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**THE ECONOMIC IMPLICATIONS
OF A MIDDLE EAST PEACE SETTLEMENT:
AN ECONOMIC DEVELOPMENT MODEL
FOR THE WEST BANK
AND GAZA STRIP**

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The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the Department of State, the Agency for International Development, or the U.S. Government.

PREFACE

This volume is one of two written for the Department of State under contract Number AID/NE-C-1553 concerning the economic implications of a Middle East peace settlement. One volume presents five year growth prospects for the West Bank and Gaza Strip based on analyses of an economic development model. The other volume projects the propensity of Palestinians to return to the West Bank and Gaza and the capacity of these economies to absorb new migration.

Several members of CACI's professional staff contributed far beyond the call of duty to the successful completion of this effort. Bertram Spector guided the research for both volumes as principal investigator, directed data acquisition, and was the primary author of the economic modeling volume. Farid Abolfathi conceptualized, conducted, and authored the research on migration and absorption projections. Sayeed Kayvan, Gary Keynon, and Constance Corbett-Mejia formulated the economic modeling approach and guided many of the sectoral analyses and forecasts. David McCormick contributed to the formulation of the study's approach, and offered many useful comments on draft chapters.

CACI's research support staff played a highly constructive role in organizing and analyzing data on the economic sectors. William Harvey conducted a thorough examination of public utilities in the West Bank and Gaza. Stephen Harvey and Edward Heyman contributed to the analysis of public services and housing. Joseph Moskowitz, Smadar Rauff, and Paula Heresson-Ringskog assisted in data acquisition and translation.

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Last, but hardly least, CACI's support staff labored extremely long hours over seemingly endless manuscripts and tables to ensure high quality and prompt delivery. James Schlotter's editing added readability and style to our often harshly stated social science findings. Kathy Harris directed the diligent typing staff of Karen Wolfe, Briana Taravella, and Mara Strock through an inordinate number of requests for "just one last change," while still managing to remain understanding of the authors. Again, the study team expresses its sincere thanks.

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CHAPTER 1. EXECUTIVE SUMMARY

MINIMUM INVESTMENT REQUIREMENTS TO SUSTAIN ECONOMIC GROWTH

The West Bank and Gaza Strip economies will require increased rates of investment from public, private, and foreign sources over the next 5 years to sustain economy-wide real growth. Expanded capital investment and assistance is especially needed to absorb the projected inflow of Palestinian immigrants; provide relief services; develop adequate infrastructure, jobs, and housing; and improve the overall economic prospects of the area.

The investment requirements for two alternate growth scenarios were projected for the 1979-1983 period. One scenario forecasts continuation of recent historic 8 percent aggregate annual real growth increases in the West Bank and Gaza. The other scenario projects future aggregate growth rates of 5.6 and 4.6 percent annually for the West Bank and Gaza, respectively, between 1980 and 1983.¹ This latter scenario is based on analyses of the potential limits and opportunities to sector growth, and thus, can be considered a reasonable, conservative guideline for future development prospects.

The 8 percent growth scenario assumes a stable rate of investment each year, while the reasonable/conservative growth scenario assumes uneven annual investment requirements (see Table 1). The investment schedule projected for the latter scenario is probably more realistic than the former one. It is likely that high investment will be required during the initial years of Palestinian immigration to the West Bank and Gaza to support rapid development of adequate infrastructure and services and

¹ Average annual growth rates of 10.0 and 11.5 percent for the West Bank and Gaza, respectively, are registered when the major growth increases for 1979 are included to account for immigrant absorption requirements.

enable successful absorption and integration of the migrants into the society and economy.

TABLE 1
Minimum Investment Requirements
(in millions U.S. \$)

	<u>Annual 8 Percent Aggregate Growth</u>	<u>Reasonable/Conservative Aggregate Growth</u>
	<u>West Bank</u>	
1979	163.7	464.9
1980	179.6	117.2
1981	196.2	111.6
1982	214.4	128.8
1983	<u>234.9</u>	<u>127.9</u>
TOTAL	988.8	950.4
	<u>Gaza Strip</u>	
1979	154.5	712.9
1980	177.0	84.0
1981	202.8	74.3
1982	233.0	91.8
1983	<u>271.8</u>	<u>92.3</u>
TOTAL	1,039.1	1,055.3

INVESTMENT OPTIONS BY SECTOR

Investment requirements were also projected on a sectoral basis, which helps to pinpoint potential bottlenecks and opportunities for development in the economies (see Table 2).

By far, the construction sector requires the most investment over the next five years, primarily to build housing and public facilities to absorb the projected inflow of Palestinian immigrants. Both construction and public services can be expanded easily and productively beyond the indicated growth rates to improve absorptive capacity if further investment can be made available. Further growth in agriculture is limited due to

scarce land and water resources. However, this sector has long-term potential if increased capital investment, beyond the identified requirements, can be allocated for extensive irrigation, new crop cultivation techniques, and expanded mechanization.

TABLE 2
Minimum Investment Requirements by Sectors
(1979-1983, in millions U.S. \$)

	<u>8 Percent Aggregate Growth</u>		<u>Reasonable/Conservative Aggregate Growth</u>	
	<u>Sector Growth (percent)</u>	<u>Investment</u>	<u>Sector Growth (percent)</u>	<u>Investment</u>
	<u>West Bank</u>			
Agriculture	8.0	284.1	6.0	141.7
Industry	7.0	14.3	6.0	11.9
Construction	12.0	409.0	11.8	497.6
Trade, Transport, and Other Ser- vices	7.0	265.4	6.0	220.3
Public Services	<u>6.0</u>	<u>16.0</u>	<u>6.9</u>	<u>78.9</u>
	8.0	988.8	5.6/10.0 ^a	950.4
	<u>Gaza Strip</u>			
Agriculture	8.0	153.4	4.0	48.0
Industry	12.0	21.4	8.0	12.6
Construction	17.0	830.4	6.5	924.1
Trade, Transport, and Other Ser- vices	2.0	17.7	2.0	17.7
Public Services	<u>8.0</u>	<u>16.2</u>	<u>5.7</u>	<u>52.9</u>
	8.1	1,039.1	4.6/11.5 ^a	1,055.3

^a Average annual growth rates of 5.6 and 4.6 percent reflect stable rates of increase for 1980-1983. Average annual growth rates of 10.0 and 11.5 percent include the major growth increases registered in 1979 to account for immigrant absorption requirements.

The prospects for industrial growth are marginal over the next five years, even if increased investment is forthcoming. Current inadequacies pose constraints in the areas of skilled labor, entrepreneurship, public service infrastructure (especially electricity), and domestic markets, limiting the amount of private and foreign investment that can be absorbed successfully over the short term. Government development plans and incentives to reduce these limitations should be encouraged to improve industry's capacity to absorb expanded investment over the long term. But it is probable that such efforts will have only limited short-term payoffs. Finally, trade, transport, and private services are likely to grow at the same rate as increases in other sectors and in disposable income. However, expanded investment can be employed to improve the prospects for tourism, regional transport, and regional market centers.

REQUIRED FOREIGN CAPITAL INFLOWS

Table 3 shows that the projected demand for foreign capital inflows to ensure sustained economic growth is not extensive.

TABLE 3
Required Foreign Capital Inflows
(1979-1983, in millions U.S. \$)

	<u>8 Percent Aggregate Growth</u>	<u>Reasonable/Conservative Aggregate Growth</u>
West Bank	128.8	317.9
Gaza Strip	573.8	631.8

Gaza is likely to require much more foreign assistance and foreign private capital investment than the West Bank due to its less developed economy. Moreover, the reasonable scenario forecasts much higher and more concentrated demands for foreign capital in the initial years of projected Palestinian immigration than does the steady 8 percent growth scenario. This higher level of investment is required to develop

adequate infrastructure and provide relief services. These estimates of foreign capital requirements are low in comparison to estimates by other analysts for two reasons:

- Rapid growth scenarios that require high investment are not considered realistic over the next 5 years.
- Projected migration rates are low.

POLICY OPTIONS FOR MORE RAPID GROWTH

More rapid economic growth in the West Bank and Gaza can be stimulated by:

- Establishing a stable and secure political environment for investment.
- Implementing an economic development plan to structure and guide growth.
- Providing government incentives to channel domestic savings into investment and encourage private foreign investment.
- Developing adequate public infrastructure to facilitate the successful absorption of private capital investment.

CHAPTER 2. INTRODUCTION

The economic patterns that have developed in the West Bank and Gaza Strip since 1967 are likely to have a major and lasting impact on the future economic prospects of these regions.¹ The relationships among trading partners, distribution of labor by sector, sectoral output, and overall economic growth, for instance, have changed dramatically over the last decade. But these changes in the economy are limited by many factors, not the least of which are the quantity of investment and labor available to promote growth. This study examines the opportunities and constraints to economic growth and employment in the West Bank and Gaza Strip over the next five years, with special focus on the requirements for investment and labor to enable a steady economy-wide eight percent annual growth rate.

For a developing country, a sustained growth rate of eight percent per year in real terms is generally considered satisfactory. Historically, the West Bank has reportedly experienced an 11 percent average annual increase in gross domestic product (GDP) in real terms between 1968 and 1975 (Bregman, 1976). The Gaza Strip has registered an 8 percent average annual rate of growth in GDP over the same time period (Bregman, 1976).² While these annual rates tended to be higher during the earlier years of the Israeli administration due to the largely undeveloped base in the pre-1967 period, they appear to have leveled out

¹ This study analyzes economic growth prospects in the West Bank and Gaza Strip without reference to any present or anticipated political constraints or assumptions as to the parameters of a peace settlement. As the political situation warrants, an analysis similar to the one presented in this report could be conducted with assumptions concerning the economic implications of specific political peace settlements.

² CACI's calculations of West Bank average annual real growth in GDP between 1968 and 1977 report a rate of 10.0 percent (using Central Bureau of Statistics data). For the Gaza Strip, the growth rate is 8.6 percent between 1968 and 1977.

at 8.4 percent annual growth in the West Bank between 1975/76 and 1976/77, and at 10.7 percent annual growth in the Gaza Strip for these years. On the basis of these trends and the typical growth patterns observed in other less developed countries (LDC's), an eight percent growth target for future economic development appears satisfactory for the West Bank and Gaza Strip.

The major question addressed by the analysis is: How much domestic investment and foreign capital inflow is required by the West Bank and Gaza Strip to achieve this growth target over the next five years?

The solution is approached on a sector-by-sector basis to obtain increased specificity in the estimates and, hopefully, overall improved reliability. Reasonable sectoral growth targets are established, the current status of each sector is reviewed, the requirements and constraints on future growth are examined, investment required to reach the established sectoral growth targets is forecasted, and sectoral employment requirements are estimated. Finally, the growth potential of each sector of the economy is examined independently and then aggregated to determine economy-wide performance and requirements.

This volume is divided into ten chapters and several appendices. Chapter 3 surveys the West Bank and Gaza economies and provides a macro-economic guide to the sectoral analyses that follow. Chapter 4 presents the analytical scheme and modeling technique employed in generating estimates for the investment and employment questions. Chapters 5 through 9 address growth prospects in the public services, agriculture, industry, construction, and other services sectors, respectively. The financial and employment requirements to support an average annual eight percent growth target are then summarized in Chapter 10 on a sector-by-sector basis.

