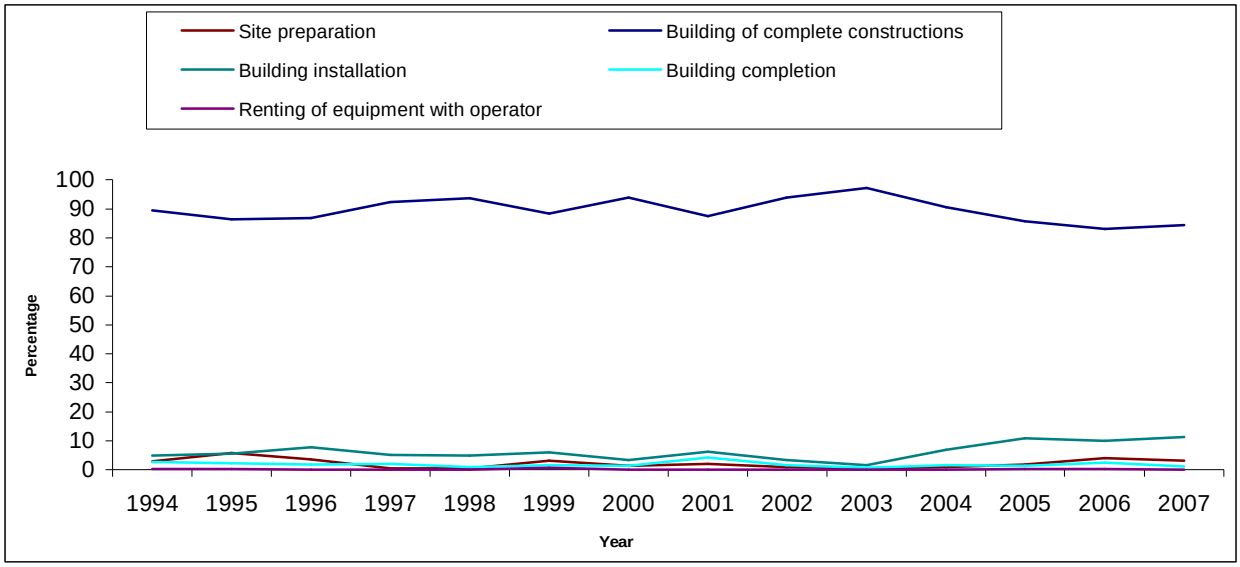


Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Table 4.11 shows that the sub sector building of complete construction consumed the major part of construction consumption by a value fluctuates between a high level of $125.80 million, which constitutes 92% of the total construction consumption in the year 1997 and a low level of $20.54 million, which is about 83% of total consumption in the year 2006. The second largest consumer was building installation subsector, whose consumption fluctuates through the time interval between a high level of $9.28 million of 7.7 % of the total consumption and a low level of $1.56 million of 1.4% of the total consumption. Figure 4.7 shows the wide gap between the

consumption of subsector building of complete construction and the remaining sectors. It also shows that building of complete construction fluctuates around a constant value through the time interval and so do the remaining sectors except building installation which displays a constant value approximately until 2003 then it increased.

Figure 4.7: Percentage of Consumption by Economic Activity in Construction in RWBGS, 1994-2007.



Source: The Economic Survey Series 1994 - 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

4.3.4 Value of output.

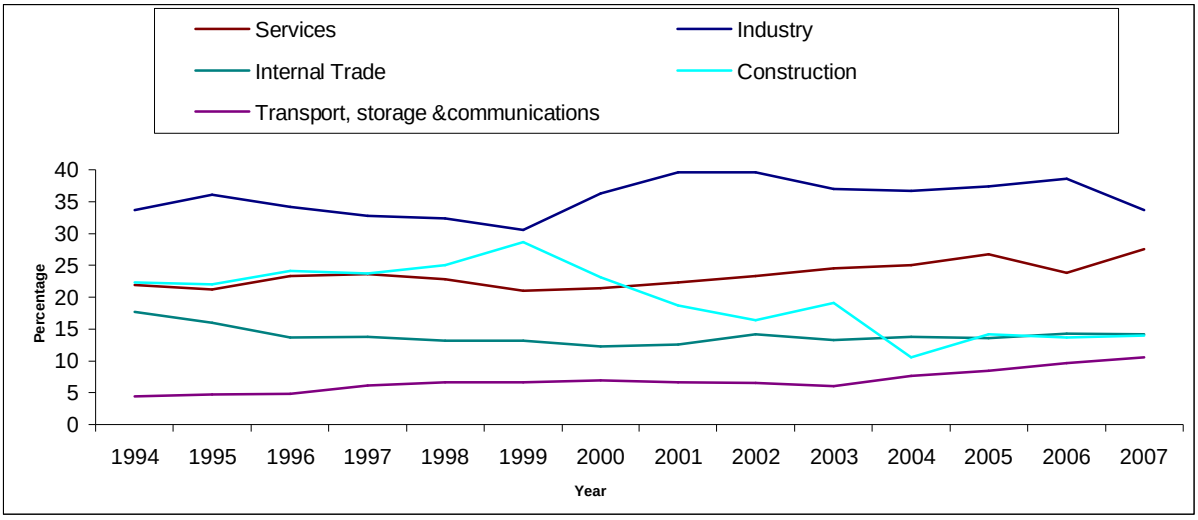
Table 4.12 shows the output of the main five sectors through time interval from 1994-2007. It is shown that with respect to the value of output, the construction sector has the second largest output sector through the time interval from 1994 to 2000. After that, the output of construction declined dramatically due to the Israeli restrictions after Al-Aqsa Intifada, which reached the value of 13.7% in 2006. Through the time interval, industry has the maximum value of output of the amount of $1,853.9 million followed by construction of the amount of $1,467.8 million. As seen from Table 4.13, the output value percentage of construction ranged between a high level of 28.6% to a low level of 13.7%. It is also seen that after the year 1999, the industry and service sectors display an increase in the value of output, while the internal trade kept on a constant rate of about 13%, transport storage and communication display fluctuation between 6% and 10.6%, and the construction displays a continuous decrease from 28.3% to 14%. This is clearly observed from Figure 4.8, which shows that in the year 1994, the output value of construction was $865.1 million which increased to reach its peak through the interval with an amount of $1,467.8 million in the year 1999. Afterwards, it decreased to reach its minimum by an amount of $586.5 million in 2006.

Table 4.11: Value of Consumption by Economic Activity in Construction in Remaining West Bank and Gaza Strip, 1994-2007 (Value in US $ 1000).

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Construction	61,852.2	133,931.5	120,371.2	136,364.2	123,874.0	99,540.5	110,314.6	43,549.3	63,678.2	104,116.9	134,105.2	40,817.8	24,744.5	60,203.3
Site preparation	1,803.6	7,635.4	4,167.4	613.0	591.7	3,056.1	1,488.2	898.2	631.4	601.9	1,217.9	783.2	1,014.1	1,931.7
Building of complete constructions	55,302.9	115,544.7	104,660.6	125,804.7	116,019.6	87,897.5	103,605.5	38,082.5	59,817.8	101,124.4	121,548.7	35,011.9	20,544.5	50,840.9
Building installation	3,037.2	7,535.5	9,285.7	7,092.8	6,066.6	6,092.8	3,697.2	2,714.6	2,155.7	1,560.1	9,106.8	4,393.4	2,484.6	6,739.5
Building completion	1,587.9	2,985.3	2,227.7	2,817.8	1,189.9	1,695.9	1,491.9	1,818.0	982.9	816.8	2,123.2	534.1	616.6	691.2
Renting of equipment with operator	120.6	230.6	29.8	35.8	6.1	798.2	31.8	36.1	90.4	13.7	108.6	95.2	84.8	0.0

Source: The Economic Survey Series 1994 - 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Figure 4.8: Distribution of Percentage Output by Economic Activity in Remaining West Bank and Gaza Strip, 1994-2007.



Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data)

Figure 4.9 shows the contribution percentage of formal and informal sectors in the total output of construction. It is seen that the contribution of the formal sector increased through the years from 1994 to 1996, in other words, from 14% to 22% approximately. Then, it fluctuates between 20% and 22% through the years 1997 to 2001. After that it increased from 20% to 32% through time interval from 2002 to 2006, then decreased in 2007 by an amount of 8% to reach 24%. In general, most output value of the construction sector came from the informal sector. The reason behind this maybe due to the laws that govern the work in the construction sector and their weaknesses, and they did not contain the necessary features and benefits for contractors. Table 4.14 shows the output value of the construction subsector. This table illustrates that building of complete construction output constituted the main output of the construction industry, which constituted between 80% and 95% of the construction total output through the interval from 1994 to 2007. The second largest subsector contributor to the output value of construction was building installation by an amount between 3% and 16%. As seen from Figure 4.10, the remaining construction subsectors (site preparation, building completion and renting of equipment with operator) constitute marginal contributors to the total output value of the construction sector. Also it could be seen from the figure that the contribution percentage of building of complete construction after the year 2003 decreased markedly by a relatively significant amount, while the building installation increased in the same period by a significant amount.

Table 4.12: Value of Output by Economic Activity at Constant Prices in Remaining West Bank and Gaza Strip,1994-2007 (Million US$).

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Services	854.6	816.8	811.6	938.3	1,031	1,071.8	1,093.5	965.6	886.9	1,016.1	1,141.5	1,310.5	1,046.2	1,176.5
Industry	1,316.5	1,386.6	1,201.6	1,303.9	1,468	1,564.7	1,853.9	1,695	1,508.1	1,530.0	1,681.1	1,819.7	1,692.5	1,435.0
Internal Trade	690.6	616.0	481.7	547.0	594.4	675.4	628.2	532.2	533.2	551.5	633.7	666.0	630.6	609.5
Construction	865.1	835.5	839.7	935.5	1,133	1,467.8	1,179.4	799.1	623.6	792.2	771.9	693.3	586.5	598.4
Transport, storage &communication	174.0	181.0	171.4	242.1	298.7	334.7	356.2	282.9	249.4	249.1	347.6	414.0	423.7	454.3

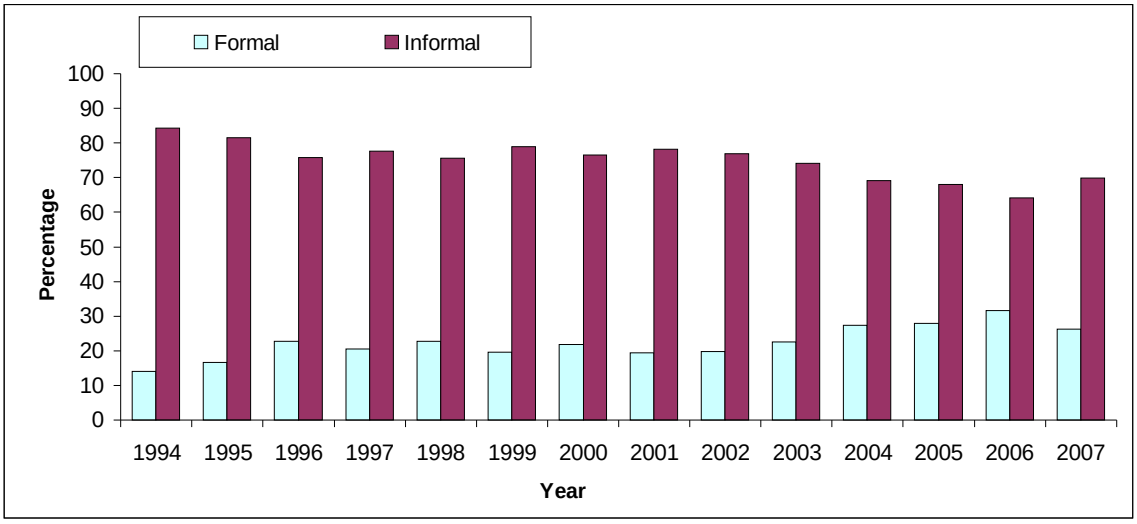
Source: The National Accounts Statistics 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Table 4.13: Percentage of Output by Economic Activity at Constant Prices in Remaining West Bank and Gaza Strip,1994-2007.

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Services	21.9	21.2	23.2	23.6	22.8	21	21.4	22.3	23.3	24.5	25	26.7	23.8	27.5
Industry	33.7	36.1	34.2	32.8	32.4	30.6	36.3	39.6	39.6	37	36.7	37.1	38.6	33.7
Internal Trade	17.7	16	13.7	13.8	13.2	13.2	12.3	12.6	14.2	13.3	13.8	13.6	14.3	14.2
Construction	22.3	22	24.1	23.7	25	28.6	23.1	18.9	16.4	19.1	16.9	14.2	13.7	14
Transport, storage &communications	4.4	4.7	4.8	6.1	6.6	6.6	6.9	6.6	6.5	6	7.6	8.4	9.6	10.6

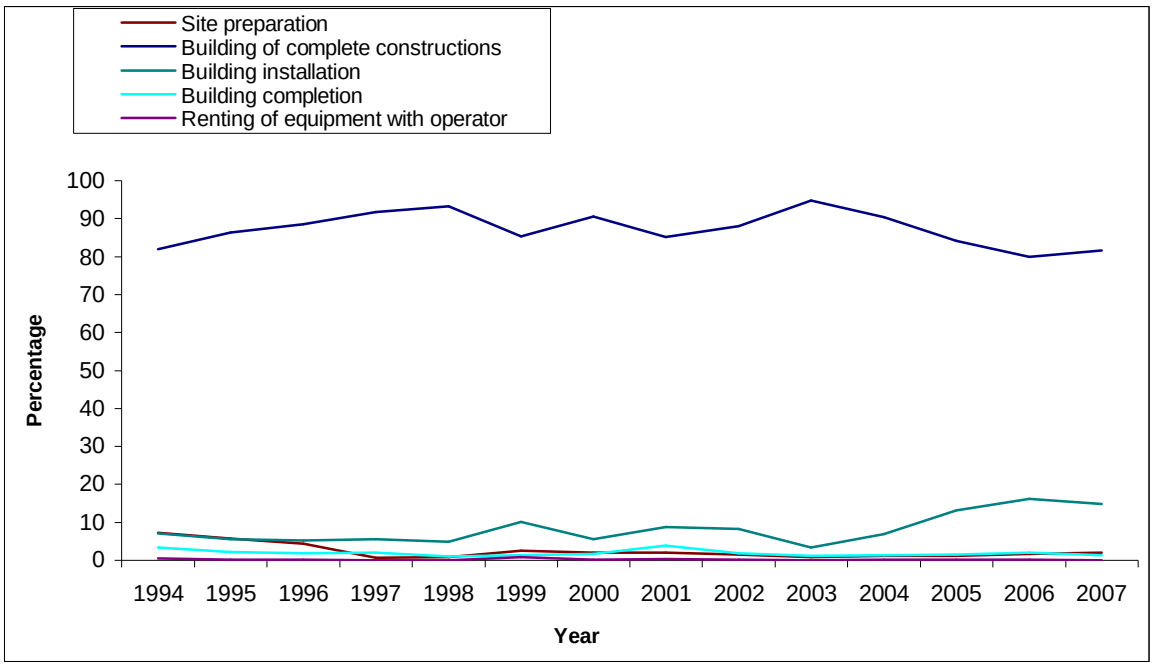
Source: The National Accounts Statistics 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Figure 4.9: Percentage of Output by construction Formal and Informal sectors for the Years 1994-2007 in Remaining West Bank and Gaza Strip.



Source: The National Accounts Statistics 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

Figure4.10: Percentage of Output by Economic Activity in Construction in RWB and Gaza, 1994-2007.



Source: Palestinian Central Bureau of Statistics, 2009. The National Accounts Statistics 1994-200 (Unpublished data)

Table 4.14: Value of Output by Economic Activity in Construction formal sector in Remaining West Bank and Gaza Strip, 1994-2007(Value in US $ 1000).

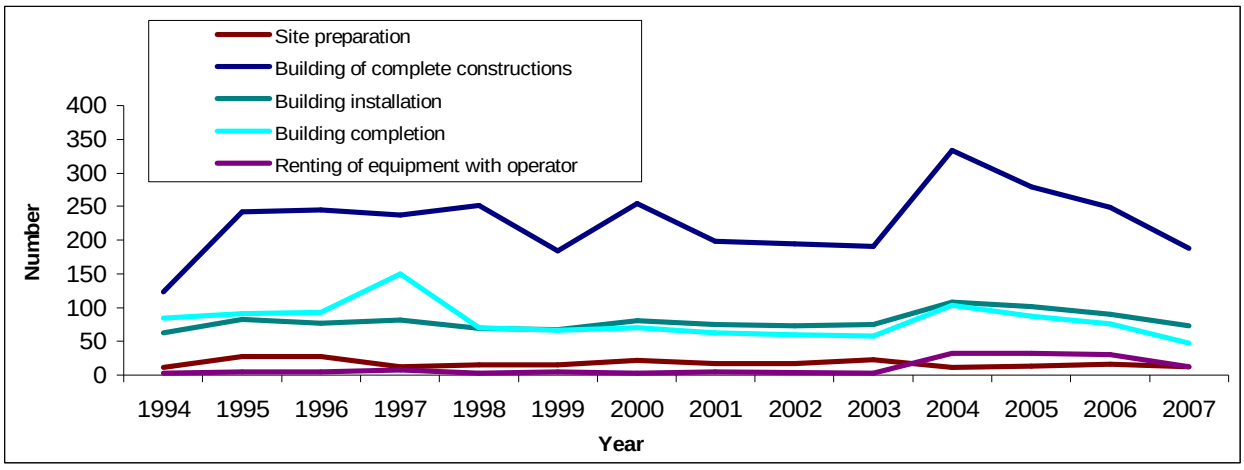
Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Construction	98,805.3	133,931.5	196,658.9	216,738.0	225,663.1	199,326.5	178,834.9	83,515.9	95,931.0	153,862.9	219,450.7	177,713.3	160,475.1	186,135.2
Site preparation	7,107.0	7,635.4	8,658.3	1,296.8	1,803.4	5,010.7	3,810.8	1,771.8	1,454.9	1,222.7	2,354.2	1,930.8	2,704.5	3,979.8
Building of complete constructions	80,978.8	115,544.7	173,998.1	198,873.0	210,393.0	169,977.1	161,948.2	71,108.2	84,524.6	145,803.3	198,376.4	149,442.3	128,219.8	151,948.6
Building installation	6,987.4	7,535.5	10,372.3	12,152.8	11,077.6	20,090.7	9,907.8	7,283.9	7,934.0	5,045.8	15,217.4	23,283.1	25,990.2	27,737.3
Building completion	3,229.9	2,985.3	3,478.1	4,366.9	2,360.7	2,744.7	3,048.7	3,133.9	1,851.7	1,728.7	3,140.1	2,683.2	3,188.2	2,469.4
Renting of equipment with operator	502.2	230.6	152.1	48.6	28.4	1,503.3	119.4	218.1	165.9	62.3	362.6	373.9	372.4	0.0

Source: The National Accounts Statistics 1994- 2007, Palestinian Central Bureau of Statistics, 2009. (Unpublished data).

4.3.5 Number of enterprises.

Table 4.15 shows the number of enterprises by the economic activity in the period from 1994 to 2007. From the table it is shown that the minimum percentage of construction enterprises ranged from a low level of 0.5% with a number of enterprises equal to 285 to a high level of 0.8% with a number of enterprises equal to 448. Most enterprises belong to the internal trade with percent ranged from a low level of 57.5% with 32,648 enterprises to a high level of 61% with 49,491 enterprises. It is important to note that although construction enterprises range from 0.5% to 0.8% out of the total enterprises through the time interval from 1994 to 2007, its contribution to GDP ranged from a low level of 3.9% to a high level of 13.7% through the same period of time. On the other hand, the internal trade whose enterprises constitute from 57.5% to 61% of the total enterprises, its contribution to GDP ranged from 9.2% to 17.9%. This reflects the volume of the output value of construction enterprises. Table 4.16 shows the number of enterprises by the economic activity in construction. Most construction enterprises belong to building of complete construction subsector which constitutes from 33% to 61% of the total construction enterprises with an average of 53%. Renting of equipment with operator and site preparation subsectors enterprises constitute a marginal percent of the total construction enterprises. Figure 4.11 shows the decrease and increase of construction subsectors enterprises through the time interval. Renting equipment with operator displays approximately constant number of enterprises until the year 2004 where it increased by an amount of 966% reaching 32 enterprises, then in the year 2007 decreased by amount of 60%. Site preparation subsector enterprises go approximately around 17 enterprises through the time interval. Building installation subsector goes approximately constant through the time interval with an amount of 75 enterprises until year 2004 where it increased to reach 108 enterprises then decreased to reach 73 in the year 2007. The Building completion subsector fluctuates through the time interval between 70 and 150 enterprise as shown in the figure.

Figure 4.11: Number of Enterprises by Economic Activity in Construction in RWB&G, 1994-2007



.Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics. **(**Unpublished data).

Table 4.15: Number of Enterprises in Remaining West Bank and Gaza Strip by Economic Activity 1994-2007.

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Services	9,637	9,380	9,688	12,439	12,373	12,781	14,144	12,223	12,978	11,925	17,763	14,622	15,645	21,797
Industry	14,136	11,276	11,306	14,438	14,471	14,849	14,509	14,605	14,179	13,693	12,690	12,211	11,351	14,508
Internal Trade	32,648	32,137	32,648	39,329	38,904	39,433	42,498	38,530	39,084	39,189	49,491	45,539	43,912	54,677
Construction	285	448	447	488	408	337	430	356	348	348	587	513	460	566
Transport, storage &communications	N.A	365	277	621	650	652	598	479	469	444	649	619	598	1,041
Total	56,742	53,614	54,074	67,315	66,806	68,052	72,179	66,193	67,058	65,599	81,180	75,304	71,966	92,589

Source**:** The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics. **(**Published data).
N.A = not available

Table 4.16: Number of Enterprises by Economic Activity in Construction in Remaining West Bank and Gaza Strip, 1994-2007.

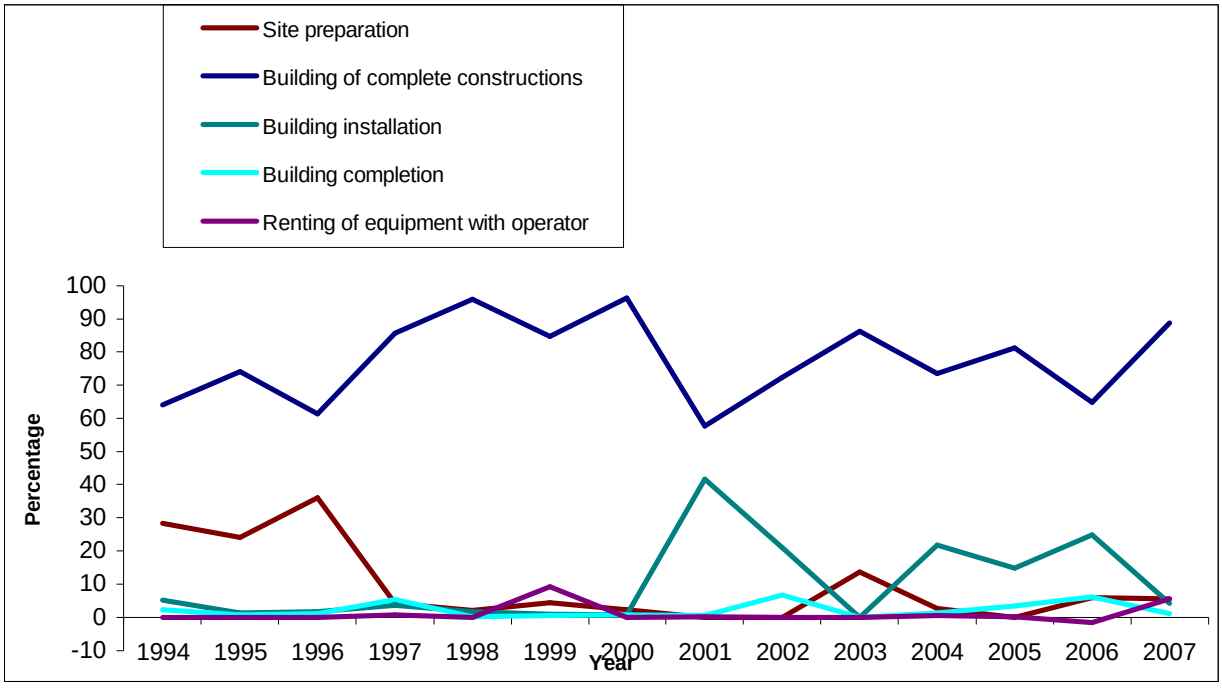
Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Construction	285	448	447	488	408	337	430	356	348	348	587	513	459	566
Site preparation	11	27	27	12	15	15	21	17	17	22	11	13	16	12
Building of complete constructions	124	242	245	237	251	184	255	198	194	191	333	279	248	188
Building installation	62	83	77	82	69	67	81	74	73	74	108	101	90	73
Building completion	85	91	93	150	70	66	70	62	60	58	103	87	76	47
Renting of equipment with operator	3	5	5	7	3	5	3	5	4	3	32	33	30	12

Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009. **(**Unpublished data).