The appendices offer more detailed and technical discussions of the methods and issues involved in the analyses. They include the five year population and migration projections estimated by CACI (1978), a discussion of data limitations and reliability,³ a description of price index deflators used to adjust for inflation,⁴ and a listing of salient technical issues involved in using incremental capital-output ratios.

³ East Jerusalem is excluded from all conclusions in this report, due to the fact that Israel has incorporated data on East Jerusalem and its surrounding areas into its own national accounts. Since East Jerusalem was the major commercial center for the West Bank, exclusion of these data will certainly affect projections of economic prospects.

⁴ To indicate economic growth in real terms, all prices are reported in constant 1976 Israeli lira (IL) or U.S. dollars. 1976 was chosen as the base year since it is the last year for which economic data on the territories are available.

CHAPTER 3. MACROECONOMIC SURVEY OF THE WEST BANK AND GAZA STRIP,
1967-1977

CONCLUSIONS

- There has been real growth in GDP of about 8 percent annually in the West Bank and Gaza Strip since 1973. This indicates a slowdown in the rate of expansion in these economies from 1967. This is partly accounted for by the fact that the absolute level of GNP in 1968 was extremely low.
- The construction sectors in the West Bank and Gaza Strip have grown in their share of GDP as compared to other economic sectors. Industry has also grown in Gaza.
- About one-third of the active labor force in the territories works in Israel, although there have been indications that Israel began to lay off workers from the territories in 1975.
- Disposable income has risen, as has private consumption. The propensity to consume is quite high in both areas, as is the average propensity to save.
- Government consumption, expenditure, and investment have been frozen since 1975; private investment has compensated.
- The balance of payments shows a deficit in the trade balance of goods and commodities for both areas. This indicates that the level of imports has been greater than the level of exports.
- Overall, while private investment has increased in the territories, it is still at a low level. Government incentives are probably required to activate entrepreneurial risk motives in the population.

BACKGROUND

One of the major obstacles to planning for economic growth in developing economies is the basic difficulty of obtaining an accurate tableau of

current economy-wide conditions. Reliable presentation of such trends and interrelationships for the West Bank and Gaza Strip is complicated by the fact that the national accounts, are not reported accurately or consistently. Arie Bregman, a major source of economic information on the territories, who has attempted to examine these macroeconomic patterns and has had the opportunity to question primary sources on the data they report (Bregman, 1976), cautions his readers to treat the following types of variables with skepticism: trade in goods and services between Israel and the territories; the product originating in industry, construction, and the services sectors; wages in the territories and Israel; changes in inventories; private capital movements to and from the areas; and residually calculated factors including disposable income and savings.

In light of these data reliability problems, one method for proceeding involves attention not so much to the absolute levels of variables, but to the relative degree of change in trends or in relationships among factors. In addition, internal consistency checks have been computed to assess the degree and possible direction of inaccuracies in the data. Overall, this chapter examines economy-wide data in terms of a general equilibrium model, which facilitates analysis of the interaction of economic factors. Due to the limited data, the remainder of the sectoral analyses employ a partial equilibrium model in which each economic branch is modeled separately with few intersectoral linkages.

TRENDS IN GNP, GNP PER CAPITA, AND GDP

Table 1 presents the GNP, GNP per capita, and GDP for the West Bank and Gaza Strip in current and constant 1976 prices for 1968 through 1977.

The salient trends noted in this data for the West Bank include:

- Over the last decade there has been a tremendous increase in the real gross national product. In current prices, GNP has climbed from IL 349 million in 1968 to IL 6456

TABLE 1

GNP, GNP Per Capita, and GDP (in current
and constant 1976 prices) 1968-1977
(IL millions)

	<u>West Bank</u>										<u>Gaza Strip</u>									
	68	69	70	71	72	73	74	75	76	77	68	69	70	71	72	73	74	75	76	77
GNP (current prices)	349	441	509	741	1151	1360	2321	3269	4554	6456	131	157	210	306	489	745	980	1468	2074	3048
Percent Change		26.4	15.4	45.6	55.3	18.2	70.7	40.8	39.3	41.8		19.8	33.7	45.7	59.8	52.3	31.5	49.8	41.2	46.9
GNP/Per capita (current prices IL)	603	742	841	1197	1821	2135	3591	5071	7219	9467	363	434	570	810	1265	1863	2441	3604	5059	6983
Percent Change		23	13.3	42.3	52.1	17.2	68.2	41.2	42.3	31.1		19.5	31.3	42.1	56.2	47.3	31.0	47.6	40.3	38.0
GNP (1976 prices)	1700	2042	2303	2724	3509	3269	4266	4127	4554	4807	770	844	1082	1219	1614	1839	1785	1812	2074	2218
Percent Change		20.1	12.8	18.2	28.8	-6.8	30.5	-3.2	10.3	5.5		9.6	25.9	9.8	29.3	10.2	-3.3	0.0	13.7	0.0
GNP/Per capita (1976 prices IL)	2941	3435	3805	4401	5552	5132	6601	6363	7219	7049	2135	2333	2938	3227	4174	4600	4446	4449	5059	5082
Percent Change		16.7	10.8	15.7	26.1	-7.5	28.6	-3.6	13.4	-2.3		9.2	25.9	9.8	29.3	10.2	-3.3	0.0	13.7	0.0
GDP (at current factor cost)	319	378	401	539	818	941	1763	2409	3634	4714	128	147	179	260	358	516	692	1035	1492	2146
Percent Change		18.4	6	34.4	51.7	15.0	87.3	36.6	50.8	29.7		14.8	21.7	45.2	37.7	44.1	34.1	49.6	44.1	43.8
GDP (1976 prices)	1415	1633	1661	1848	2375	2412	3512	3106	3634	3516	578	650	745	751	978	1132	1375	1346	1482	1604
Percent Change		12.4	3.6	9.2	20.5	-9.3	43.2	-6.7	20.2	-3.4		4.9	16.8	12.2	14.1	7.8	-1.1	1.4	16.7	4.7

Sources: Israel, Administered Territories Statistics Quarterly, 1968-1977.

million in 1977 (a growth rate of 29 percent). Factoring out the impact of inflation by converting to constant prices, GNP has experienced a growth rate of 10.5 percent for the entire 10-year period. However, this rate of expansion has generally slowed since 1973 to an average 7.3 percent annual rate of increase between 1973 and 1977.

- Per capita income figures in constant prices also have shown a remarkable increase. Over the last decade, the rate of growth in GNP per capita has been 8.5 percent, with per capita income now averaging over U.S. \$800 at 1976 prices.
- GDP in real terms almost doubled from 1968 to 1973, but since then it has fluctuated around an average annual 8 percent increase.
- As can be noted by the extreme differences between constant and current prices, there have been drastic changes in the general level of prices. For example, the GNP deflator has fluctuated from 20.5 in 1968, to 41.3 in 1973, to 100 in 1976, and 134.3 in 1977. A basic policy dilemma here is how to maintain acceptable rates of growth in GNP, GNP per capita, and GDP without simultaneously engendering unacceptable levels of inflation.

The following patterns are noted for the Gaza Strip in Table 1:

- The nominal annual average rate of growth in the Gazan GNP was 31.5 percent between 1968 and 1977. Real growth amounted to 10.6 percent for this period. An interesting feature is the high rate of growth between 1968 and 1973 (17 percent), followed by a much lower rate of increase in the period 1973 to 1977 (5 percent). One plausible explanation for this sharp decline in growth is the initially low level of development that constitutes the comparative base in Gaza (Bregman, 1976). One could hardly expect the exceptionally rapid progress that was observed in the early years to be sustained for very long.
- Per capita income figures in current and constant prices have also increased remarkably. In nominal terms, per capita income has increased 29.5 percent over the 10 years; the real rate of increase has been 8.5 percent, with GNP per capita reaching over U.S. \$600 in 1976 prices.

- GDP almost doubled in real terms between 1968 and 1974, and experienced an overall average rate of growth of 7.3 percent.
- The high rate of inflation, which is obvious in the difference between real and nominal growth rates, has shown an average increase of 20 percent per year.

VALUE ADDED AND EMPLOYMENT BY SECTOR

Table 2 represents the value added of each economic sector and the share of each sector in GDP. For the West Bank, the following trends are observed:

- Between 1968 and 1977, the share in GDP for agriculture, industry, public services, and trade, transport, and other services declined slightly.
- The only sector that improved drastically was the construction sector. It has grown tenfold during the last decade with an annual rate of growth over 20 percent.
- The large increase in value added for agriculture in 1974 can be attributed to a good olive crop that year. The rest of the low points for the agricultural sector are fairly consistent with recessions in the Israeli economy.
- The large percentage share of the trade and transport sector in GDP is largely a function of Israel's lumping of all other private services into this sector. The increase in materials sales corresponding to growth in the construction sector is picked up as associated growth in this sector. Too, as employment and income increase, there is greater demand for private retail, repair, and maintenance services.

For Gaza, the following trends in sectoral share of GDP are noted:

- Agriculture has shown slight gains, and, as of 1977, maintained a share of 33.5 percent of total GDP.

TABLE 2
Gross Domestic Product at Factor Cost in
the West Bank and Gaza by Different Sectors
(IL million)

	West Bank											Gaza Strip										
	68	69	70	71	72	73	74	75	76	77	68	69	70	71	72	73	74	75	76	77		
Agriculture, forestry, and fishing (current prices)	115	133	141	205	317	342	790	714	1243	1314	30	41	54	79	115	139	176	304	485	708		
Agriculture, forestry, and fishing (1970 prices)	477	619	562	722	1019	877	1537	951	1243	998	149	166	215	278	370	336	340	405	485	538		
Percent GDP	33.7	37.9	33.8	39.1	42.9	36.4	43.8	30.6	34.2	28.4	25.8	25.5	28.9	37.0	37.8	31.4	24.7	30.1	32.7	33.5		
Industry (current prices)	26	33	38	51	67	85	144	197	238	297	4	6	11	14	21	30	52	96	149	225		
Industry (1976 prices)	106	133	146	176	209	225	268	258	238	214	16	24	42	48	65	80	97	126	149	162		
Percent GDP	7.5	8.1	8.7	4.5	8.8	9.3	7.6	8.3	6.5	6.1	2.8	3.7	5.6	6.4	6.6	7.1	7.1	9.4	10.1	10.1		
Public and community services (current prices)	56	60	67	84	109	139	218	311	397	532	26	30	37	49	66	94	149	225	286	375		
Public and community services (1970 prices)	221	233	244	274	317	348	411	433	397	395	103	116	135	160	192	235	281	313	286	279		
Percent GDP	15.6	14.2	14.6	14.8	13.3	14.4	11.7	13.9	10.9	11.2	17.8	17.8	18.1	21.3	19.6	20.8	20.4	23.3	19.3	17.4		
Transport, trade, etc. (current prices)	111	113	133	135	182	245	404	790	1245	1834	58	61	67	53	74	111	205	226	277	495		
Transport, trade, etc. (1976 prices)	555	554	613	549	652	775	962	995	1245	1346	290	299	309	215	265	351	488	285	277	363		
Percent GDP	39.3	33.9	36.9	29.7	27.5	32.1	27.4	32	34.3	38.3	50.1	46.0	41.5	28.6	27.2	31.0	35.5	21.1	18.7	22.6		
Construction (current prices)	11	19	22	33	56	78	201	371	511	737	4	9	10	13	27	46	102	172	285	343		
Construction (1976 prices)	56	94	96	127	178	187	336	469	511	563	20	45	44	50	86	110	169	217	285	262		
Percent GDP	3.9	5.9	6.0	6.9	7.5	7.8	9.5	15.2	14.1	16.0	3.5	7.0	5.9	6.7	8.8	9.7	12.3	16.1	19.2	16.4		
Total GDP (current prices)	319	378	401	539	818	941	1763	2409	3634	4714	128	147	179	260	358	510	692	1035	1492	2146		
Total GDP (1976 prices)	1415	1633	1661	1848	2375	2412	3512	3106	3634	3516	578	650	745	751	978	1132	1375	1346	1482	1604		

- Industry and construction have shown sharp increases over the last 10 years, mainly due to Israel's development of the "industrial belt" around Gaza in the early 1970's, industrial subcontracting from Israeli firms, and increases in public housing starts, respectively.
- Trade, transport, and other services have declined sharply in their share of GDP, from 50.1 percent in 1968 to 22.6 percent in 1977. Essentially, the product from these sectors has remained constant over the last 10 years, while GDP has increased rapidly, causing the decrease in sector share.

A more complete perspective on sectoral trends in the West Bank can be observed in Table 3, which refers to employment patterns:

- In 1970, the agricultural sector accounted for 33.8 percent of the GDP and included the highest percentage of the labor force (42.5 percent). In 1975, agriculture accounted for 28.4 percent of GDP and employment dropped to 34.8 percent of the labor force. During this period, many small, marginal farms were removed from the market as the heads of households sought salaried employment to cope with rising inflation (conversation with Vivian Bull, November 1978).
- In 1970, industry was the least productive sector of the economy; 14.6 percent of the labor force was employed to produce only 8.1 percent of the GDP. This proportion did not change significantly by 1975, but is indicative of the highly labor intensive nature of West Bank cottage industries.
- While trade, transport, and other services have maintained between a 30 and 35 percent share of the GDP, the percentage of the labor force involved in these sectors has increased from 19.9 percent in 1970 to 26.1 percent in 1975. This increase in labor without an associated increase in GDP share tends to confirm the assumption that low productive private services are expanding.
- The sector in which the most output per worker is produced is construction. A fairly constant percentage of the labor force (8.7 percent in 1975) has produced a sharply increasing percentage of the GDP. This can be explained by the fact that improved and more mechanized

TABLE 3
 Employed West Bankers by Sector
 Working in the West Bank and Israel
 (in thousands)

	<u>Agriculture</u>		<u>Industry</u>		<u>Construction</u>		<u>Trade, Transport, and Other Services^a</u>		<u>Government Services</u>		<u>Total</u>	
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>
1970 in West Bank	42.4	42.5	14.6	14.6	8.4	8.4	19.8	19.9	14.6	14.6	99.8	100
in Israel	2.6	17.7	1.9	12.9	8.4	57.1	1.8	...	...	...	14.7	100
1971 in West Bank	36.6	40.1	13.4	14.7	5.6	6.1	19.7	21.7	15.9	17.4	91.2	100
in Israel	3.3	12.9	4.3	16.8	14.6	57.0	3.4	...	...	...	25.6	100
1972 in West Bank	34.2	37.9	13.2	14.6	6.4	7.1	22.5	24.9	14.0	15.5	90.3	100
in Israel	4.3	12.3	6.5	18.6	19.8	56.7	2.4	7.0	1.9	5.4	34.9	100
1973 in West Bank	30.0	34.2	14.4	16.4	6.7	7.6	22.6	25.8	14.0	16.0	87.7	100
in Israel	3.5	9.1	8.0	20.7	21.9	56.7	3.4	8.8	1.8	4.7	38.6	100
1974 in West Bank	36.0	37.9	14.0	14.8	7.0	7.4	23.9	25.1	14.0	14.8	94.9	100
in Israel	4.6	10.8	8.3	19.5	23.7	55.6	4.3	10.1	1.7	4.0	42.6	100
1975 in West Bank	32.0	34.8	14.0	15.2	8.0	8.7	23.9	26.1	14.0	15.2	91.9	100
in Israel	4.3	10.6	8.0	19.8	21.9	54.2	4.6	11.4	1.6	4.0	40.4	100

^a All figures extrapolated. Includes all other employed persons not allocated to a specific sector.

... Not available.

Sources: Bregman (1976); Israel (1974d, 1972f, 1972d, 1975b).

means of construction have been employed, non-paid family workers have been used at an increased rate (and hence, have not counted in the employment records), and after-hours construction and construction without permit have increased.

- One of the most salient trends in Table 3 reflects the drift of West Bank laborers to higher paid jobs in Israel, particularly in the construction sector. This trend has shown signs of decline in 1974 and 1975. Over 30 percent of the potential West Bank labor force works in Israel, and a smaller number of workers are presently (as of 1975) in the active labor force in the West Bank than were in the labor force in 1970.

Table 4 presents the employment condition by sector for Gaza:

- As in the West Bank, an increasing number of workers have transferred from jobs in the Gaza Strip to jobs in Israel. This has resulted in a loss of the available labor force in Gaza from 52,900 in 1970 to 47,000 in 1975.
- Agricultural employment in Gaza has declined, while employment in other sectors has remained fairly constant. The big shift has been toward employment in Israel, especially in construction.

PRIVATE DISPOSABLE INCOME, CONSUMPTION, AND SAVINGS

Table 5 presents the disposable private income in the West Bank and Gaza.¹
The major trends observed for the West Bank follow.

- One of the most interesting features in the national accounts of the territories is the greater value of disposable income in comparison to GNP (see Table 1). The Central Bureau of Statistics (Israel, 1977b) does

¹ According to Bregman (1975), the sources of data on the sector of origin are different from those used for expenditures. This has led to inconsistencies in analyzing the national accounts. Moreover, there is little information on the price indexes used by the Israelis to convert different account series to real terms, which has made consistency checks impossible.

TABLE 4
Employed Gazans by Sector
Working in the Gaza Strip and Israel

	<u>Agriculture</u>		<u>Industry</u>		<u>Construction</u>		<u>Trade, Transport, and Other Services</u>		<u>Public Services</u>		<u>Total</u>	
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>
1970 in Gaza	16.8	...	6.5	12.3	4.5	8.5	...	...	...	...	52.9	100
in Israel	2.4	41.0	0.4	7.0	2.8	48.0	...	...	...	...	5.8	100
1971 in Gaza	16.0	31.0	6.2	12.0	2.6	5.0	...	...	...	...	51.5	100
in Israel	4.2	52.0	0.7	9.0	3.1	38.0	...	...	...	...	8.1	100
1972 in Gaza	12.4	27.0	6.0	13.0	1.8	4.0	17.0 ^b	37.0	10.0	21.7	46.0 ^a	100
in Israel	7.9	45.0	2.6	15.0	6.3	36.0	4.3 ^b	24.6	0.4	2.3	17.5 ^a	100
1973 in Gaza	11.9	26.0	5.9	13.0	1.8	4.0	16.0 ^b	35.0	10.0	21.9	45.7	100
in Israel	8.4	37.0	3.2	14.0	9.8	43.0	5.0 ^b	22.0	0.1	0.0	22.7 ^a	100
1974 in Gaza	12.0	25.6	6.0	12.8	2.0	4.3	17.0 ^b	36.2	10.0	21.3	47.0	100
in Israel	8.2	31.4	3.5	13.4	12.1	46.6	3.9 ^b	14.9	0.0	0.0	26.1	100
1975 in Gaza	12.0	25.6	6.0	12.8	2.0	4.3	18.0 ^b	38.2	9.0	19.1	47.0	100
in Israel	9.0	...	4.3	...	14.0	...	3.3 ^b	12.7	0.6	2.3	25.9 ^a	100

^a Data sources are inconsistent; sectors sum to greater than total.

^b Extrapolated from total figures.

Sources: Bregman (1976); Israel (1974d, 1972f).

TABLE 5
 Disposable Private Income^{a,b}
 (IL million)

	<u>West Bank</u>											<u>Gaza Strip</u>										
	68	69	70	71	72	73	74	75	76	77	68	69	70	71	72	73	74	75	76	77		
Gross National Product (at current factor cost)	330	420	481	703	1102	1307	2316	3269	4727	6250	128	154	206	302	482	736	948	1468	2117	2992		
Transfers from government & local authorities	2	3	2	2	3	5	26	43	49	58	4	2	3	3	5	8	23	39	50	43		
Less: Income tax and transfers to government.	4	9	14	21	30	38	96	139	138	181	1	3	4	5	13	21	56	79	95	125		
Gross disposable private income from domestic sources	328	414	469	684	1075	1274	2246	3175	4638	6127	131	153	205	300	474	723	915	1428	2072	2910		
Private transfers from abroad	72	79	101	92	86	94	129	179	216	293	36	45	57	52	65	66	109	184	209	279		
Gross disposable private income from all sources (current prices)	400	493	570	776	1161	1368	2375	3353	4854	6420	167	198	262	352	539	789	1024	1612	2281	3189		
Gross disposable private income from all sources (1976 prices)	1951	2282	2579	2852	3540	3288	4366	4207	4854	4780	982	1065	1351	1402	1779	1948	1865	1990	2281	2320		

^a Disposable income has been deflated by GNP deflator.

^b Disposable income in some cases is greater than GNP due to transfer from abroad.

Source: Israel, Administered Territories Statistics Quarterly, 1968-1977.

not include factor income from workers in Arab countries in some of the national accounts, although it does include factor payments from West Bankers working and living in Israel.² However, these private transfers from abroad are obviously included in the disposable private income data. These transfers in total are greater than the income tax figure and result in higher disposable income than GNP.

- Disposable income in real terms rises steadily through 1972, but begins to fluctuate between 1972 and 1977. Much of this fluctuation is probably due to variations in the agricultural sector, and especially in the olive crop (see Table 2).
- In real terms, disposable income has increased by a rate of 12.5 percent per year between 1968 and 1972. The annual rate of growth after 1972 is only 4 percent per year (probably due to high inflation).

Data on disposable income in the Gaza Strip is also presented in Table 5. Discussion of the salient trends follows:

- The patterns of change are similar to those described for the West Bank.
- In real terms, the disposable income has increased by 14 percent annually between 1968 and 1973. Since 1973 it has grown at an average rate of only 4 percent. This latter period was highly inflationary, thus reducing growth in real disposable income.

Table 6 presents private consumption expenditure data for the West Bank and Gaza Strip. Basic patterns for the West Bank that emerge include:

- Aggregate private consumption expenditure increased steadily between 1968 and 1977. Even when the disposable income began to fluctuate (in 1972), the consumption pattern continued to increase.