4.3.6 Gross fixed capital formation.

Table 4.17 shows the gross fixed capital formation by economic activity in construction through the time interval from 1994- 2007. From the table, it is shown that gross fixed capital formation of building of complete construction through the interval from 1994 to 1997 was $3 million in average. In the year 1998 it increased sharply to reach about $8.5 million. In the year 2000 it decreased sharply reaching about one million dollar due to the Israeli restrictions after Al-Aqsa uprising, and continued to decrease to reach $0.31million in 2002. After that it increased to reach about $3.4 million in 2007. From Figure 4.12, the main contributor to the construction gross fixed capital formation is building of complete construction with a percentage between 60% to 96%. While site preparation has a significant contribution in 1996 by about 30%, the contribution of remaining subsectors is marginal except building installation in 2001 by the amount of 40%.

Figure 4.12 Percentage of Gross Fixed Capital Formation by Economic Activity in Construction in RWB &G 1994-2007.



Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics, 2009.

Table 4.17: Value of Gross Fixed Capital Formation by Economic Activity in Construction in RWBGS, 1994-2007 (Value in US $ 1000).

Main Activity	Year													
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Construction	5,952.1	4,157.6	6,380.6	3,497.5	8,893.5	9,736.8	1,324.7	509.2	429.6	1,315.2	1,500.0	1,029.5	897.1	3,804.6
Site preparation	1,690.4	1,000.3	2,294.1	151.1	186.4	440.7	30.1	0.0	0.0	178.4	42.7	0.0	53.9	216.3
Building of complete constructions	3,807.6	3,074.2	3,903.1	2,998.6	8,525.6	8,249.7	1,275.2	293.2	310.4	1,134.9	1,102.8	837.7	580.1	3,381.7
Building installation	306.6	53.3	112.6	129.7	147.8	96.5	10.0	212.3	90.4	0.4	325.1	153.1	222.5	160.7
Building completion	144.5	29.8	68.6	193.2	31.0	49.3	9.4	2.8	28.8	1.4	20.2	35.8	55.1	45.7
Renting of equipment with operator	3.0	0.0	2.2	25.0	2.8	900.6	0.0	1.0	0.0	0.0	9.2	2.9	-14.6	216.3

Source: The Economic Survey Series 1994- 2007, Palestinian Central Bureau of Statistics. (Unpublished data).

4.4 Total Economic Contribution of The Construction Industry.

The construction industry is an important part of any economy because of both, its size and the potential role it can play in the developmental efforts of the economy (Hosein, 2005). One of its most important economic features is that it creates the facilities that are necessary for the production and distribution of all other goods and services. The construction sector encompasses a wide spectrum of activities including: the building, repair and maintenance of houses, office accommodation, factory buildings, warehouses, schools, hospitals, roads, bridges, port and airport facilities, dams and sewerage systems. Construction also embraces a vast range of ancillary activities, such as the mining and manufacturing of construction materials; the transportation of such materials and equipments; the provision of professional and technical services, like architecture, quantity surveying and construction engineering and lower level technical and craft skills including masons, plumbers, carpenters and painters (Lewis, 2005). In most developing countries, where per capita income is low, the construction sector plays an important role in the developmental process. It serves as a hub of economic activity, and particularly as a source of employment. It is also a major consumer of products from the primary sector, especially quarry and forestry, as well as from the domestic manufacturing sector. The local manufacturing sector typically produces a wide range of materials and components that are used in the construction sector, including cement, bricks, nails, wood, and corrugated galvanized iron sheets. The construction sector therefore, provides critical backward and forward linkages with the economy (Hirschman, 1958).

The relationship between construction output and economic growth has been well discussed by construction economists. Most of the previous studies found a positive correlation between gross domestic product (GDP) and various measures of construction output. However, cross-sectional analysis was commonly adopted but longitudinal analysis has been called upon (Jin and Lu, 2004). With the availability of long time-series of data of Palestinian construction industry and other industries, the researcher attempts to test longitudinally the relationship between the construction and the other sectors output with the GDP. In other words, the researcher investigates the following null hypothesis:

"There is no significant statistical relation between the value added of all economic industries and the gross domestic product".

So a model will be constructed to investigate the null hypothesis as the following:

$Y= B0+B1X1+B2X2+B3X3+B4X4+B5X5 +B6X6$

Where:

X1 = Value added of agriculture and fishing sector

X2 = Value added of mining, manufacturing and water sector

X3 = Value added of construction sector

X4 = Value added of wholesale and retail trade sector

X5 = Value added of transport sector

X6 = Value added of services sector

Bo = Constant

Bi = The coefficient of the variable where i= 1, 2, 3,4,5,6

Y = GDP.

By applying regression analysis on the time series data from Table 4.18 using SPSS program the following results are obtained.

Table 4.18: Time series of the value added by economic activity in remaining West Bank and Gaza Strip, 1994-2006) value in million US$).

Year	GDP	Value added of Service	Value added of Internal trade	Value added of Transportation	Value added of Construction	Value added of Industry	Value added of A.F*
1994	3,012.3	712.8	539.3	102.9	268.4	664.9	398.4
1995	3,193.3	671.9	485.1	100.9	220.4	654.7	414.43
1996	3,285.90	661.7	357.7	98.5	274.6	552.2	482.0
1997	3,701.6	759.6	421.1	144.4	290.2	565.8	429.2
1998	4,147.9	843.3	434.2	191.3	369.4	614.7	482.9
1999	4,511.7	877.8	495.2	231.0	616.9	655.5	470.7
2000	4,118.5	898	464.4	221	366.3	545.6	403.6
2001	3,765.2	809	362.6	209.4	205.4	616.8	340.8
2002	3,264.1	767.3	386.8	183.9	127.7	534.7	251.3
2003	3,749.6	856.3	366.1	173.9	187.2	635.4	297.6
2004	4,196.7	886.1	381.2	180.2	288	709.1	338.6
2005	4,478.8	956	390.8	169.9	343.6	662	289.8
2006	4,107	940.2	382.7	466	104	531.1	334

*A.F: agriculture and fishing.

Regression

Table 4.19: The strength of the model relating the value added of all economic sectors and GDP

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.985	.970	.944	115.029352900223100

Table 4.20: F-test between the values added of all economic sectors and GDP

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2997985.029	6	499664.171	37.763	.000
	Residual	92622.264	7	13231.752		
	Total	3090607.293	13			

Table 4.21: Coefficients of all independent variables in the model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	137.247	876.768		.157	.880
Agriculture and fishing	1.197	.846	.183	1.414	.200
Industry	.842	.741	.105	1.136	.293
Construction	1.416	.577	.390	2.456	.044
Internal trade	2.112	.739	.244	2.857	.074
Transport	.834	.660	.203	1.265	.247
Services	3.718	.870	.735	4.272	.004

Table 4.21(A): DW: test

DW-Test	Test of Autocorrelation
1.928	P-Value(.001)

From Table 4.20, we find that the F-test, which examines the total relation between the independent variables and the dependent one, has a statistical significance equals to 0.000, which is less than 0.05. This implies that we reject the null hypothesis which says that "there is no significant statistical relation between the value added of all economic industries and the gross domestic product", and accept the alternative hypothesis. This means that there is a statistical significant relation between the independent variables and the dependent one.

Additionally, the strength of this relation obtained from the Table 4.19 equals to 98.5% which indicates very strong relationship. From table 4.21(A) P-Value equal to 0.001 which is less than 0.05 this means that the model is significant and the DW-Test is 1.928 which is near the value of 2, so the model doesn't have serial correlation between residual. As for the impact of each sector on the GDP, the following results are obtained as shown in Table 4.21.

First; construction sector: it is noticed that the unidirectional relation of the construction industry with the GDP is statistically significant, the reason behind this is that the T- test shows that the significance is equal to 0.044 which is less than 0.05, and from the same table the coefficient of construction is equal to 1.416.

Second: Service Sector; we notice that the unidirectional relation of the service sector with the GDP is statistically significant, this is because the T- test displays that the significance equal to 0.004 which is less than 0.05, and from the same table the coefficient of service equal to 3.718.

Third: The remaining sectors; the T- test which tests the unidirectional relation between the independent variable and the dependent GDP displays that each of agriculture and fishing, mining, manufacturing and water, wholesale and retail trade, and transport have the significances that equal to 0.200, 0.293, .074, 0.247 respectively which are greater than 0.05. Thus, it can be concluded that there is no significant relation between the products of these sectors and the gross domestic product.

According to the results above the model is reduced to the following form:

$Y= B0+ 1.416X3 +3.718X6.$

This means that if the value added of construction industry and service sector increases by one unit, the GDP will increase by 1.416 units and 3.718 units respectively.

It is seen from the afore mentioned analyses that the change in value added in only two sectors, the construction is one of them, have a significant impact on the output of GDP. This displays the important role which the construction industry plays in the Palestinian economy.

Most of the previous studies illustrate a positive correlation between the construction sector and other economic sectors. Depending on the time series in Table 4.18 and by using the SPSS program, the researcher investigates these findings. The results are found in the Table4.22:

Table 4-22: Correlation table between all sectors and GDP

		Agriculture and fishing	Industry	Construction	Internal trade	Transport	services	GDP
Agriculture and fishing	Pearson Correlation	1	.047	.601	.453	-.271	-.388	-.029
	Sig. (2-tailed)		.873	.023	.104	.348	.170	.922
	N	14	14	14	14	14	14	14
Industry	Pearson Correlation	.047	1	.444	.284	-.507	-.011	.107
	Sig. (2-tailed)	.873		.112	.325	.064	.971	.717
	N	14	14	14	14	14	14	14
Construction	Pearson Correlation	.601	.444	1	.464	-.355	.105	.898
	Sig. (2-tailed)	.023	.112		.009	.213	.721	.037
	N	14	14	14	14	14	14	14
Internal trade	Pearson Correlation	.453	.284	.464	1	-.205	-.224	.756
	Sig. (2-tailed)	.104	.325	0.009		.482	.442	.044
	N	14	14	14	14	14	14	14
Transport	Pearson Correlation	-.271	-.507	-.355	-.205	1	.655	.493
	Sig. (2-tailed)	.348	.064	.213	.482		.011	.073
	N	14	14	14	14	14	14	14
services	Pearson Correlation	-.388	-.011	.105	-.224	.655	1	.891
	Sig. (2-tailed)	.170	.971	.721	.442	.011		.000
	N	14	14	14	14	14	14	14
GDP	Pearson Correlation	-.029	.107	.898	.756	.493	.891	1
	Sig. (2-tailed)	.922	.717	.037	.044	.073	.000	
	N	14	14	14	14	14	14	14
Correlation is significant at the 0.05 level								

The correlation table shows the following:

- Construction industry has a significant correlation with agriculture and fishing, internal trade and (GDP) by 0.601, 0.464 and 0.898 respectively. Moreover, a nonsignificant correlation with industry, transport and services by 0.444, -0.355 and 0.105 respectively.
- Agriculture and fishing has a significant correlation with construction only.
- Industry has no significant correlation with any sectors.
- Internal trade has significant correlation with (GDP) by 0.756.
- Transport has only a significant correlation with services by 0.655.
- Services have only a significant correlation with transport and (GDP).