² Factor remittances are estimates. There appear to be misclassifications of factor payments as compared to gifts. Transfer payments in the balance of payments accounts appear to include remittances of workers in Arab countries.

TABLE 6
Private Consumption Expenditure
(IL million)

Year	<u>West Bank</u>				<u>Gaza Strip</u>			
	<u>Consumption (current prices)</u>	<u>Consumption (1976 prices)</u>	<u>Consumption/Capita (IL) (current prices)</u>	<u>Consumption/Capita (IL) (1976 prices)</u>	<u>Consumption (current prices)</u>	<u>Consumption (1976 prices)</u>	<u>Consumption/Capita (IL) (current prices)</u>	<u>Consumption/Capita (IL) (1976 prices)</u>
1968	359	1718	620	2966	142	736	393	2036
1969	452	2064	760	3470	174	866	481	2393
1970	496	2255	819	3723	205	1000	556	2712
1971	635	2396	1026	3872	270	1042	715	2761
1972	908	2977	1437	4711	405	1426	1048	3690
1973	1144	3011	1756	4621	542	1522	1368	3843
1974	1808	3379	2750	5140	802	1502	1981	3710
1975	2791	3555	4292	5468	1283	1636	3096	3949
1976	3792	3792	5953	5953	1614	1614	3858	3858
1977	5523	4041	8099	5920	2609	1889	5977	4328

Source: Israel, Administered Territories Statistics Quarterly, 1971-1977.

- The average annual rate of growth of consumption expenditure is almost 10 percent in real terms. In other words, the annual rate of growth in consumption is greater than the annual growth of disposable income, which indicates that the annual rate of growth in saving is less than that of disposable income. Transfers from abroad, which are not counted in GNP, may account for a positive saving rate in the West Bank, despite the high consumption rate.
- Since 1969, the share of consumption expenditure has remained stable at approximately 85 percent of GNP, a very high ratio for a developing country. This unusually high level of consumption may be partly due to the demonstration effects of consumption in the Israeli economy.
- The standard of living in the West Bank, as measured by per capita consumption expenditures, rose steadily by an annual rate of 8 percent in real terms between 1968 and 1977.

The following patterns of private consumption expenditure in Gaza are depicted in Table 6:

- Consumption follows a pattern similar to that of the West Bank, except that it starts at a lower level. The average growth rate is about 10.5 percent annually in real terms.
- Again, increased transfers from abroad can explain why consumption growth rates can be greater than disposable income growth rates without resulting in negative saving.
- The share of consumption expenditure in GNP ranges between 80 and 85 percent, which is high for an LDC.
- The standard of living, as measured by per capita consumption, rose steadily at an average rate of 8.5 percent.

Table 7 compares private disposable income, consumption, and saving at constant 1976 prices. The salient trends concerning the West Bank include:

- The average propensity to consume (consumption divided by disposable income) fluctuates around 0.8, which

TABLE 7

Private Disposable Income, Consumption,
and Saving (at 1976 prices)
(IL million)

Year	<u>West Bank</u>				<u>Gaza Strip</u>			
	<u>Disposable Income</u>	<u>Consumption</u>	<u>Saving</u>	<u>Average Rate of Saving (percent)</u>	<u>Disposable Income</u>	<u>Consumption</u>	<u>Saving</u>	<u>Average Rate of Saving (percent)</u>
1968	1951	1718	233	11.9	982	736	246	25.1
1969	2282	2064	218	9.5	1065	866	199	18.7
1970	2579	2255	324	12.6	1351	1000	351	25.9
1971	2853	2396	457	16.0	1402	1042	360	25.7
1972	3540	2977	563	15.9	1779	1462	317	17.8
1973	3288	3011	277	8.4	1948	1522	426	21.9
1974	4366	3379	987	22.6	1865	1502	363	19.5
1975	4207	3555	652	15.5	1990	1636	354	17.8
1976	4854	3792	1062	21.9	2281	1614	667	29.2
1977	4780	4041	139	15.5	2320	1889	431	18.6

Source: Tables 5 and 6.

indicates that West Bankers consume about 80 percent of their disposable income. This is comparatively high for an LDC, which usually requires higher saving rates to sustain economic growth.

- The high propensity to consume may be an artifact of increasing costs for fuel oil, kerosene, gasoline, and food staples that have resulted from the reductions in Israeli subsidies of these products since 1973. Overall, these reductions in subsidies have resulted in 25 to 30 percent increases in item costs (conversation with Vivian Bull, November 16, 1978).
- The average propensity to save has increased from 11.9 percent in 1968 to 16.0 percent in 1971. Since then, this ratio has fluctuated with disposable income, because consumption expenditure has increased steadily.
- The high rate of average propensity to save in 1974 and 1976 can be attributed to high value added in the agricultural sector for those years; saving appears to fluctuate with the agricultural cycle.
- The high average rate of saving suggests high potential for domestic investment. At present, however, most savings are hoarded, sent to banks in Amman and elsewhere, or invested in private construction (conversation with Vivian Bull, November 1978).

The following items are important from the standpoint of consumption, income, and saving in Gaza:

- The average propensity to consume varies around 0.75, which is quite high, though lower than in the West Bank. Because of the lower propensity to consume, the average rate of saving is higher than in the West Bank.
- The average propensity to save is high, averaging at 20 percent for the 10-year period.

GOVERNMENT CONSUMPTION, GOVERNMENT INVESTMENT, AND PRIVATE INVESTMENT

Table 8 presents government consumption expenditure for the West Bank and Gaza Strip. The basic point to be made from this table regarding the West Bank follows:

- Government consumption expenditures have risen moderately by an annual rate of 8 percent in real terms between 1968 and 1978. During this initial period of Israeli administration, the public sector helped to generate economic activity and reduce unemployment (Bregman, 1976). This policy was emphasized by the creation of many public works and construction programs sponsored by the military authority during the initial years and an expressed policy to keep the work as labor intensive as possible to maintain high employment levels (Israel, 1974d, 1972f).³ However, as the private sector began to grow, government expenditures were frozen, perhaps as a result of private sector growth, and direct revenues that are below customary levels of taxation, even for LDC's (Bregman, 1976).

From the perspective of Gaza, the following patterns have been observed:

- Government consumption expenditure has increased by an average annual rate of 12.5 percent in real terms during 1968-1973. While this rate of growth is higher than for the West Bank, it started from an initially lower level of expenditure.
- Since 1973, government expenditure has been frozen.

Gross domestic capital formation in the West Bank and the Gaza Strip is presented in Table 9. Salient West Bank trends follow:

- Government and local authority investment in real terms have decreased from IL 69 million in 1968 to IL 61

³ While some critics of Israeli policy assert that Israeli motives were to establish and reinforce military positions in the administered territories through these public works (largely road construction), these documents contend that if the military motive was primary, the Israelis would have employed more mechanized and capital intensive construction methods from the beginning.

TABLE 8
Government Consumption Expenditure
(IL million)

<u>Year</u>	<u>West Bank</u>		<u>Gaza Strip</u>	
	<u>Consumption</u> <u>(at current prices)</u>	<u>Consumption</u> <u>(at 1976 prices)</u>	<u>Consumption</u> <u>(at current prices)</u>	<u>Consumption</u> <u>(at 1976 prices)</u>
1968	51	255	19	135
1969	56	280	25	164
1970	65	316	34	192
1971	83	350	43	199
1972	109	366	55	213
1973	138	369	77	221
1974	217	379	121	221
1975	293	376	167	215
1976	381	381	222	222
1977	485	373	279	220

Source: Israel, Administered Territories Statistics Quarterly, 1971-1978.

TABLE 9
Gross Domestic Capital Formation^a
(IL million)

	<u>WEST BANK</u>											<u>GAZA STRIP</u>										
	68	69	70	71	72	73	74	75	76	77	68	69	70	71	72	73	74	75	76	77		
Gross Domestic Capital Formation in Fixed Assets (current prices)	25	51	62	87	145	198	409	683	884	1288	11	24	26	36	77	124	212	341	506	652		
(1976 prices)	123	230	255	301	430	475	725	887	884	944	92	183	182	217	391	428	432	441	506	496		
Government Local Authority (current prices)	14	20	20	20	25	30	60	112	100	83	4	15	16	19	28	38	64	118	114	122		
(1976 prices)	69	90	82	69	74	74	106	145	100	61	33	114	112	114	142	131	130	153	114	93		
Private Sector (current prices)	11	31	42	67	120	168	349	571	784	1205	7	9	10	17	49	86	148	223	392	530		
(1976 prices)	54	140	173	232	356	401	619	742	784	883	59	69	70	103	249	297	302	288	392	403		
Building & Construction Work (current prices)	8	18	23	42	83	120	269	461	668	1033	5	4	5	7	25	56	98	150	303	378		
(1976 prices)	39	81	95	145	246	286	477	599	668	757	42	31	35	42	127	192	200	194	303	287		
Machinery, Transportation, and Other Equipment (current prices)	3	13	19	25	37	48	50	73	89	152	2	5	5	10	24	30	50	73	89	152		
(1976 prices)	15	59	78	87	110	114	89	95	89	111	17	38	35	60	122	103	102	94	89	116		
Change in Inventory (current prices)	--	6	-7	--	23	-14	126	-160	-13	-95	--	--	--	--	--	--	--	--	--	--		
(1976 prices)	--	27	-29	--	68	-33	223	-208	-13	-70	--	--	--	--	--	--	--	--	--	--		
Total (fixed investment & change in inventory) (current prices)	25	57	55	87	168	184	535	523	871	1193	11	24	26	36	77	124	212	341	506	652		
(1976 prices)	123	257	226	301	498	442	948	679	871	874	92	183	182	217	391	428	432	441	506	496		

^a Excludes Israeli settlements (e.g., military settlements, Qiryat Arba, etc.)

^b The value of stocks of olive oil is calculated as the difference between the value of production and the value of consumption and exports.

Sources: Israel, Administered Territories Statistics Quarterly, 1968-1977.

million in 1977 -- with an average annual rate of decrease of 1.2 percent.

- Private investment has compensated for the reduction in government consumption and investment expenditure, and has increased from IL 54 million in 1968 to IL 883 million in 1977 (in real terms). Much of this investment is probably coming from private transfers from workers in Arab countries (conversation with Vivian Bull, November 16, 1978). The share of private investment in GNP has risen rapidly from 3.1 percent in 1968 to 18.4 percent in 1977.

In Gaza, trends in government and private investment are as follows:

- Government investment expenditures have increased from IL 33 million in 1968 to IL 131 million in 1973 (in constant prices), or an annual rate of increase of almost 25 percent. However, by 1977, government investment had decreased to IL 93 million. Much of this investment goes into public housing construction.
- As in the West Bank, there has been a sharp increase in private investment expenditure. Investment has increased at an average annual rate of 21 percent.