From the afore mentioned analysis, it is found that the construction sector has a significant correlation more than any other sector. Farther more, it has the strongest correlation with (GDP) which has the power of 89.9%. This finding reveals the important role of construction industry in the economy.

4.5 The Impact of Construction Expenditure In Palestinian Economy.

The construction industry purchases goods and services from private business and pays wages to its employees who in return spend their income in the regional economy. All these expenditures are magnified throughout the local economy as the business expenditures and employee compensations are further cycled through the regional economy, multiplying the economic impact to the region. Payroll expenditures are separated from non-payroll expenditures (goods, services, materials, etc.) to account for the economic contribution of each.

4.5.1 Payroll expenditure.

Since a long time series of data, about the indicators of the compensation of the employees on construction industry and the business activity of the years from 1994 to 2007, is available as raw data from PCBS, the researcher quantifies, calculates and investigates the impact of the payroll expenditure of the employees of construction industry on the business activity of Palestinian economy by using regression analysis. So, the researcher examines the following null hypothesis which says that: there is no significant statistical relation between the expenditure of the construction employees' payroll and the business activity, against the alternative hypothesis whish says that there is a significant statistical relation between the expenditure of the construction employee payroll and the business activity. The following model can be constructed:

Y=B0+B1X1

Where:

Y = Business activity

X1 = The payroll expenditure (compensation of employees).

Bo = Constant

B1 = Coefficient of the variable X1

By applying the SPSS program on the model above where the payroll is the independent variable and the business activity is the dependent, and using the data from Table 4.23 the following results are obtained:

Table 4.23: Compensation of the employees on construction and business activity in RWB&GS 1994-2007.

Year	Business activity in $million	compensation of construction employees in $million
1994	1,915.1	34.3
1995	1,840.2	19.9
1996	2,066.1	26.4
1997	1,978.5	28.0
1998	2,509.8	30.4
1999	2,935.0	27.0
2000	2,920.6	32.2
2001	2,157.3	13.9
2002	1,890.2	11.8
2003	2,170.8	14.7
2004	2,855.7	29.5
2005	2,842.8	19.9
2006	2,591.1	16.9
2007	1,915.1	26.7

Regression

Table 4.24: The strength of the model relating business activity and compensation of employees

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.445	.345	.234	123.3019

Table 4.25: F- test between the business activity and the compensation of construction employees

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	564378.170	1	564378.170	4.89	.867
	Residual	567834.892	10	56783.4892		

Table 4.26: Coefficient of compensation of construction employees

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	234.789	768.989		.564	.786
	Salary in cons	.456	.112	.654	4.89	.867

From Table 4.25, it is found that the F-test, which examines the total relation between the variables, has a statistical significance equals to 0.867 which is greater than 0.05. This implies that we accept the null hypothesis, which means that there is no significant impact of the expenditure of the payroll sheet of construction industry on the business activity. These findings contrast with the findings found by (Dennis K. Winters October 2003). He found that the payroll expenditure of construction has a significant statistical impact on business activity equal a multiplier of 2.54.

4.5.2 Non payroll expenditure.

Non-payroll expenditures or the intermediate consumptions of the construction industry are the money that are spent on goods and services from other businesses, which enters as an input to the construction industry in order to give the production of the construction. The intermediate consumption of the construction industry consists of mainly the final product of the other industries so it has a strong effect on pulling the other industries which generates more and more business activities. This excludes employee wages and benefits. In order to assess the impact of the intermediate consumption on the business activity, the researcher will examine the following null hypothesis which says that: there is no significant statistical relation between the non payroll expenditure of the construction industry and the business activity, against the alternative hypothesis which says that there is a significant statistical relation between the non payroll expenditure of the construction and the business activity, the following model can be constructed:

$Y=B0+B1X1$

Where:

Y= Business activity.

X1= The non payroll expenditure (intermediate consumption).

Bo= Constant

B1= Coefficient of the variable X1

Here, the independent variable is the non-payroll expenditure and the business activity is the dependent variable. Since a long time series of business activity and intermediate consumption is available as a raw data from PCBS in Table 4.27, and by applying the SPSS program on the model, the following results are achieved.

Table 4.27: Construction intermediate consumption of formal sector and business activity in RWB&G 1994-2007.

Year	Business activity in $million	Construction intermediate consumption in $million
1994	1,915.1	61.8
1995	1,840.2	133.9
1996	2,066.1	120.1
1997	1,978.5	136.4
1998	2,509.8	123.9
1999	2,935.0	99.5
2000	2,920.6	110.3
2001	2,157.3	43.5
2002	1,890.2	63.7
2003	2,170.8	104.2
2004	2,855.7	134.1
2005	2,842.8	40.8
2006	2,591.1	24.7
2007	1,915.1	60..5

Regression

Table 4.28(A): The strength of the model relating business activity and the intermediate consumption

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.553	.423	.334	223.3019

Table 4.28: F- test between the business activity and the intermediate consumption

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2990414.567	1	2990414.567	15.081	.022
	Residual	2181192.245	11	198290.204		
	Total	2197207.326	12			

Table 4.29: coefficient of intermediate consumption

Mode l	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2275.851	319.143		7.131	.000
Intermediate Consumption Construction	.951	3.346	.085	4.284	.022

From Table 4.28 above, we find that the F-test, which examines the total relation between the variables, has a statistical significance equals to 0.022, which is less than 0.05. This implies that we reject the null hypothesis which says that "there is no significant statistical relation between the non payroll expenditure of the construction industry and the business activity" and accept the alternative hypothesis, which means that there is a statistical significance relation between the above two variables. Additionally, the strength of this relation obtained from the Table 4.28(A) equals to 55.3%. From Table 4.29 we find that the coefficient of independent variable equals to 0.951 and the model will be in the following form.

Y=B0+0.951X1.

This means that if the intermediate consumption of the construction industry increases by one unit the business activity through the Palestinian economy will increase by 0.951 units. In other words, the increase of the intermediate consumption of construction industry by one million dollars generates business activity through the economy by an amount of $951,000. From the previous discussion, it is concluded that the construction industry has a great role in activating Palestinian economy.

4.6 Job Creation

Not only does the construction industry spending flow through the state economy generating further economic activity as demonstrated above, it also creates jobs with the suppliers of goods and services to the industry. As the case for the economic impact that expands direct spending to greater economic activity, there is also an employment impact that translates spending into job creation. Since, a long time series of data about the indicators of the intermediate consumption of the construction industry and the employees in Palestine for the years from 1994 to 2007 is available as raw data from PCBS, the researcher quantifies, calculates and investigates the impact of the intermediate consumption of construction industry on the total numbers of employees in Palestine by using regression analysis. So, the researcher examines the following null hypothesis which says that: "there is no significant statistical relation between the intermediate consumption of the construction industry and the

total employees in Palestine", against the alternative hypothesis whish says that there is a significant statistical relation between the intermediate consumption of the construction industry and the total employees in Palestine. The following model can be constructed:

Y=B0+B1X1

Where:

Y = Total employees.

X1= The intermediate consumption.

Bo= Constant

B1= Coefficient of the variable X1

Here, the intermediate consumption is the independent variable and the employees in Palestine are the dependent variable. By applying the SPSS program and using the data in Table 4.30, the following results are achieved:

Table 4.30: Construction intermediate consumption of formal sector and total employees in RWB&GS 1994-2007.

Year	Total employment	Construction intermediate consumption in million $
1994	155,725	61.8
1995	143,690	133.9
1996	158,742	120.1
1997	185,376	136.4
1998	187,261	123.9
1999	203,567	99.5
2000	214,671	110.3
2001	202,566	43.5
2002	194,633	63.7
2003	188,367	104.2
2004	230,121	134.1
2005	216,102	40.8
2006	190,964	24.7
2007	155,725	60..5

Regression:

Table 4.31: The strength of the model relating total employment and intermediate consumption

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.55	0.35	.0.46	26231.1564

Table 4.32: F- test between the total employment and the intermediate consumption

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10343809924	1	10343809924	150.33	.046
	Residual	7568809230	11	688073566.4		
	Total	7591788497	12			

Table 4.33: Coefficients of intermediate consumption with total employment

Mode l	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	186969.389	18799.743		9.945	.000
Intermediate Consumption CONSTRACTION	36.024	197.124	.055	2,133	0.046

From Table 4.32 we find that the F-test, which examines the total relation between the variables, has a statistical significance equals to 0.046, which is less than 0.05. This implies that we reject the null hypothesis which says that "there is no significant statistical relation between the intermediate consumption of the construction industry and the total employees in Palestine" and accept the alternative hypothesis, which means that there is a statistical significance relation between the above two variables, and the strength of this relation equals to 0.55 as seen from the Table 4.31. From Table 4.33 we find that the coefficient of the independent variable equals to 36 and the model will be in the following form.

Y=B0+36X1.

This means that if the intermediate consumption of construction industry increases by one unit the employment in Palestine will increase by 36 units. This means that if the intermediate consumption of the construction industry increases by one million dollars, it creates 36 jobs. Regarding this finding, it is concluded that the construction industry has a significant role in employment policy.

Obviously, the construction industry creates jobs directly by the number of employees on the job. More jobs are created in the region to serve the construction industry employees in their

professional and personal lives. There is employment impact that translates full-time positions into support job creation. In order to quantify the relation between the employment in construction and total employment in Palestine, the researcher examines the following null hypothesis which says that: "there is no significant statistical relation between the employment in the construction industry and the total employment in Palestine" against, the alternative hypothesis which says that there is a significant statistical relation between the employment in the construction industry and the total employment in Palestine. The following model can be constructed:

Y=B0+BIX1

Where:

Y = Total employees.

X1= Employees in construction.

Bo= Constant

B1= Coefficient of the variable X1

In the model above, the independent variable is the employment in construction and the dependent one is the employment in Palestine. By applying the SPSS program and using the time series data in Table 4.34, the following results are achieved.

Table 4.34: Total employment and construction employees in RWB&GS 1994-2007.

Year	Total employment	Construction employees
1994	155,725	4,665
1995	143,690	4,743
1996	158,742	5,169
1997	185,376	5,538
1998	187,261	5,911
1999	203,567	4,153
2000	214,671	5,864
2001	202,566	3,362
2002	194,633	3,505
2003	188,367	3,693
2004	230,121	5,661
2005	216,102	4,600
2006	190,964	3,908
2007	155,725	5,359

Regression:

Table 4.35(A): The strength of the model relating the total employment and the employment in construction

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.583	.473	.384	55.3056

Table 4.35: F-test between the total employment and the employment in construction

Model		Sum of Squares	df	Mean Square	F	Sig.
Regression		11040530912	1	11040530912	16.008	.006
Residual		7586571716	11	689688337.8		
Total		7591788497	12			

Table 4.36: Coefficients of construction employment with total employment

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	186758.872	39522.480		4.725	.001
No.of Persons Engaged Const..		.720	8.284	.026	3.087	0.006

From Table 4.35 we find that the F-test, which examines the total relation between the variables, has a statistical significance equals to 0.006, which is less than 0.05. This implies that we reject the null hypothesis which says that "there is no significant statistical relation between the employment in construction industry and the total employment in Palestine" and accept the alternative hypothesis, which means that there is a statistical significance relation between the above two variables. Additionally, the strength of this relation obtained from the Table 4.35(A) equals to 58.6%. From Table 4.36 we find that the coefficient of independent variable equals to 0.72 and the model will be in the following form.

$Y = B0 + 0.72X1$

This means that if the employment of construction industry increases by one unit the employment in Palestine will increase by 0.72 units. The previous discussion explains the important role of construction industry in reducing the number of the unemployed in Palestine. Now, is there any impact of the payroll expenditure of the employees of construction industry on increasing the total employees in Palestine?

To answer this question, the researcher investigates the following hypothesis which says that "there is no significant statistical relation between the compensation of the construction

employees and the total employment". The following model can be constructed:

Y = B0+ B1X1

Where:

Y= Total employees.

X1= Compensation of construction employees.

Bo= Constant

B1= Coefficient of the variable X1

By applying the regression analysis on data from Table 4.37 and using the SPSS program, the following results are achieved:

Table 4.37: Compensation of construction employees and total employment in RWB&G 1994-2007.

Year	Total employment	compensation of construction employees in $million
1994	155,725	34.3
1995	143,690	18.5
1996	158,742	24.9
1997	185,376	28.0
1998	187,261	30.4
1999	203,567	27.0
2000	214,671	32.2
2001	202,566	13.9
2002	194,633	11.8
2003	188,367	14.7
2004	230,121	29.5
2005	216,102	19.9
2006	190,964	16.9
2007	155,725	23.0

Regression

Table 4.38(A): The strength of total employment and the compensation of construction employees construction

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.453	.393	.314	245.3214

Table 4.38: F-test between the total employment and the compensation of construction employees

Model		Sum of Squares	df	Mean Square	F	Sig.
Regression		6905681166	1	6905681166	10.069	.0254
Residual		7544194342	11	685835849		
Total		7591788497	12			

Table 4.39: Coefficient of compensation of construction employees with employment

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
(Constant)		183601.731	25850.835		7.102	.000
Compensations of Employees CONST.		150.788	1084.868	.079	3.263	0.0254

From Table 4.38 we find that the F-test, which examines the total relation between the variables, has a statistical significance equals to 0.0254, which is less than 0.05. This implies that we reject the null hypothesis which says that "there is no significant statistical relation between the compensation of the construction employees and the total employment" and accept the alternative hypothesis. This means that there is a statistical significance relation between the above two variables. Additionally, the strength of this relation obtained from the Table 4.38(A) equals to 45.3%. From Table 4.39 we find that the coefficient of independent variable equals to 150.8 and the model will be in the following form:

$Y = B0 + 150.8X1$.

This means that if the compensation of construction employment increases by one unit (million dollars) the employment in Palestine will increase by 150.8 units. The previous discussion explains the important role of construction industry in reducing the number of the unemployment in Palestine.

4.7 Tax Revenue Generation.

The presence of the construction industry contributes to economic activity and jobs creation. It is also the prime pump for state tax revenue.

The researcher estimates the total income tax only for the year 2007, but the researcher can not estimate the sales tax due to the shortage in the data required. Palestine income tax revenues are compiled from construction industry value added income taxes, industry employee's income tax, and the product of the number of jobs the construction industry spending creates times their average income times the Palestinian income tax rate. The

construction industry value added in 2007 according to the data of ministry of finance equals to $135.7 million and the value added tax equals to 14.5%.

The number of construction industry employees in 2007 equal to 5,359, their compensation according to the ministry of finance equals to $16.9 million and the income tax equals to 7%.

The intermediate consumption is responsible for creating 24.7* 36 = 889 employees; the number of employee on construction is responsible of creating 5359 *0.72 = 3,858 employees. The compensation of construction employees responsible for creating 23*150.8 = 3,486. From the previous discussion, the construction industry through its different activity creates through the year 2007, 889 +3,858+3,486 = 8,233 employees. The average annual salary on 2007 = $2300, the total payroll sheet of the creating employees = 2,300*8,233 = $18.9 million.

From previous, the total income tax revenue from construction industry in the year 2007 is estimated as follows.

Tax from value added= 135.7 *0.145= $19.675 million

Tax from construction employee = 16.9 * .07 = $1.183 million

Tax from creating jobs = 18.9 * 0.07 =$1.323 million

Total income tax of the year 2007 = $19.675 + $1.183 + $1.323 = $22.181 million.

4.8 The Impact of Investment in Construction Industry in Palestinian Economy.

In this section the researcher investigates and calculates the impact of construction industry investment on the total employment and earning and the business activity.

4.8.1 Investment and total employment.

It is often noteworthy to note that the investment in construction industry has an impact on the total employment. In order to investigate this relation and since a time series data is available for the years from 1994-2007 to the required indicator as seen in the Table 4.40 issued by PCBS, a model can be constructed to investigate the following null hypothesis which says: "there is no significant statistical relation between the investment in construction industry and the total employment in Palestine" against the an alternative hypothesis which says that: "there is a significant statistical relation between the investment in construction industry and the total employment in Palestine". The object of this model is to predict the number of jobs created per million dollars invested in construction.

$Y=B0+B1X1$

Where:

Y = Total employment.

X1= Investment in construction.

Bo= Constant

B1= Coefficient of the variable X1

In the model above, the independent variable is the investment in construction and the dependent one is the employment in Palestine. By applying the SPSS program and using the time series data in Table 4.40, the following results are achieved:

Table 4.40: Total employment and investment in construction in RWB&GS 1994-2007.

Year	Total employment	Investment in construction in $millions
1994	155,725	722.1
1995	143,690	697.5
1996	158,742	727.7
1997	185,376	816.5
1998	187,261	930.2
1999	203,567	1,186.4
2000	214,671	910.6
2001	202,566	624.1
2002	194,633	460.8
2003	188,367	595.6
2004	230,121	678.3
2005	216,102	662.9
2006	190,964	722.1
2007	155,725	697.5

Regression

Table 4.41(A): The strength of total employment and the investment in construction

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.654	.547	.457	125.25

Table 4.41: F- test between the total employment and the investment in construction

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8343037909	1	8343037909	110.97	0.043
	Residual	7518282337	10	751828234		
	Total	7591048125	11			

Table 4.42: Coefficient of investment in construction with total employment

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	179851.976	33779.861		5.324	.000
Invest constrac	56.03	43.724	.098	3.311	0.042

From Table 4.41 we find that the F-test, which examines the total relation between the variables, has a statistical significance of 0.042, which is less than 0.05. This implies that we reject the null hypothesis which says that "there is no significant statistical relation between the investment in construction industry and the total employment in Palestine" and accept the alternative hypothesis, which means that there is a statistical significance relation between the above two variables. Additionally, the strength of this relation obtained from the Table 4.41(A) equals to 65.4%. From Table 4.42 we find that the coefficient of independent variable equals to 56.03 and the model will be in the following form:

Y = B0+ 56.03X1.

This means that if the investment in construction industry increases by one unit the employment in Palestine will increase by 56.03 units. In other words, each million dollars invested in construction industry will create 56.03 new jobs. The previous discussion explains the important role of investment in construction industry in creating new jobs.

4.8.2 The return of investment.

In this section we calculate the return of investment on the following sectors: construction, agriculture and fishing, industry, internal trade, transportation and services by applying regression analysis on the available time series data in Table 4.43 issued by PCBS. Here, because the independent variable is the investment, we have to construct six models. The first relates the investment with the value added in agriculture and fishing as follows:

Y=B0+B1X1

Where;

Y = The value added of Agriculture and fishing.

X1= The investment.

B0= Constant

B1= Coefficient of the variableX1

By applying the SPSS program on the model the result is as follows:

Table 4.43: Value of investment and value added of economic sectors in RWB&GS 1994-2007 ($million).

year	Investment	Value added in Construction.	Value added in agriculture & fishing	Value added in industry	Value added in internal trade	Value added in services	Value added in transportation
1994	1,008.6	268.3	398.3	664.9	539.2	712.8	102.8
1995	998.5	220.3	414.4	654.7	485.0	671.9	100.9
1996	1,099.9	274.6	482.0	552.2	357.6	661.7	98.5
1997	1,224.8	290.1	429.2	565.8	421.1	759.5	144.4
1998	1,437.6	369.3	482.9	614.7	434.2	843.2	191.3
1999	1,929.7	616.9	470.7	655.5	495.1	877.7	231.0
2000	1,524.1	366.3	403.6	545.6	464.4	898.0	221.0
2001	1,099.2	205.4	340.8	616.8	362.6	809.0	209.4
2002	924.6	127.7	251.3	534.7	386.8	767.3	183.9
2003	1,167.9	187.2	297.6	635.4	366.1	856.3	173.9
2004	1,106.5	288.0	338.6	709.1	381.2	886.1	180.2
2005	1,212.4	343.6	289.8	662.0	390.8	956.0	169.9

Regression

Table 4.44: The strength of the model relating value added of agriculture and total investment.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.55	.550	.54	71.442193727533000

Table 4.45: F- test between the value added of agriculture and fishing and the total investment.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	66339.713	1	66339.713	12.891	.045
Residual	51039.870	10	5103.987		
Total	68346.583	11			

Table 4.46: Coefficient of investment with the value added of agriculture and fishing

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	209.959	96.358		2.179	.054
investment	.141	1.077	1.503	2.841	.045

The model above explains the impact of change of investment in agriculture and fishing value added, in which the null hypothesis says that "there is no significant statistical relationship between the change of investment on agriculture and fishing value added". From Table 4.45, we note that the F- test, which examines the total relation between the variables, has a statistical significance equals to 0.045, which is less than 0.05. This implies that we reject the null hypothesis and accept the alternative hypothesis, which means that there is a statistical significance relation between the above two variables. The strength of this relation is equal to 0.55 as seen from Table 4.44. From Table 4.46 we find that the coefficient of the independent variable equals to 0.141 and the model will be in the following form:

$Y = B0 + 0.141X1$

This means that if the investment changes by one unit the value added will change by an amount equals to 0.141 units. In other words, the return of each million dollars invested in agriculture and fishing equal to 141,000 dollars.

In the second model, the researcher investigates the relation between the changes of investment on industry value added as the following:

$Y=B0+B1X1$

Where:

Y = The value added of industry.

X1= The investment.

Bo= Constant

B1= Coefficient of the variable X1

By using the SPSS program and the time series in Table 4.43, the results are the followings:

Regression

Table 4.47: The strength of the model relating value added of industry and total investment.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.0.29	.281	.25	58.894643258325700

Table 4.48: F- test between the values added of industry and the total investment

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	51.887	1	51.887	.015	.905
Residual	34685.790	10	3468.579		
Total	34737.677	11			

Table 4.49: Coefficient of investment on the model with the value added of industry

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	608.149	79.435		7.656	.000
investment	.008	.063	.039	.122	.905

The model above explains the impact of change of investment on industry value added, where the null hypothesis says that "there is no significant statistical relationship between the change of investment and the industry value added". From Table 4.48, we find that the F- test, which examines the total relation between the variables, has a statistical significance equal to 0.905, which is greater than 0.05. This implies that we accept the null hypothesis, which means that there is no statistical significance relation between the investment and the industry value added.

In the third model the researcher investigates the impact of the change of investment on construction value added, so the following model is constructed and investigated:

Y=B0+B1X1

Where:

Y = The value added of construction.

X1= The investment.

B0= Constant

B1= Coefficient of the variable X1

By applying regression analysis and using the raw data from Table 4.43 the following results are achieved:

Regression:

Table 4.50: The strength of the model relating value added of construction and total investment.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.927	.859	.844	49.172950698067900

Table 4.51: F- test between the values added of construction and the total investment

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	146794.508	1	146794.508	60.710	.000
Residual	24179.791	10	2417.979		
Total	170974.299	11			

Table 4.52: Coefficient of investment on the model with the value added of construction

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-208.280	66.323		-3.140	.011
investment	.411	.053	.927	7.792	.000

From Table 4.51 we find that the F-test, which examines the total relation between the variables, has a statistical significance equals to 0.000, which is less than 0.05. This implies that we reject the null hypothesis which says that "there is no statistical relationship between the change of investment and construction value added" and accept the alternative hypothesis, which means that there is a statistical significance relation between the above two variables. The strength of this relation equals to 0.927, as seen from Table 4.50, which is very strong relation. From Table 4.52 we find that the coefficient of independent variable equals to 0.411,

And the model will be in the form $Y = B0 + 0.411X1$

This means that if the investment changes by one unit the construction value added will change by an amount equals to 0.411 units. In other words, the return of each million dollars invested in construction equals to 411,000 dollars.

In the fourth model, the researcher investigates the impact of the change of investment on internal trade value added. So, the following model is constructed and investigated:

$Y=B0+B1X1$

Where:

Y = The value added of internal retail.

X1= The investment.

B0= Constant

B1= Coefficient of the variable X1

By applying regression analysis and using the raw data from Table 4.43 the following results are achieved:

Regression:

Table 4.53: The strength of the model relating value added of internal trade and total investment.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.332	.110	.021	59.409608679714900

Table 4.54: F- test between the values added of internal trade and the total investment

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4374.494	1	4374.494	1.239	.292
Residual	35295.016	10	3529.502		
Total	39669.510	11			

Table 4.55: Coefficient of investment with the value added of internal trade

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	336.567	80.129		4.200	.002
investment	.071	.064	.332	1.113	.292

From Table 4.54 it is found that the F-test, which examines the total relation between the variables, has a statistical significance equals to 0.29, which is greater than 0.05. This implies that we accept the null hypothesis which says "there is no significant statistical relationship between the change of investment and the internal trade value added".