Table 10 compares government consumption, government investment, and private investment trends in the West Bank and Gaza. The following major trends were observed for the West Bank:

- The ratio of government consumption to GNP has decreased from 15 percent in 1968 to 7.7 percent in 1977. This is due to the freeze on government expenditures since 1973.
- The ratio of government investment to GNP has also decreased from 4 percent in 1968 to 2.2 percent in 1973 and 1.2 percent in 1977.
- The ratio of private investment to public investment increased substantially from 0.78 in 1968 to 14.4 in 1977. This indicates a rapid shift by the private sector to assume responsibility when government investment was reduced.

- The ratio of private consumption to government consumption increased moderately from 6.7 in 1968 to 10.8 in 1977.
- The ratio of private investment in machinery to private investment in construction has declined from 0.38 in 1968 to 0.14 in 1977. This indicates that substantial private investment has gone into construction as opposed to machinery, transport, and other equipment. Especially in the last 3 years, it has accounted for 80 percent of total investment in the West Bank.
- Overall, private investment has increased in the West Bank, but at a low level in comparison to other LDC's. However, this pattern suggests that there is a capacity to absorb private investment, and that government incentives are probably needed to motivate the entrepreneurial disposition of the population.

For Gaza, the following comparisons concerning government and private investment and expenditure were made:

- The ratio of government consumption expenditure to GNP has decreased from 17.5 percent in 1968 to 9.9 percent in 1977.
- The share of government investment in GNP has also decreased from 17.5 percent in 1968 to 4.1 percent in 1977.
- The ratio of private investment to public investment has increased rapidly from 1.79 in 1968 to 4.33 in 1977. This rate of increase is not as great as in the West Bank.
- The ratio of private consumption to government consumption increased moderately from 5.45 in 1968 to 8.58 in 1977.
- The ratio of private investment in machinery to private investment in construction has remained stable, indicating that both have been increasing at about the same rate.

Balance of Payments

After the Six Day War in 1967, there was a major break in the traditional trading partners of the West Bank and Gaza Strip. However, new trading relations were soon established with Israel, and, to a lesser extent, with Jordan. Table 11 presents import and export figures, as well as other balance of payment data. The salient trends for the West Bank are:

- West Bank exports have increased steadily from IL 422 million in 1969 to IL 1169 million in 1977, in real terms. The average rate of growth is 12 percent per year.
- West Bank imports also increased rapidly between 1969 and 1977, at an annual average rate of 10 percent.
- Due to the fact that the level of imports exceeds the level of exports, there is a substantial deficit in the trade balance of goods and commodities. The average rate of increase in this deficit is about 7 percent per year.
- On the other hand, the services rendered by both territories has a positive balance between 1969 and 1977 -- the surplus increased to IL 469 million by 1977.
- Transfer payments also had a positive balance during the 1969-1977 period. Most of these payments are probably due to laborer remittances from West Bankers living and/or working in Israel or Arab countries to their families still living in the West Bank.
- Since there was a surplus in the current account during 1969-1972, there was a capital inflow in the West Bank. However, this situation turned around in 1973 to a deficit in the current account and a resultant outflow of capital.

For Gaza, the major trends in the balance of payments are:

- Exports have increased rapidly from very low levels in 1969. Imports of goods and commodities have increased by a rate of 16 percent per year.

TABLE 11
Balance of Payments, West Bank and Gaza Strip
(IL million, at 1976 prices)

	<u>WEST BANK</u>																	
	1969		1970		1971		1972		1973		1974		1975		1976		1977	
	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>
Total	1180	1180	1606	1606	1658	1658	1948	1948	2053	2053	2217	2217	2650	2650	2801	2801	2868	2868
Merchandise:																		
Export	422	--	502	--	490	--	607	--	595	--	703	--	886	--	1024	--	1169	--
Import	--	864	--	927	--	1002	--	1305	--	1448	--	1603	--	1892	--	1975	--	2038
Services ^a	258	222	461	298	685	360	946	404	947	498	997	508	1071	545	1218	650	1130	661
Transfer Payments	500	16	643	97	483	87	395	132	220	107	262	106	279	213	497	176	374	169
Capital Movement	--	78	--	284	--	209	--	107	291	--	255	--	414	--	69	--	295	--
	<u>GAZA STRIP</u>																	
	1969		1970		1971		1972		1973		1974		1975		1976		1977	
	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>	<u>Credit</u>	<u>Debit</u>
Total	475	475	809	809	826	826	1220	1220	1254	1254	1427	1427	1880	1880	2021	2021	2075	2075
Merchandise:																		
Export	160	--	221	--	308	--	428	--	563	--	509	--	686	--	829	--	958	--
Import	--	366	--	506	--	537	--	831	--	970	--	1130	--	1436	--	1488	--	1618
Services ^a	20	5	138	113	156	116	411	149	446	235	625	233	620	341	674	297	624	300
Transfer Payments	295	--	450	48	362	20	381	66	163	65	167	64	359	103	518	101	454	97
Capital Movement	--	104	--	142	--	153	--	174	82	--	126	--	215	--	--	135	39	--

^a Services includes transport, insurance, foreign travel, investment income, government, and miscellaneous.

Source: Israel, Administered Territories Statistics Quarterly, 1968-1977.

- The deficit in the trade balance has increased by an average rate of 13 percent annually. However, services rendered by Gazans have netted the territory a surplus that has increased to IL 324 million by 1977.
- Transfer payments to Gaza have a positive balance, but fluctuate over the period. Finally, as in the West Bank, the early period of capital inflow reversed itself in the post-1973 period to a capital outflow.

CHAPTER 4. ANALYTICAL APPROACH

INTRODUCTION

The principal objective of this study is to identify the amount of investment required to sustain an annual 8 percent rate of growth economy-wide in the West Bank and Gaza Strip. This chapter describes the general analytical approach employed to achieve this goal for each territory. First, a rationale for choosing the aggregate 8 percent growth target is presented and the method by which sectoral growth targets were chosen and measured is described. Second, the basic modeling technique employed in the analysis -- a simple Harrod-Domar growth model -- is described in nontechnical terms. Third, an additional forecasting technique that was employed to deal with estimating required government expenditures is described. Finally, other methodological issues, including price index deflators, are presented.

GROWTH TARGETS

As discussed in Chapter 2, an annual aggregate growth target of 8 percent appears reasonable for the West Bank and Gaza Strip for the next 5 years on the basis of historical trends and typical economic patterns in other LDC's. Bregman (1976) reports an 11 percent average annual increase in GDP in real terms between 1968 and 1975. Between 1975/76 and 1976/77 the average annual growth rate in real terms was 8.4 percent. In the Gaza Strip, Bregman (1976) reports an 8 percent annual average growth (between 1968 and 1975), but more recently (1975/76-1976/77), it has shown an even higher growth trend -- an average annual rate of 10.7 percent. (However, since Gaza started with an even less developed base than the West Bank, smaller absolute increments in output will register higher percentage increases.) A sustained 8 percent growth rate economy-wide is also consistent with satisfactory economic growth performance as it is typically observed in other LDC's.

Since analyses will be conducted on a sector-by-sector basis,¹ reasonable growth targets per sector must be defined so that in aggregate they yield an annual 8 percent economy-wide growth rate. A balanced-growth model, in which each sector grows at the same rate, is unrealistic given the different states of development in agriculture, industry, construction, trade, transport, and private and public services. An unbalanced-growth model provides a more realistic fit to the West Bank and Gaza situation. In this economic development paradigm, sectors are assumed to grow at varying rates, while the weighted sum of these rates can be adjusted to achieve the specified target of 8 percent overall.

To achieve an overall annual target, three targets were chosen for each sector:

- Historical Average Growth Target. Based on historical averaged annual rates of growth in each sector (using value added figures between 1968 and 1977).² These targets assume that over the next 5 years, growth rates in each sector will approximate their recent historical growth performance.
- High Growth Target. Using the historical average as a standard, these growth targets assume the requirement for more rapid development in order to absorb migrant population, sustain rapid real growth in industry, and so forth.
- Low Growth Target. Again, using the historical average as a standard, these growth targets assume that there may be limits to real growth in certain sectors. For

¹ Five economic sectors, defined by the Israeli authorities, will be analyzed in this report -- agriculture; industry; construction; trade, transport, and other services; and public services.

² Two-year moving averages of value added figures were calculated by sector to smooth the fluctuation from year-to-year. Annual rates of growth by sector tended to be higher during the first few years after 1967 due to the low base from which additional development was being measured. The final historical average for each sector used in this report is based on the average of growth rates in more recent years when the rates began to level off.

instance, without additional land or water resources, agriculture may have already reached its growth limits.

First, the historical averages were calculated from value added data for each sector between 1968 and 1977. Using these results, weighted averages³ were then computed and summed to determine whether these empirically-derived sectoral growth rates aggregate to an average annual 8 percent economy-wide growth rate. As shown in Table 1, the historical sectoral rates indeed sum to an overall annual 8 percent rate of growth.

The high and low targets were then chosen sector-by-sector on the basis of specific assumptions concerning the realistic requirements and limitations on growth in each economic branch. The rationale behind these target choices are described in each sector chapter. Table 1 summarizes these targets by sector. The major objective in providing these alternate goals is to provide a realistic range for growth potential in each sector, rather than focus on a historical rate that may change in the future, given a changed environment. No attempt was made to calibrate these high and low sector targets to an overall 8 percent target; they merely provide a range of potential growth around the historical average rate that does calibrate to an 8 percent target.

Using these targets for each sector, growth is measured in real terms by value added at factor cost in constant 1976 prices. Table 2 presents the range of growth targets and extrapolated value added figures that measure projected growth in real terms for each year from 1978 to 1983 (using 1977 historical value added figures as the base year).

³ The historical average rate of growth in each sector was weighted by its yearly output, and summed to give the increment in total output per year. This increment was then divided by the previous year's aggregate output to give the economy-wide growth rate per year.

TABLE 1
Annual Sectoral Growth Targets
(in percent)

<u>West Bank</u>	<u>Low Rate of Growth</u>	<u>Historical Average Rate of Growth</u>	<u>High Rate of Growth</u>
Agriculture	6	8	10
Industry	6	7	8
Construction	11.8	12	20
Trade, transport, and other services	6	7	8
Public Services	8.3	6	6.9
Weighted Historical Aggregate Annual Rate of Growth ^a	--	8.0	--
 <u>Gaza Strip</u>			
Agriculture	4	8	6
Industry	8	12	10
Construction	6.5	17	8.4
Trade, transport, and other services	2	2	2
Public Services	5.7	8	6.1
Weighted Historical Aggregate Annual Rate of Growth ^a	--	8.1	--

^a The historical average rates of growth in each sector were weighted by yearly output in each sector, and summed to give the increment in total output per year. This increment was then divided by the previous year's aggregate output to give the economy-wide growth rate per year.