In the fifth model, the researcher investigates the relation between the change of investment and transport value added as the following:

Y=B0+B1X1

Where:

Y = The value added of transport.

X1= The investment.

B0= Constant

B1= Coefficient of the variable X1

By applying SPSS program on the time series in Table 4.43, the results are as the followings:

Regression

Table 4.56: The strength of the model relating value added of transport and total investment.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.639	.408	.349	37.372624833450720

Table 4.57: F- test between the values added of transport and the total investment

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	9622.026	1	9622.026	6.889	.025
Residual	13967.131	10	1396.713		
Total	23589.157	11			

Table 4.58: Coefficient of investment with the value added of transport

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	38.049	50.407		.755	.468
investment	.105	.040	.639	2.625	.025

From Table 4.57 we find that the F-test, which examines the total relation between the variables, has a statistical significance equals to 0.025, which is less than 0.05. This implies that we reject the null hypothesis which says "there is no significant statistical relationship between the change of investment and transport value added" and accept the alternative hypothesis. This means that there is a statistical significance relation between the above two variables, and the strength of this relation equals to 0.639 as seen from Table 4.56. From Table 4.58 we find that the coefficient of independent variable equals to 0.105 and the model will be in the following form:

Y = B0+ 0.105X1

This means that if the investment changes by one unit, the value added will change by an amount of 0.105 unit. In other words, the return of each million dollars invested on transport equals to 105,000 dollars.

In the last model, the researcher investigates the impact of the change of investment on services value added. So the following model is constructed and investigated:

Y=B0+B1X1

Where:

Y = The value added of services.

X1= The investment.

B0= Constant.

B1= Coefficient of the variable X1

By applying regression analysis and using the raw data from Table 4.43 the following results are achieved:

Regression

Table 4.59: The strength of the model relating value added of services and total investment

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.621	.611	.598	84.316528820097400

Table 4.60: F- test between the values added of services and the total investment

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	6398.366	1	6398.366	8.718	.043
Residual	71092.770	10	7109.277		
Total	97524.136	11			

Table 4.61: Coefficient of investment with the value added of services

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	594.122	113.723		5.224	.000
investment	.174	1.090	1.521	2.928	.043

From Table 4.60 we find that, the F-test which examines the total relation between the variables, has a statistical significance equal to 0.043, which is less than 0.05. This implies that we reject the null hypothesis which says "there is no statistical relationship between the change of investment and the services value added" and accept the alternative hypothesis. This means that there is a statistical significance relation between the above two variables, and the strength of this relation is equal to 0.621 as seen from Table 4.59. From Table 4.61, we find that the coefficient of independent variable equals to 0.174 and the model will be in the form: Y = B0+ 0.172X1.

This means that if the investment changes by one unit, the value added of services will change by an amount equals to 0.174 units.

From the aforementioned analysis, the researcher constructs a multiplier table to explain the multiplier effect of the investment on different economic sectors. From Table 4.62, it is clear that, the multiplier of investment in construction is higher than any other sector with a magnitude equal to 1.411 followed by the service sector with the a magnitude equal to 1.174. It is important to note that the statistical significance of both industry and internal trade sectors is greater than 0.05 which means that there is no certain impact or return of investment on these sectors.

Table 4.62: The multiplier effect of investment on different sectors.

Sectors	Multiplier	Statistical sig.	Strength of relation
construction	1.411	0.00	93%
Agric. & fishing	1.141	0.045	55%
industry.	1.008	0.905	29%
internal trade	1.071	0.292	33%
transport	1.104	0.025	63%
services	1.174	0.043	62%

With respect to the strength of relation, it is seen that the strength of construction model is the greatest with the magnitude of 93% followed by the transport with the magnitude of 63%. The main finding from the afore mentioned analysis is that it is recommended to invest in construction sector due to the high return which equals to 411,000 dollars for each million dollar invested in construction which is more than the return of service sector by 236%.

4.9 The Impact of Construction Industry and Other Sectors in the Trade Balance.

Here the researcher investigates the role of construction and other sectors value added on the deficit of trade balance. In order to achieve this goal, the researcher investigates the following hypothesis "there is no significant statistical relation between the value added of all economic sectors and the deficit on the trade balance (net export and import)". So, in order to investigate this hypothesis the following model is constructed:

$Y= BO + B1X1 + B2X2 + B3X3 + B4X4 + B5X5 + B6X6$

Where:

X1= Agriculture and fishing.

X2= Industry

X3= Construction.

X4= Internal trade.

X5= Transport.

X6= Services.

B0= Constant

Bi= Coefficient of the variable where i= 1, 2,3,4,5,6.

Y=: Deficit in the trade balance.

By applying the regression analysis on the model using SPSS program depending on the raw data in Table 4.63, the following results are achieved:

Table 4.63: Value added by economic activity and trade balance in remaining West Bank and Gaza Strip, 1994-2005 (value in million $).

year	export	import	Trade balance	Value added of Agriculture	Value added of Industry	Value added of Construction	Value added of Transportation	Value added of Internal trade	Value added of Service
1994	286.0	1,658.2	-1,399.2	398.4	664.9	268.4	102.9	539.3	712.8
1995	441.0	2,016.1	-1,575.1	414.4	654.7	220.4	100.9	485.1	671.9
1996	394	2,238.6	-1,844.6	482.0	552.2	274.6	98.5	357.7	661.7
1997	339	2,375.1	-2,036.1	429.2	565.8	290.2	144.4	421.1	759.6
1998	382	3,007.2	-2,625.2	482.9	614.7	369.4	191.3	434.2	843.3
1999	395	2,382.8	-1,987.8	470.7	655.5	616.9	231.0	495.2	877.8
2000	372	2,033.6	-1,661.6	403.6	545.6	366.3	221	464.4	898
2001	401	1,515.6	-1,114.6	340.8	616.8	205.4	209.4	362.6	809
2002	290	1,800.3	-1,510.3	251.3	534.7	127.7	183.9	386.8	767.3
2003	241	2,373.2	-2,132.2	297.6	635.4	187.2	173.9	366.1	856.3
2004	280	2,666.8	-2,386.8	338.6	709.1	288	180.2	381.2	886.1
2005	313	2,758.7	-2,445.7	289.8	662	343.6	169.9	390.8	956

Regression

Table 4.64: The strength of the model relating value added of economic sectors and trade balance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.767	.588	.176	425.59667

Table 4.65: F- test between values added of economic sectors and trade balance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1549613.479	6	6258268.913	12.426	.050
Residual	1086795.160	6	181132.527		
Total	2636408.640	12			

Table 4.66: Coefficient of independent variables in the trade balance model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3808.200	3244.197		1.174	.285
Agriculture and fishing	-5.221	3.131	-.854	-1.667	.044
Industry	-1.465	2.751	-.184	-.532	.614
Construction	-2.021	2.135	-1.564	-1.947	.050
Internal trade	-1.916	2.746	-.240	-.698	.512
Transport	-1.471	2.743	-295	-.536	.611
Services	-5.524	3.269	-1.146	-1.690	.042

Table 4.66(A): DW: test

DW-Test	Test of Autocorrelation
1.958	P-Value(.002)

From Table 4.65, we note that the F- test, which examines the total relation between the independent variables and the dependent one, has a statistical significance equal to 0.05, which is the limit. This implies that we reject the null hypothesis and accept the alternative hypothesis. This means that there is a statistical significance relation between the independent and dependent variables. The strength of this relation is equal to 77% as seen from the Table 4.64. From table 4.66(A) P-Value equal to 0.002 which is less than 0.05 this means that the model is significant and the DW-Test is 1.958 which is near the value of 2, so the model doesn't have serial correlation between residual. By looking at the unidirectional relation between the agricultural and fishing sector with the trade balance, it is found that the significance of T-test from Table 4.66 equals to 0.044, which is less than 0.05. This means that there is a significant impact of the value added of agricultural sector on the trade balance and its coefficient equals to -5.221, and so on. By looking at the significance of T-test, there is a significant impact of both the value added of construction and service sectors on the trade balance, where the significances were 0.05 and 0.042 respectively. However, with respect to the industry, internal trade and transport, the T-test indicates that there is no significant relation between the value added of these sectors and trade balance because the significances were 0.614, 0.512 and 0.611 respectively, which are greater than 0.05. By substituting the magnitude of the coefficient of independent variables from Table 4.66, our model will be as the following:

Y= B0 -5.221 X1 -2.021 X3 -5.524 X6

It is seen from the model that if the value added of construction sector increases by one unit, the deficit of trade balance decreases by 2.021 units, and so on. If the agriculture and service sectors increase by one unit the deficit of trade balance will decrease by 5.22 and 5.524 units respectively. The remaining sectors have no significant impact on reducing the deficit of trade balance. From the previous discussion, it is concluded that the construction industry has a great role on economic growth by reducing the deficit of trade balance. The policy regarding this finding from Palestinian policy maker's side is to support the production of construction industry.

4.10 Summary of the Major Findings of The Economic Impact of Construction Industry in The Economy.

a) Economic impact of investment on construction.

An investment in construction by	Creates new jobs by the amount of	Has a return of
One million dollar	56.03	411,000 $

b) Economic impact of changing the construction value added.

An increase of value added of construction by	Reduces deficit trade balance by	Increases GDP by
One million dollar	2.021 million $	1.416 million $

c) Economic impact of construction expenditure.

An increase of the intermediate consumption by	Creates business activity by the amount of	Creates new jobs by amount of
One million $	0.951 million $	36

d) Economic impact of construction employee.

An increase of the number of construction employees by one unit	Total number of employees increases by 0.72 units

e) Economic impact of the payroll expenditure of construction employees.

An increase of the payroll expenditure by one million $	Creates 150.8 new jobs

f) Tax income revenue only ($ million).

Tax from value added	Income tax from construction employees	Income tax from creating jobs	Total income tax
19.675	1.183	1.323	22.181

4.11 The Impact of the Size of Construction Enterprises on its Productivity.

In this cross-sectional analysis the researcher investigates the efficiency of the construction enterprises with respect to its size in order to explain the Palestinian construction enterprises character. The researcher classifies the construction enterprises according to their number of employees. The first group is the small enterprises, of one to four workers. The second group of 5 to 9 workers. The third group is that group which employs from 10 to 19 workers. The fourth group is that group of more than 19 workers. From the raw data available in the PCBS for the population of all construction enterprises in the year 2007 which consist of 566 enterprises, the researcher takes a weighted random sample and then calculates the main productivity of each group and its weight with respect to the production of the construction sector. From Table 4.67 it is seen that the enterprises with a high volume of employment contribute a high percentage of production to the construction industry. The enterprises with more than 19 workers share 92.4%, followed by enterprises with workers from 10-19 with 4.6%.

Table 4.67: The random weighted sample of enterprises & its productivity according to its classification,.2007.