TABLE 2
Value Added By Sector For Alternate Target
Growth Rates: West Bank and Gaza Strip
(IL millions)

West Bank Growth Rates	Agriculture			Industry			Construction			Trade, Transport, and Other Services			Public Services		
	High 10%	Low 6%	Historical Average 8%	High 8%	Low 6%	Historical Average 7%	High 20% ^b	Low 11.8% ^b	Historical Average 12%	High 8%	Low 6%	Historical Average 7%	High 8.3% ^b	Low 6.9% ^b	Historical Average ^a 6%
1977 ^a	998	998	998	214	214	214	563	563	563	1346	1346	1346	395	395	395
1978	1098	1058	1078	231	227	229	676	726	631	1454	1427	1440	422	422	419
1979	1208	1121	1164	249	240	245	1345	1037	706	1570	1512	1541	918	880	444
1980	1328	1189	1257	269	255	262	1400	1084	791	1696	1603	1649	982	935	470
1981	1461	1260	1358	291	270	280	1449	1120	886	1831	1699	1764	1048	994	499
1982	1607	1336	1466	314	286	300	1505	1170	992	1978	1801	1888	1120	1056	529
1983	1768	1416	1584	339	304	321	1559	1213	1111	2136	1909	2020	1195	1121	560
Gaza Strip Growth Rates	6%	4%	8%	10%	8%	12%	8.4% ^b	6.5% ^b	17%	2%	2%	2%	6.1% ^b	5.7% ^b	8%
1977 ^a	538	538	538	162	162	162	262	262	262	363	363	363	279	279	279
1978	570	560	581	178	175	181	284	502	307	370	370	370	295	295	301
1979	604	582	628	196	189	203	619	570	359	378	378	378	621	615	325
1980	641	605	678	216	204	228	647	599	420	385	385	385	650	644	351
1981	679	629	732	237	220	255	678	623	491	393	393	393	690	681	380
1982	720	655	790	261	238	285	707	654	574	401	401	401	726	721	410
1983	763	681	854	287	257	320	741	684.7	672	409	409	409	776	764	443

^a The 1977 base year value added data was obtained from Israel (1973a, 1977a).

^b Uneven growth rates based on population projections.

ECONOMIC DEVELOPMENT MODEL

Economic theory postulates that capital stock and investment in the past can help to estimate productivity, which in turn, can assist in forecasting economic growth prospects. However, due to the lack of available data for the West Bank and Gaza Strip on capital stock, yearly investment by sector, capital/labor ratios, the productivity of labor, profit rates, and rates of return, functional relationships for forecasting investment cannot be formulated (see Appendix A on data sources and limitations). Alternative models had to be employed to estimate investment requirements on the basis of assumed growth rates.

For this purpose, a simple Harrod-Domar growth model was used to project investment requirements that meet the sectoral growth targets. This model assumes that the rate of growth depends critically on the amount of capital investment per year (Kindleberger, 1965). In addition, a fixed relationship is assumed between additions to capital stock and growth in production. (See Appendix B for a more technical discussion of this modeling technique.)

The essential element of this model is the incremental capital-output ratio (ICOR). The ICOR is defined as the investment required to produce one additional unit of output (Kindleberger, 1965). In other words, it is the ratio between the change in the physical stock of capital in a period to the change in output over the period. This ratio is widely used as a device for projecting outputs from estimates of investment. In sum, the modeling technique chosen for this study provides a means to forecast investment requirements based on projected output by sector that is keyed to the sectoral growth targets.

Due to the lack of data on the key investment and capital stock variables, ICOR values had to be borrowed from other economies. The economies from which ICOR values were borrowed were chosen after careful examination of

their resemblance to the West Bank and Gaza Strip in terms of specific production methods, industrial concentration, and other economic conditions. The method used in choosing ICOR's follows the criteria discussed by Kuznets (1959) and Gianaris (1970) on the conditions under which ICOR's can be compared reliably across economies. ICOR values were chosen for each sector based on information regarding its structure and absolute value added, taking into account as many exogenous factors as possible (see Appendix B).

For most sectors, ICOR values were borrowed from other economies in the Near East. ICOR values were obtained or computed on a sector-by-sector basis from 1955 to 1975. In general, the procedure involved choosing the highest and lowest ICOR's found in these economies to provide a range in investment calculations for the West Bank and Gaza Strip economies. Simply, a high ICOR suggests that a large amount of capital must be added to get one additional unit of output. A low ICOR indicates that a small amount of additional capital is required to get one additional increment of output produced. The ICOR values that were chosen are presented in each sector chapter and explained in Appendix B.

Given the sectoral growth targets, 5-year estimates based on these targets of value added by sector, and the range of ICOR values for each sector, investment requirements were forecasted using a simple Harrod-Domar growth model. The forecasting procedure was carried out for all identified points in the chosen ranges and resulted in:

- Annual investment requirements by sector for the three growth targets given two alternate assumptions about the relationship between capital and output in each sector.

Overall, the study's conclusions provide data on annual investment requirements by sector to achieve an aggregate annual 8 percent growth rate (assuming continuation of the average historical rates of growth by sector), and a range of annual investment around the historical average

that may be required if certain economic conditions change that necessitate a modification in sectoral growth rates from the historical average. In addition, a shadow set of investment conclusions are provided reflecting alternate combinations of capital-output trend assumptions.

An attempt has been made to estimate the growth in employment by sector that must accompany the projected growth in capital stock. The procedure used is analogous to the one described above using ICOR values (see Appendix B for a technical discussion). Historically-based labor-output ratios for the West Bank and Gaza Strip, respectively, were computed based on recent figures of employment by sector and value added by sector. This ratio can be interpreted as the amount of employment required historically to produce a unit of value added or output per sector. This ratio was applied to the estimated value added figures that are keyed to the growth targets to obtain estimated employment requirements over the next 5 years on a sector-by-sector basis. Finally, a range of aggregate investment requirements for the two economies is calculated by summing the projected values over all sectors.

GOVERNMENT EXPENDITURE FORECASTS

Some of the most crucial investment requirements are in the public services sector -- in educational, housing, health, and public utility services. These sectors are the key constraints in estimating the capacity of the West Bank and Gaza to absorb the projected in-migration of Palestinians. To provide greater detail on the projected government expenditures required to maintain and extend these services to a larger population base, a different forecasting technique was employed.

Since more detailed information was available for most of these public services, it was possible to key future requirements for government spending for these services to population growth. In other words, adequate levels of each of these services were identified and matched to

the number of persons that could be served by each unit of service. Combining this estimate with the estimated unit cost of providing the service, and given the population projections for the next 5 years (see Appendix C in this volume), required government expenditures are estimated.

PRICE INDEXES

In order to show the extent of economy-wide and sectoral growth in real terms, price indexes had to be established to discount the various data series. The necessity for discounting is especially relevant due to high inflation rates in recent years. 1976 was used as the base year, unless otherwise stated. Data were put into constant 1976 prices for comparative purposes. The various indexes employed to adjust the appropriate series are identified in Appendix D. In the 5-year projections of investment, no attempt was made to predict inflationary movement; estimated prices are given at the 1976 base. However, readers who wish to inject their own assumptions about future inflation can use the appropriate price index in Appendix D to adjust the investment estimates.

CHAPTER 5: PUBLIC SERVICES

CONCLUSIONS

	<u>West Bank</u>	<u>Gaza Strip</u>
<u>Minimal Investment Requirements</u> <u>(1978-1983):</u>		
<u>Reasonable Growth Scenario</u>		
Sector Growth (percent)	6.9	5.7
Investment (millions U.S. \$)	82.0 ^a	54.7 ^a
<u>Overall 8 Percent Growth Scenario</u>		
Sector Growth (percent)	6.0	8.0
Investment (millions U.S. \$)	18.8	18.7
<u>Additional Employment Requirements</u> <u>(by 1983)</u>		
Teachers	2,488	1,002
Doctors	66	36
Nurses	114	93

^a Based on uneven growth assumptions.

BACKGROUND

Both the military authority and municipalities provide essential social services: primarily education, health, housing, utilities, and welfare. Each of these services is administratively distinct, and sufficient information is available on the conditions of production and delivery of them to conduct independent analyses and projections in this chapter. By conducting these intrasectoral analyses, greater specificity can be realized in establishing future cost requirements. At the conclusion of this chapter, government investment requirements for public services are projected.

The goal of this chapter is to develop conditional forecasts of adequate levels and costs of these government services over the next five years. For education, health, housing, and utilities, levels are conditional on increments of population increase. In all cases, the level of services provided will be linked to (a) costs of providing the service for a given increase in population, and (b) the employment required to provide the service.

The forecasting procedure is not always straightforward, because uncertainty surrounds current conditions, services provided, and the adequacy of those services. Moreover, parallel social services, currently provided by the United Nations Relief and Works Agency (UNRWA) and private voluntary agencies, render the level and extent of required government services for a new migrant population ambiguous. Consequently, available information is often linked to relevant analytical assumptions or empirical findings from other economies to facilitate forecasting of adequate service levels in the West Bank and Gaza.

In this chapter, estimates of future service levels and costs are established for each publicly provided service. Within each subsection, the implications of all evidence and assumptions are analyzed. A summary section is presented subsequent to the separate public services discussions to sum the overall cost requirements for the government services sector over the next five years. At the conclusion of the chapter, costs are matched with population growth projections and associated investment requirements are estimated.

WEST BANK

EDUCATION: WEST BANK.

Current Status

Education on the West Bank is provided by three separate systems -- the military government, UNRWA, and private institutions (mainly Christian

and supported by international agencies abroad). The 1964 Jordanian educational laws have remained in force under Israeli occupation and provide for free compulsory education for nine years (six years in primary schools and three years in preparatory schools) beginning at age six, and for free secondary education for three years. Vocational training in technical, agricultural, and commercial skills are incorporated within the framework of the regular high school curriculum.¹ Moreover, the government system includes several agricultural and teacher training institutes to provide elements of higher education.

As indicated in Table 1, the government schools serve about 76.1 percent of the total student population (over 175,000 pupils as of 1976). While facilities and teaching staff have increased over the past ten years, the rate of increase has just kept pace with growing student enrollment. So, the average number of students per class (33.7) and the average number of students per teacher (27.4) have remained fairly constant since 1967.

UNRWA schools provide education services to the refugees. The first nine years of education are compulsory. Secondary education for refugee children is provided by the government system, although UNRWA has established one vocational high school and several teacher training units. These schools serve 14.8 percent of the student population (over 34,000 pupils as of 1976). As with the government schools, student/class (averaging 35.1) and student/teacher (averaging 30.6) ratios have barely kept pace with increasing demand. The private schools are located primarily in the Bethlehem and Ramallah regions. They serve approximately 9.5 percent of the student population (over 21,000 pupils as of 1976).

¹ In addition, the Ministry of Labor and UNRWA conduct specialized vocational training for senior workers, high school graduates, and school dropouts.