No	enterprises group	Mean productivity 1000$	enterprises group	Mean productivity 1000$	enterprises group	Mean productivity 1000$	enterprises group	Mean productivity 1000$
1	1.0	75.0	2.0	270.5	3.0	546.0	4.0	10,995.0
2	1.0	75.2	2.0	270.5	3.0	528.0	4.0	10,268.0
3	1.0	74.0	2.0	274.0	3.0	587.0	4.0	14,568.0
4	1.0	73.0	2.0	278.0	3.0	564.0	4.0	15,489.0
5	1.0	72.0	2.0	258.0	3.0	524.5	4.0	17,845.0
6	1.0	75.0	2.0	278.0	3.0	524.5	4.0	12,365.0
7	1.0	71.0	2.0	274.0	3.0	555.0	4.0	10,568.0
8	1.0	74.0	2.0	279.0	3.0	558.0	4.0	12,222.0
9	1.0	73.0	2.0	270.5	3.0	574.0	4.0	10,000.0
10	1.0	72.0	2.0	245.0	3.0	592.0	4.0	10,001.0
11	1.0	75.0	2.0	285.0	3.0	568.0	4.0	8,457.0
12	1.0	74.0	2.0	269.0	3.0	574.0	4.0	14,578.0
13	1.0	76.0	2.0	278.0	3.0	512.0	4.0	15,789.0
14	1.0	71.0	2.0	215.0	3.0	548.0	4.0	14,789.0
15	1.0	72.0	2.0	269.0	3.0	524.5	4.0	12,548.0
16	1.0	78.0	2.0	284.0	3.0	524.5	4.0	10,258.0
17	1.0	75.0	2.0	269.0	3.0	524.5	4.0	10,654.0
18	1.0	75.2	2.0	249.0	3.0	544.0		
19	1.0	74.0	2.0	215.0	3.0	557.0		
20	1.0	73.0			3.0	574.0		
21	1.0	72.0			3.0	592.0		
22	1.0	75.0			3.0	568.0		
23	1.0	75.7			3.0	574.0		
24					3.0	512.0		
25					3.0	548.0		

Table 4.68: The random sample of construction enterprises 2007

Employment category	No. of enterprises	Main productivity $1000	Weight%
1-4	111	73.876	0.6
5-9	50	271.955	2.4
10-19	50	527.091	4.6
20 and more	23	10,622.800	92.4

Although the number of enterprises with workers from 1-4 is 111, it shares 0.6% only of the total production. It is also seen that the main productivity of establishment with a high employment volume is more than those with a low employment volume. As seen from table, the main productivity of the enterprise with employment more than 19 is $10,622,800, while other categories have main productivity of $527,091 $271,955 and $73,876 in sequence. It is noticed that the productivity of the Palestinian construction enterprises depends on the volume of its employment so the more employment it has, the more its productivity is. The important question here is that: Is there any statistical difference between the main productivity of each group? To answer this question the researcher investigates the following null hypothesis, "there are no significant statistical differences between the main productivity of small enterprise (1-4), medium ((5-9), (10-19)) and the large (more than 20)". In order to investigate this hypothesis, the researcher needs to examine the arithmetic main of the sample by taking a represented random sample from each group and then applying the compare mean analysis. By using SPSS program to select the random enterprises from the random sample of enterprises, which is seen in the Table 4.68, and using the SPSS program to have the test to compare means the following results are achieved:

Table 4.69: The main productivity of each group according to construction enterprise classification

Max.	Min.	95% Confidence Interval for Mean		Std. Error	Std. Deviation	Mean	
		Upper Bound	Lower Bound			1000 $	Establishment size
78.0	71.0	74.537	73.216	.3245	1.8921	73.876	1-4
279.0	270.5	272.950	270.959	.4887	2.8073	271.955	5-9
592.0	512.0	529.184	524.998	1.0560	11.0759	527.091	10-19
10622.8	10622.8	10622.800	10622.800	.0000	.0000	10622.800	More than 20
10622.8	71.0	1700.365	877.510	208.5996	2905.4556	1288.938	Total

Table 4.70: F- test of compare mean.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1629229026.221	3	543076342.074	7508743.376	.000
Within Groups	13741.914	190	72.326		
Total	1629242768.135	193			

From Table 4.70 it is found that the significance is equal to 0.00 which is less than 0.05. This means that the null hypothesis is rejected and the alternative one is accepted, which says that " there are significant statistical differences between the main productivity of small enterprises from 1-4, medium from ((5-9), (10-19)) and large with more than 19 workers". From the previous analysis, it is found that in order to improve the production of construction sector, the Palestinian policy makers should go toward supporting the construction enterprises with a high rate of employment and furthermore encourage the policy of employment in construction sector.

CHPTER 5

Conclusion and Recommendations

5.1 Introduction

This chapter includes the conclusion and recommendations that would help to identify the construction industry in Palestine. The main objective of this study was to find the impact of construction industry on the Palestinian economy. The study assesses the impact of construction output on economic growth, the correlation between construction sector and other economic sectors, the impact of investment in construction industry and the impact of construction expenditure on business activity and job creation.

5.2 Conclusion

This part concludes the main findings: the contribution of construction industry to the GDP, comparisons between the formal construction sector and other formal sectors and correlation of construction sector with other sectors of economy. Findings about the impact of construction expenditure, the impact of investment in construction industry on the Palestinian economy and the impact of construction employees on total employment are stated in this part. Finally findings about tax revenue generation, the impact of construction output on the trade balance, and the impact of the size of construction enterprise on its productivity are introduced.

5.2.1 The contribution of construction industry to the Palestinian economy.

- Through time interval from 1994 to 2007, it is found that the minimum number of employees in construction was 3362 in the year 2001, and the maximum number was 5911 in 1998. The percentage of individuals engaged in construction sector to the total employees through the time interval is ranged from a low value of 1.7% to a high value of 3.3%.

- Through the time interval from 1994 to 2007, the compensation of construction employees ranged from a low value of $11.780 million in 2002 to a high value of $34.910 million in 1996. In 1994, the average annual compensation of the Palestinian employees was $2120, while this average of construction, services, industry and internal trade was $7764, $3220, $2344 and $938 respectively. This reflects that construction has the highest average income with an amount of 366% above the average income of the Palestinian employees. Year 2007 displayed drop in construction average income to reach $4295, but it was still above the average income by an amount of 167%. The percentage of construction

employee's compensation to the total compensation through the time interval from 1994 to 2007 ranged from a low value of 3.1% in 1999 to a high value of 7.7% in 2007.

- Through the interval from 1994 to 2007, it is found that the construction industry was the second largest consumer of intermediate consumption after industry sector with an amount ranged from a low value of $274.2 millions in 2006 and a percentage of 9.5% from the total intermediate consumption, to a high value of $850.8 millions in 1999 and a percentage of 26.5% from the total consumption.

- Time interval from 1994 to 1999 shows that construction output value increased from $865.1 millions in 1994 to reach its peak in 1999 by an amount of $1467.8 millions. Through this interval construction has the second largest output after industry sector. Additionally, it is found that through the time interval from 1994 to 2007, the percentage of construction output to the total output ranged from a low value of 8.1% in 2006 to a high value of 19% in 1999.

5.2.2 The impact of construction industry on job creation.

- From regression analysis, it is found that there is a significant impact of the compensation of construction employees on total employment, which implies that if the compensation of construction employees increases by one million dollar, the total employment in Palestine will increase by 150.8 jobs.

- From regression analysis, it is found that there is a statistical significant relation between construction intermediate consumption and each business activity and total employment. From this relation, it is found that the increase of construction intermediate consumption by one million dollars generates 0.951 million dollars in business activity through the Palestinian economy and creates 36 additional jobs.

- From analysis, it is noticed that the increase in the number of employees in construction industry creates jobs in other sectors. More jobs are created in the region to serve the employees of construction industry in their professional and personal life. From the analysis, it is found that the increase of construction employees by one unit increases the total employment in Palestine by 0.7 units.

5.2.3 The impact of construction value added on GDP and trade balance.

- Through the time interval from 1994 to 2007, it is found that in contrary to all economic sectors, when construction value added as a share of the GDP increases, the GDP increases, and when it decreases, GDP decreases. This reflects the direct positive correlations between the construction output and GDP. Based on regression analysis, it is found that if the output of construction industry increases by one unit, the GDP increases by 1.416 units.

- From regression analysis, it is found that if the output of agriculture and fishing, construction and services sectors increases by one unit, the deficit of trade balance is reduced by 5.221, 2.021 and 5.524 units respectively.

5.2.4 Correlation between construction industry and GDP.

- From correlation analysis, it is found that the construction has a significant correlation at the 0.05 levels with the following economic sectors; agriculture and fishing, household and retail trade and GDP by amounts of 0.61, 0.464, and 0.898 respectively. It is also found that the construction sector has a significant correlation with the economic sectors more than any other sector, further more it has the strongest correlation with GDP which has the power of 89.9%.

5.2.5 The impact of investment on construction industry and construction income tax.

- Analysis shows that the income tax from construction industry in the year 2007 was 22.391 million dollars.

- From regression analysis, it is found that for each million dollar invested on construction industry, 50.03 new jobs will be created. Analysis concerning the return of investment on different economic sectors shows that the return of investment of one million dollars invested on construction is 1.411 million dollars followed by services, agriculture and fishing with the amounts of 1.174, 1.141 million dollars respectively.

5.2.6 The impact of the size of construction enterprise on its productivity.

- From the cross sectional analysis, it is noticed that the enterprises with high volume of employees contribute the most of the production of construction industry. Also, the average productivity of the enterprise with categories from 1-4, 5-9, 10-19 and more than 19 were $73,876, $271,955, $527,091 and $10,622,800 respectively.

5.3 Recommendations:

Construction industry has a significant contribution to the GDP. Furthermore, the increase of construction output has vital role in increasing the volume of GDP and reducing the deficit of trade balance. Construction industry has significant positive correlation with most of economic sectors and plays great role in inducing economic sectors due to its pull effect. In addition, construction expenditure and construction employees have a significant positive impact on the business activity and total employment. Investment on construction has an important role on creation of new jobs and as a result reduces the number of the unemployed in Palestine. Furthermore, the return of investment on construction is higher than any other sector in the economy. Policy decisions on the construction sector have an important effect on not only the performance of the economy but also on the levels of employment. Due to the above findings and in order to let the construction sector play its full potential in terms of employment creation and local economic development, there is a need for more aggressive development strategies and policies. The construction sector needs an access to credits, facilities and flexible forms of training. The following main areas of intervention can be identified.

5.3.1 Construction sector

To construction economist and policy maker

- Due to the fact that the enterprises with high volume of employees contribute high percentage on the production of construction industry**,** it is recommended that government policy must support enterprises with high volume of employment, increase their percentage and adopt policies to encourage employment in construction.

- Most Palestinian contractors and their labors do generally not have any formal training. The low level of education and the lack of managerial skills require integrated programs to help construction sector upgrade and develop. Demand driven training and technical assistance programs, primarily focusing on upgrading the skills of contractors and the structure of the enterprises may help in sustaining these enterprises. The assistance may take the form of modified training activities targeting certain segments in the fields of management, technical, professional skills, upgrading of the tools and machines used in production and knowledge.

- There is a need to establish institutions to serve the labors sector protect their rights and develop them technically. Some of these institutions are:

  * Specialized laborers courts. These courts concern workers in the construction sector. They work on protecting the labors and their rights. They are protected from, employment termination, suspension of their wages and forcing them to unsuitable work. These courts aim to expedite the decision taken in labor cases because these cases can not be postponed when it is related to the labor wages and rights. Moreover, these courts work to settle dispute in labor and work field.

  * Construction training centers**.** Those centers are specialized in specific construction jobs like; formwork, tiling, plastering, electrical and sanitary installations. They educate candidates by means of specialized courses. These courses outline the basics for every job, describe the needed specifications and teach the basis on which contract between labor and employers are made and focus a job ethics. Those centers might be distributed in the whole country and they award the students a certificate to work in the job after fulfilling all of the required graduation exams**.**

  * There is a need to plan means of enforcing the occupational health regulations in construction operations in order to reduce the exposure of workers to workplace hazards. This calls for issuing safety manuals for workers on ways of minimizing the risk of accidents on-site. They should be encouraged to use work processes that reduce operational hazards while improving working environments and output. Meanwhile, government should play an active role in ensuring adherence to basic health and safety standards as well as the basic provisions of the labor laws and the social security law.

5.3.2 Government

To policy makers and planners

- In order to reduce the deficit in trade balance, it is recommended to increase and support the production of construction industry.

- So far, development programs, either governmental or donor ones, seem that they have neglected to incorporate policies and strategies targeting the informal construction sector. Intervention in policy formulation and assistance programs, therefore, to specifically target this sector is not only to keep it functioning, but also to encourage it and to support

its transformation into more sound business, with higher potential for growth and development, could be a useful national economic investment.