TABLE 1
Education in The West Bank

	<u>Government</u>		<u>UNRWA</u>		<u>Private</u>		<u>Total</u>
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	
1967/68							
Students	106,311	...	...	...	...	...	...
Teachers	3,820		...		...		...
Institutions	661		...		...		...
Classrooms	3,162		...		...		...
1968/69							
Students	118,559	76.8	24,425	15.8	11,459	7.4	154,443
Teachers	3,842		792		682		5,316
Institutions	669		85		82		836
Classrooms	3,287		693		422		4,402
1969/70							
Students	131,418	74.4	27,724	15.7	17,592	9.9	176,734
Teachers	4,726		888		819		6,433
Institutions	686		83		111		880
Classrooms	3,887		760		584		5,231
1970/71							
Students	142,425	75.2	28,538	15.1	18,372	9.7	189,335
Teachers	5,188		909		890		6,987
Institutions	698		82		113		893
Classrooms	4,156		781		617		5,554
1971/72							
Students	145,217	74.8	29,277	15.1	19,701	10.1	194,195
Teachers	5,598		930		970		7,498
Institutions	714		83		131		928
Classrooms	4,496		799		667		5,962
1972/73							
Students	149,274	75.0	29,718	14.9	19,940	10.1	198,932
Teachers	5,740		...		...		...
Institutions	722		84		142		948
Classrooms	4,647		...		...		...
1973/74							
Students	153,528	75.5	29,697	14.6	20,224	9.9	203,449
Teachers	5,862		896		961		7,719
Institutions	728		81		140		949
Classrooms	4,813		790		689		6,292

continued

Table 1
Continued
Education in the West Bank

	<u>Government</u>		<u>UNRWA</u>		<u>Private</u>		<u>Total</u>
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	
1974/75 Students	162,588	76.1	31,054	14.5	20,042	9.4	213,684
Teachers	...		1,063		...		...
Institutions	741		87		143		971
Classrooms	5,013		872		715		6,600
1975/76 Students	174,187	75.8	33,596	14.6	22,026	9.6	229,809
Teachers	...		1,097		...		...
Institutions	765		90		140		995
Classrooms	5,277		935		725		6,937
1976/77 Students	175,627	76.1	34,078	14.8	21,031	9.1	230,736
Teachers	...		...		...		...
Institutions	760		91		184		865
Classrooms	5,235		971		710		6,916

Sources:

Ben-Ari, (1974).
Bregman, (1975).
Israel, (1978b; 1977a; 1976c; 1974d; 1973b; 1972f; 1970a; 1969b; 1969f; 1968a).
United Nations, (1973-1975).

Approximately two-thirds of all students and classes in the West Bank are located in rural areas (Israel, 1969b, 1970a). This corresponds closely to the urban/rural split in the overall population. Table 2 indicates that the provision of government-sponsored education in rural regions, as compared to UNRWA and private facilities, is consistent with the overall provision of government educational facilities (about 80 percent). However, in urban and nomadic regions, government facilities are less prominent in comparison to the two other educational systems.

Approximately 30 percent of the total budget for the West Bank is devoted to educational services and construction (see Table 3). As of 1973/74, the construction budget assumed 3.6 percent of the total approved allocation for education (IL 5.0 million at 1976 prices). By far, teachers' salaries constitute the largest proportion of annual operational expenditures for education.

Educational Requirements

Serious questions exist as to whether these educational facilities are adequate to meet the demand. UNRWA reports that a large percentage of its schools in the West Bank are forced to maintain double shifts to accommodate the increasing student population (United Nations, 1973, 1974, 1975). This phenomenon has been increasing each year, as evidenced in the following percentages:

1973/74	35.4 percent double shifted classes.
1974/75	39.6 percent double shifted classes.
1975/76	41.8 percent double shifted classes.

Double shifting is even more prevalent in the Gaza Strip, where it reached 48.4 percent in 1975/76, and in Syria, where it averages around 90 percent. Double shifting of classes is also prevalent in government-run schools in the West Bank, although not to the extent experienced in

TABLE 2
 Government Provision of Education in the
 West Bank, Urban/Rural Distribution

	Urban (Percent served by Government)	Rural (Percent served by government)	Nomadic (Percent served by government)
1969/70 Students	63.8	80.4	69.0
Classes	59.0	81.5	66.7
Institutions	53.2	84.7	66.7
1970/71 Students	64.1	80.9	72.2
Classes	60.7	81.2	66.7
Institutions	54.2	84.7	66.7

Sources: Israel, (1970a, 1969b).

the UNRWA system (unpublished material provided by Vivian Bull, October 25, 1978). Insufficient physical facilities in both educational systems appear to be impairing maximum benefit from schooling, although, to date, there is no evidence that students have been turned away for lack of space.

Student density in UNRWA schools is somewhat greater, on the average, than in government schools. Inadequacy and overcrowding of facilities is especially felt in the urban areas. As the population under 15 years of age increases, the stress on existing educational facilities grows. However, classroom construction is just barely keeping pace with increased enrollment (see Table 1). Moreover, unpublished materials (from Vivian Bull) indicate that even the inadequacies of physical facilities were overshadowed in the early 1970's by shortages of science and math teachers and high percentages of teachers with inadequate qualifications.

Another indicator of demand for education can be measured by comparing student attendance rates with the existing school age population. Overall, the largest age group in the West Bank consists of the 15 years and under group, which places a heavy burden on the educational system. Table 4 compares the school age population with attendance (both compulsory and noncompulsory) for all educational services. In terms of primary and preparatory schooling, the proportion of the school age population actually attending schools has increased from 80.2 percent in 1969/70 to 96.1 percent in 1975/76. As for noncompulsory secondary schooling, a fairly constant 25 to 27 percent of the relevant population chooses to attend. The consistency of these trends provides an indicator of the probable demand for these types of educational services in the future.

Taking all of these data into account, the physical requirements for adequate government education on the West Bank can be estimated. For our purposes, "adequate" is defined as facilities that would enable 100 percent single shift classes. This estimate will facilitate projections of

TABLE 4
School Age Population and Pupil
Attendance in the West Bank

	<u>School Age Population</u>		<u>Pupil Attendance</u>		<u>Percent Attending</u>	
	<u>5-14 Years^a</u>	<u>15-19 Years^b</u>	<u>Compulsory^c</u>	<u>Secondary^d</u>	<u>Compulsory^c</u>	<u>Secondary^d</u>
1967/68	180,000	52,200	...	...	...	...
1968/69	182,600	55,400	...	...	...	...
1969/70	191,200	59,400	153,377	16,025	80.2	27.0
1970/71	...	...	161,897	17,682	...	...
1971/72	197,000	67,300	178,257	17,547	90.5	26.0
1972/73	196,100	71,300	174,712	18,185	89.0	23.5
1973/74	201,200	76,500	180,067	18,428	89.5	24.1
1974/75	...	...	183,898	19,884	...	...
1975/76	203,800	83,000	195,815	22,697	96.1	27.3
1976/77	...	...	194,975	25,247	...	...

^a Average age groups attending primary and preparatory schools.

^b Average age groups attending secondary schools range from 15 to 17 years.

^c Excluding kindergartens; includes primary and preparatory schools.

^d Excluding teacher training schools.

Sources: Israel, (1976d, 1974b, 1973b, 1972f, 1970a, 1970b).

the need for future investment in construction of additional classrooms. Using proportions of urban/rural/nomadic students per government classroom and adjusting for double shifting that currently occurs, estimates of adequate government school facilities can be calculated.

<u>Type of Region</u>	<u>Average Number of Students Per Government Classroom²</u>	<u>Estimate of Single Shift Classes in Government Schools³</u>	<u>Calculation of Number of Students per Classroom (without double shifting)</u>
Urban Areas	40.2	75%	30.2
Rural Areas	31.9	90%	28.7
Nomadic Areas	33.9	100%	33.9

These adjustments for double shifting assume that the situation in government schools is somewhat better than in the UNRWA schools, and that there is currently a higher proportion of double shifting in urban schools than in rural or nomadic areas.

Assuming an overall attendance rate of 76.2 percent for primary through secondary levels,⁴ estimates of the total number of school age persons required to justify construction of one additional classroom can be derived by region:

<u>Type of Region</u>	<u>Estimate of Total School Age Persons (5-19 years) Required for Each Additional "Adequate" Classroom</u>
Urban area	39.6
Rural area	37.7
Nomadic area	44.5

² Israel (1969b, 1970a).

³ Proportions estimated by CACI on the basis of UNRWA data.

⁴ Calculated by dividing total pupil attendance by total school age population (5-19 years) for 1975/76 from Table 4.

These estimates indicate that for each additional 39.6 persons between the ages of 5 and 19 years in urban areas, an additional classroom is required to maintain "adequate" classroom facilities. Again, "adequate" is defined as 100 percent single shift classes at current students-per-class ratios. In rural communities, 37.7 persons within this age distribution are required, and in nomadic regions, 44.5 persons are required.

Expenditure Estimates for Education

Construction costs for new classrooms can be estimated for each additional 1,000 school age residents, on the basis of these calculation of adequate (single shift) classes.

<u>Estimate of School Age Persons per Additional Adequate Classroom</u>	<u>Number Classrooms Required per 1,000 New School Age Residents (by region)</u>	<u>Cost per Classroom⁵ (IL 1976 prices)</u>	<u>Calculated Construction Cost per 1,000 New School Age Residents (in millions IL)</u>
39.6 (urban)	25.3	42,661	1.08
37.7 (rural)	26.5	42,661	1.13
44.5 (nomadic)	22.5	42,661	0.96

Table 5 presents the average expenditure per student in government schools from 1967/68 to 1973/74 at 1976 prices. The estimate for 1973/74 operational expenses is IL 865.5 per student. Using this per student cost and assuming that the overall attendance rate of school age persons remains constant at its 1975/76 level (76.2 percent, from Table 4), the following annual operational expenditure estimates can be made:

<u>Annual Operational Expenditures per Student (1973/74 base)</u>	<u>Overall Attendance Rate (1975/76 base, in percent)</u>	<u>Calculated Annual Operational Costs per 1,000 New School Age Residents</u>
IL 865.5	76.2	IL 659,511

⁵ Based on construction estimates for 218 classrooms for the West Bank

TABLE 5
 Average Expenditures Per Student,
 Government Schools in the West Bank
 (using implemented regular budget figures
 at constant 1976 prices, IL)

	<u>Average Expenditure Per Student</u>
1967/1968	864.1 ^a
1968/1969	917.3 ^a
1969/1970	812.2
1970/1971	768.3
1971/1972	909.0
1972/1973	1,077.3
1973/1974	865.5 ^a

^a Using approved regular budget figures.

Sources: Data in Tables 1 and 3.

Finally, the number of teachers required per 1,000 new school age residents can be estimated by using the teacher/student ratio in government schools from 1973/74 (0.038 teachers per student, see Table 1) and adjusting for the overall rate:

<u>Number of Teachers Required per Student (at 1973/74 base)</u>	<u>Overall Attendance Rate, (1975/76 base, in percent)</u>	<u>Calculated Number of Teachers per 1,000 New School Age Residents</u>
0.038	76.2	29

This estimate results in class sizes of 26.3 students per teacher.

Evaluation of Estimates

The following estimates have been made for the provision of educational services per 1,000 new school age residents (between 5-19 years old):

- Construction costs
 - (per 1000 urban school age residents)
IL 1.08 million (US \$135,338)
 - (per 1000 rural school age residents)
IL 1.13 million (US \$141,604)
 - (per 1000 nomadic school age residents)
IL 0.96 million (US \$120,301)
- Annual operational costs--IL 695,511 (US \$87,157)
- Teachers--29

In making these estimates several assumptions have been made:

- Currently provided services will be maintained for current residents.

between 1971 and 1974 at IL 9.3 million (1976 prices) (Bull, 1975). This averages to IL 42,661 per classroom.