- In Palestine, the government should aim to create and enable the required environment for the construction sector to operate. This involves setting up a system that promotes the sector's activities and protects the rights of those involved in the sector. Policies may include the following:

  * Introduce a social insurance law which takes care of staff working in both formal and informal construction sector where both contractors and their employees pay monthly subscription fees for the social insurance institutions for the sake of covering the work injuries and death in addition to the pensioners. The social insurance law will secure those workers' future and encourage more workers to join this sector**.**

  * Introduce a law of association organization. The association, according to the law, should work to achieve several goals including organizing the job practicing, improving the academic and professional level of members. Moreover, it should activate and support the scientific research in this field. The association will also support workers in this field and involve in discussion of common subjects among Arab and international countries. Exchanging of information, experience and coordination, and cooperation between official entities in Palestine is a vital goal of this association knowing the association as professional in its field**.**

5.3.3 Investment sector

To investors

- Investment on construction industry has a significant impact on total employment and has a higher return than any other sector in the economy, so it is recommended to invest on construction sector due to the high return and also its impact on job creation.

5.3.4 Official statistics

To policy makers

- To demonstrate the relative importance of construction, it is essential that reliable data on the sector is acquired. Good quality construction data provides a basis for policy formulation and planning. The usefulness and availability of published statistical information about the construction have problems concerning definition and collection, so

it is recommended to develop a single-agency which is responsible for data collection and the setting up regional construction databases.

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5.3.5 Financial sector

To policy makers

- Contractors need to increase their capital in order to grow and expand. This is not possible without financing sources. Credit programs might be designed to focus on construction sector, with flexibility in the design and requirements of the credit products. Moreover, the legal environment of micro lending should be developed and policies must be formulated in order to build a micro finance industry that also helps feeding this significant sector in Palestine. Experience internationally has demonstrated that access to liquid and safe (micro) savings services is important. Some attention needs to be paid to the issue of access to savings services.

5.3.6 Recommendations for further studies.

- For about three decades there has been a debate in the field of construction economics on the role of the construction industry in socio-economic development. In this research the researcher investigates the relationship between construction activity and Palestinian economy by using tables of the main economic indicators to assess the weight of construction industry on the economy and its weight with respect to other sectors on the economy, furthermore the researcher use the regression analyses to calculate the impact of construction industry on the economy and the relation between construction and economic growth. Most previous studies and this study found a positive correlation between GDP and construction sector. Although studies using this methodology may have proven to be somewhat useful in examining the construction activity–economic growth relationship, they have fully failed to provide any means with which to determine the direction of causality. The researchers are invited to address the issue of the direction of causation.
- The intermediate consumption of construction industry is the final products of the other sectors in the economy. Due to the consumption of large amount of intermediate input, the pull effect is induced. The pull effect between sectors is measured quantitatively by the total input coefficient. Tow parameters are usually used to measure quantitatively the pull effect from construction sector to the whole economy: the output multiplier and influence coefficient. The researchers are invited to calculate the pull effect of construction industry in Palestine.

References

Akintoye, A., & Skitmore, M. (1994). Models of UK private sector quarterly construction demand. Construction Management and Economics, 12(1), 3–13.

Ball, M., & Wood, A. (1996). Does building investment affect economic growth? Journal of Property Research, 13(2), 99–114.

Balkenhol. B, (1978).The construction industry in Niger (Addis Ababa 1977).

Bon, R. (2000). Economic Structure and Maturity: Collected Papers in Input–Output Modeling and Applications, Ashgate, Aldershot.

Bhalla, A. and Edmonds, G. (1983). Construction growth and employment in developing countries. Habitat International, 7(5/6).

Bon, R. (1988) .Direct and indirect resource utilization by the construction sector: the case of the USA since World War II. Habitat International, 12(1).

Bon, R. and Pietroforte, R. (1990). Historical comparison of construction sectors in the United States, Japan, Italy and Finland using input–output tables. Construction Management and Economics, 8(3).

Bon, R. and Pietroforte, R. (1993). New construction versus maintenance and repair construction technology in the US since World War II. Construction Management& Economics, 11(2).

Bon, R, Birgonul, T. and Ozdogan, I. (1999). An input– output analysis of the Turkish construction sector, 1973–1990: A note Construction Management & Economics, 17(5).

Bon, R. and Yashiro, T. (1996). Some new evidence of old trends: Japanese construction, 1960–1990. Construction Management & Economics, 14(4).

Burns, N., and Grove, S.K., 1987. The practice of nursing research, W.B. Saunders Company, Philadelphia.

Bon, R., Birgonul, T. and Ozdogan, I. (1999) an input– output analysis of the Turkish construction sector, 1973–1990: a note. Construction Management and Economics, 17, 543–51.

Chang.T, Nieh.C.C 2004 . A note on testing the causal link between constructions activity and economic growth in Taiwan. Journal of Asian Economics 15 (2004) 591–598.

Crosthwaite, D. (2000). The global construction market: A cross-sectional analysis. Construction Management and Economics, 18, 619–627.

Capt. & Edmond. G. A. (1977).Study of small contractors in Kenya (Geneva, ILO, 1977; mimeogeaphed World Employment Programme research working paper; restricted).

Chao, K. (1978). The construction industry in Comininst China (Edinburgh, University Press, 1978).

Drewer, S. (1980). Construction and development: A new perspective. Habitat. International, 5(4).

Drewer, S. (1975).The supply of construction in the West Midlands. Building Economic Research Unit, University College, London, 1975.

Edmonds, G. (1979).The construction industry in developing countries. International Labor Review, 118(3).

Edmonds, G. and Miles, D. (1984). Foundations for Change: Aspects of the Construction Industry in Developing Countries, ITP, London.

Field, B. and Ofori, G. (1988) Construction and economic development – a case study. Third World Planning Review, 10(1), 41–50.

Granger, C. W. J. (1969). Investigating causal relations by econometric models and cross-spectral methods. Econometric a, 37.

Ghosh, A. (1958) .Input–output approach to an allocation system. Economic, 25(1).

Hirschman AO (1958) .The strategy of economic development. Yale University Press, New Haven.

Hillebrandt, P. (1984). Economic Theory and the Construction Industry, second Edition, Macmillan, London.

Hillebrandt, P. (2000) Economic Theory and the Construction Industry, Macmillan, London.

Hillebrandt, P. (1985) Analysis of the British Construction Industry, Macmillan, London.

ILO/JASPA, (1977). Employment and development in Cameron (Addis Ababa 1977).

International Monetary Fund (1993). System of National Accounts 1993, USA

Irvin, G. W (1975). Road and redistribution; social cost and benefits of labour intensive road construction in Iran (Geneva, ILO, 1975).

Kirmani, S. (1987). A Review of Bank Assistance to the Construction Industry in Developing Countries, World Bank Discussion Paper. The World Bank, Washington, DC.

Kirmani, S. (1988). The Construction Industry in Development: Issues and Options, World Bank Discussion Paper, the World Bank, Washington, DC.

Liu, A, 1997. Research methods for construction, Blackwell Science Ltd.

Leontief, W. (1966). Input–Output Economics, Oxford University Press, New York.

Li, L. & Xue. (1988). Theory and Application of Input–Output Analysis in Modern China, China International Broadcast Press, Beijing (in Chinese).

Lawrence, R. (1997). Better Understanding Our Cities: The Role of Urban Indicators. Organization for Economic Co-operation and Development, Paris.

Moavenzadeh. F & Rossow. J. (1975).The construction industry in developing countries, Cambridge, Massachusetts Institute of Technology, 1975.

McDavid, H. (1997). Construction and economic development: a stimulus or constraint in developing countries? Ph.D. thesis, George Washington University.

Moavenzadeh, F. (1978). Construction industry in developing countries. World Development, 6.

Miller, J.l, Oswego, S. and Gowdy, J.M. (1992). Vertically integrated productivity measures: tests of standard assumptions. Review of Income and Wealth, 38(4).

Marx, K. (1976). Capital, 3 Vols, Penguin, Harmondsworth.

Neo. R (1979) .International construction contracting, (Gower Press, 1976).

North, D. (1990). Institutions, Institutional Change and Economic Performance, Cambridge University Press.

Naoum, S.G, 1998. Dissertation research and writing for construction student, Butterworth- Heinmann.

Norusis, M. J, 1990. SPSS base system user's guide, SPSS.

Ofori, G. (1993). Managing Construction Industry Development, Singapore University Press, Singapore.

O'Conner, R. and Henry, E.W. (1975). Input–Output Analysis and Its Applications, Macmillan, New York.

Ofori, G. (1990). The Construction Industry: Aspects of its economics and management, Singapore University Press, Singapore.

Oppenheim, A.N, 1999. Questionnaire Design, Interviewing and Attitude Measurement, Pinter Pup Ltd.

Pietroforte, R. and Gregori, T. (2003). An input–output analysis of the construction sector in highly developed economies. Construction Management and Economics, 21(3).

Peterson, W. (1979). Total factor productivity in the UK: a disaggregated analysis, in Patterson, K.D. and Schott, K. (Eds) The Measurement of Capital: Theory and Practice, The Macmillan Press Ltd, London.

Pietroforte, R. and Gregori, T. (2003). An input–output analysis of the construction sector in highly developed economies. Construction Management and Economics, 21(3).

Punwani, A. (1997) A study of the growth–investment– financing nexus of the major UK construction groups. Construction Management and Economics, 15, 349–61.

Polit, D.F, and Hungler, B.P, 1999. Nursing research principle and methods. 6th edition. Lippincott Williams and Wilkins. Philadelphia.

Programme of Action, World Employment Conference, Geneva 1976.

Riedel, J. (1981). Planning development processes in the Third World: the construction sector, in Planning Processes in Developing Countries.

RCRG (1993). Construction and Development in the Russian Federation, Russian Construction Research Group, Construction Forecasting & Research Ltd, London.

Rymes, T.K. (1971). On Concepts of Capital and Technical Change, Cambridge University Press, Cambridge.

Rasmussen, P. (1956) .Studies in Interectoral Relations, Einar Harks, Copenhagen.

Strassmann, P. (1970). The construction sector in economic development. The Scottish Journal of Political Economy, 17(3).

Strassmann, P. (1970) .The construction sector in economic development. Scottish Journal of Political Economy, 17.

Su, C, Lin, C. and Wang, M. (2003). Taiwanese construction sector in a growing 'maturity' economy, 1964–1999. Construction Management and Economics, 21(7).

State Statistical Bureau of China (SSBC) (1998, 2001, 2003). China Statistical Yearbook: (1996, 1998, 2001 and 2003), China Statistics Press, Beijing (in Chinese).

Turin, D. (1980). Building as Process, Transactions of the Bartlett Society, Vol.6.1967-68.Reprinted in Habitat international, Vol.5, 1980.

Turin, D. (1978). Construction and development. Habitat International, 3(1).

Turin, D.(1972).Construction and development: a framework for research and action A paper prepared for the IBRD (London, University College Environment Research Group,1972)

Turin, D. (1978) .Construction and development. Habitat International, 3(1/2).

UN Economic Commission for Africa: A review of the building materials industry in Africa and the possibilities of rapid expansion, the United Nations; industrial development in Africa (New York, 1967).

UN Economic Commission for Africa: Survey of economic conditions in Africa, 1971 part 1.

United Nations Centre for Human Settlements (1995). Monitoring Human Settlements: Abridged Survey, Indicators Programme.

UN Department for Economic and Social Information, 1993. System of National Accounts, 1993.

Valadkhani, A. (2003). Using input–output analysis to identify Australia's high employment generating industries. Australian Bulletin of Labour, 29(3).

Wells, J. (1985). The role of construction in economic growth and development. Habitat International, 9(1).

Wang, B. (1987). Construction and Development: With Reference to Malaysia, Pelanduk, Petaling Jaya.

World Bank (1984). The Construction Industry: Issues and Strategies in Developing Countries, the World Bank, Washington, DC.

Williamson, O. (1985). The Economic Institutions of Capitalism, Free Press, New York.

Wolff, E.N. (1991). Capital formation and productivity convergence over the long term. American Economic Review, 81.

Wolff, E.N. (1994). Productivity measurement within an input–output framework. Regional Science and Urban Economics, 24(1).

Wells, J. (1986). The Construction Industry in Developing Countries: Alternative Strategies for development. Croom Helm, London.

World Bank (1984) the Construction Industry: Issues and Strategies in Developing Countries, The World Bank, Washington, DC.

Zhang, Z. (1996). Research on the Economics and Management of the Chinese Construction Sector in the Transformation Period, PhD dissertation, University of Harbin Building, Harbin (in Chinese).