- Teacher to student ratios in 1973/74 can be used to estimate provision of new services over the next five years.
- Operational expenditures per student in 1973/74 will be applied to the provision of services over the next five years.
- Capital cost estimates are based on construction of a sufficient number of classrooms to avoid double-shifting for new residents over the next five years.
- Private and UNRWA schools will maintain educational services at current levels for their current student populations over the next five years. This assumption implies that the government will not have to assume costs for these services over the forecast period. This assumption is reasonable since UNRWA educational services have been maintained at current levels despite recent overall budgetary cuts, and UNRWA or a newly chartered authority is likely to maintain its services until there is a resolution of the refugee problems, which is not likely over the five year horizon.

HEALTH SERVICES: WEST BANK.

Current Status

There are three providers of health services in the West Bank: the government, UNRWA, and private institutions. However, government-run institutions command a predominant share of the facilities, personnel, and public usage.⁶ Government health care services include nine hospitals, 109 clinics (as of 1973), 27 mother-child centers, three laboratories, three tuberculosis clinics, and various preventive and promotive health services. UNRWA facilities include clinics, mother-child welfare stations, and various disease control and environmental health programs in

⁶ Most of the government-provided statistics on health care in this section are confirmed in a report by the Jordan Medical Council (1976).

the refugee camps. UNRWA patients requiring hospitalization are usually referred to government or private facilities, where a number of hospital beds are available for UNRWA referrals.

As Table 6 indicates, the number of hospitals in the West Bank has declined by about one-third since the Israeli occupation. This is due primarily to Israeli restructuring and redistribution of health care delivery (Pielemeier, 1975). Small facilities were closed or combined with others, with an emphasis on developing comprehensive regional health care centers to serve rural populations. Many of the remaining facilities have been modernized and specialized hospitals have been built or converted by the government. The number of total hospital beds per 1,000 population has remained fairly constant (see Table 6).

The medical personnel slots are staffed entirely by Arab professionals. While the number of doctors declined after the 1967 war, pre-war levels were resumed by 1969. As of 1974, 600-800 West Bank students were studying medicine abroad and may serve to increase the number of qualified medical personnel in the future (Stebbing, 1977). Maldistributions of physicians in Jenin and Hebron appear to have been corrected, and the total number of doctors in the West Bank appears to have reached about 200 (in government and nongovernment facilities). This amounts to about three physicians per 10,000 population (in 1973) (Pielemeier, 1975; Stebbing, 1977).

Bed occupancy rates have increased since 1967, and are typical of those in most less developed countries (World Bank, 1975a). Israeli hospitals are open to West Bank residents, treating 1,100 West Bank patients in 1973/74. In 1973, the government instituted a health insurance and fee system to prepay all medical services for heads of households and offer medical services at a 50 percent fee schedule for their families (at U.S. \$1.50/month) (Pielemeier, 1975).

TABLE 6
Indices of Health Services, West Bank

<u>Facilities</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
No. of Hospitals - Total	24 ^a	16	...	15	14	16	16	16	17	17
- Government	...	8	...	8	8	8	8	9	9	9
No. of Hospital Beds - Total	2,085 ^a	1,281	...	1,302	1,282	1,409	1,393	1,342	1,375	1,328
- Government ^b	...	953	...	1,042	1,006	1,016	992	941	976	938
Total Beds/1,000 population	2.4 ^a			2.1	2.0	2.3	2.2	2.0	2.1	2.0
No. of Hospital Beds available to UNRWA patients	...	...	...	...	...	...	323	296	294	296
Total No. of Clinics	...	...	...	186	132	146	...	...	...	...
<u>Personnel</u>										
No. of Doctors - Government Institutions	65	48	68	74	...	103	116	...	...	...
Government Doctors/1,000 population	.08	.09	.11	.12	...	.16	.18	...	...	...
No. of Nurses-Government Institutions	332	237	348	392	...	450	342	...	...	...
Government Nurses/1,000 population	.37	.42	.58	.62	...	.68	.53	...	...	...
Total Medical Staff/Bed - Government Institutions	...	.30	...	.44	.39	.54	.46	.52	...	...

^a Based on 1964 Jordanian data.

^b Includes Bethlehem Mental Hospital.

continued

Table 6
Indices of Health Services, West Bank
Continued

<u>Usage</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
Admissions - Total (in 1000's)	43.1	42.5	43.2	45.9	50.4	52.8	52.7
- Government (in 1000's)	33.9	32.0	31.1	33.0	37.1	40.7	38.5
Occupancy Rate - Government (%)	...	50.6	...	74.1	72.4	71.4	77.1	83.3	84.6	85.5
- Private (%)	...	41.4	...	63.5	71.1	69.1	70.0	74.0	68.9	68.8

Sources:

Israel, Administered Territories Statistics Quarterly, various issues; 1974d; 1972f; 1970d; 1967a.
 Jordan Medical Council, (1976).
 Pielemeier, (1975).
 Shye, (1972).

Annual health services expenditures by the government have increased since 1969 (see Table 7). The per capita allocation has also increased to about IL 77.1 in 1972/73.

Health Services Requirements

Are these services adequate to meet the population's needs? Determination of adequacy depends on the scope of health care objectives. The UNRWA policy is to maintain services at a level equal to that of local Arab nations in comparable economic circumstances (Pielemeier, 1975). The government's goal is to maintain at least the prewar levels of service and to aim at achieving levels comparable to those received by Arabs in Israel (Israel, 1972c). In comparison to other Arab nations, the West Bank and Gaza appear somewhat deficient in the number of physicians per 10,000 population, but at satisfactory levels in terms of nurses, hospital beds, and occupancy rates (see Table 8).

From the point of view of two observers (Pielemeier, 1975; Stebbing, 1977), the health status of the population has improved rapidly in recent years. The health care structure is modern and likely to be sufficient for a period of years, providing that existing institutions can keep step with development needs, population increases remain at current rates, and Israeli services remain available. Death rates have declined overall. UNRWA and government disease control, immunization, and environmental health programs have reduced the incidence of disease.

Many problems remain. There is a critical shortage of qualified nursing personnel, which was highlighted in a special World Health Organization report on the West Bank (Pielemeier, 1975). Planning and cooperation among health care providers is lacking. In addition, limited post-graduate medical education in the West Bank slows trends toward modernization of techniques and skills.

TABLE 7
Annual Health Services Budget: West Bank
(in 1976 prices)

Regular Operational Budget

	<u>Approved Budget</u> <u>(in millions IL)</u>	<u>Implemented Budget</u> <u>(in millions IL)</u>	<u>Per Capita</u> <u>(IL)</u>	<u>Approved</u> <u>Development Budget</u> <u>(in millions IL)</u>
1967/68	15.8	...	...	...
1968/69	23.3	...	...	...
1969/70	24.4	27.7	46.2	...
1970/71	26.6	32.4	53.1	...
1971/72	26.0	36.1	57.7	...
1972/73	35.9	49.3	77.1	1.2
1973/74	41.7	...	...	10.5

Sources:

Israel. (1974d; 1972f; 1970d).
 Shye (1972).

TABLE 8

Comparison of Health Services With Other Arab Nations

	<u>West Bank (1974)</u>	<u>Gaza and North Sinai (1974)</u>	<u>Jordan (1975)</u>	<u>Syria (1975)</u>	<u>Saudi Arabia (1975)</u>	<u>Kuwait (1975)</u>
Doctors/10,000 population	3.0 ^a	2.9 ^b	3.9	3.3	4.0	10.9
Nurses/10,000 population	5.3 ^b	7.6 ^b	1.7	1.7	--	43.7
Hospital Beds/10,000 population	20.4 (1975)	26.2 (1975)	10.7	9.3	11.7	42.7
Bed Occupancy Rate (%)	83.3 (1975)	75.7 (1975)	60.3 (1974)	64.7	--	--

^a Estimate of total doctors per 10,000 population (Stebbing, 1977).

^b Calculation based on doctors and nurses in government institutions only.

Source: World Health Organization (1977).

On the basis of these current trends and observations of health care in the West Bank, the following facilities and personnel can be considered minimally adequate to serve each additional 10,000 inhabitants:⁷

- 0.25 Hospitals/10,000 population.
- 19.5 Hospital beds/10,000 population.
- 3.0 Doctors/10,000 population.
- 5.3 Nurses/10,000 population.
- 2.3 Clinics/10,000 population.

Expenditure Estimates for Health Care Services

Recent construction and operational costs for a 105-bed hospital in Nablus can be used to develop expenditure parameters for future health care requirements (Tahal Consulting Engineers, 1971). The total investment costs for construction, design, medical equipment, staff training, and contingencies amounted to IL 18.6 million (at 1976 prices) for the 105-bed hospital. This brings the capital investment cost per hospital bed to IL 177,143 each.

At present, there is one clinic per 4,348 inhabitants. To maintain this proportion, the Israeli authorities (Tahal Consulting Engineers, 1971) have planned for the development of 70 to 80 new clinics (approximately one clinic for six villages). Estimates for construction costs are IL 556,500 (in 1976 prices) each.

Recurrent operational expenditures include salaries, maintenance, medicines, and utilities. Annual government expenditures for these items are found in the regular budget (see Table 7) and reached a per capita cost of IL 77.1 by 1972/3 (in 1976 prices).

⁷ Based on calculations of 1976/77 figures from Tables 6 and 8 and estimates of population.

Summary of Costs

The following capital costs have been estimated per 10,000 new residents:

<u>Requirements/ 10,000 Persons</u>	<u>Per Unit Cost Estimate</u>	<u>Cost/10,000 Persons</u>	
		<u>IL</u>	<u>U.S.\$</u>
19.5 hospital beds	IL 177,143 ⁸	3.45 million	432,868
2.3 clinics	IL 556,500	1.28 million	160,395

In addition, recurrent annual operational costs have also been estimated at IL 77.1 per capita or IL 771,000 per 10,000 persons.

On the basis of current trends, the following medical personnel are also required per 10,000 persons:

- 3.0 Doctors.
- 5.3 Nurses.

These cost estimates are based on several assumptions:

- Current provision of health services is minimally adequate for the population.
- Provision of health services to additional residents can be based on levels of service currently provided.
- UNRWA health care will continue to be provided to the current refugee population at current levels. Thus, the government will not have to incur the costs or provide the services presently dispensed by UNRWA, or a continuing authority, at least for the next five years.

⁸ This per bed estimate includes all construction, design, medical equipment, staff training, and contingency costs entailed in capital investment for hospital facilities.

HOUSING: WEST BANK.

Current Status

Housing in the West Bank consists primarily of single-family dwelling units of stone and cement block. The construction process is highly labor intensive and has been financed primarily by private sources, although a major exception is refugee housing financed by UNRWA. However, it is assumed that a large future in-migration of settlers will require massive housing coordination and construction efforts that may increase public housing activity substantially. While projections for housing are estimated in this section, the results will be carried to the chapter on construction for inclusion in the investment requirements forecast.

The "household" is the available measurement unit to evaluate the current status of housing in the West Bank. The "household" is defined as "a group of people living permanently at one place and having a common budget of expenses" (Israel, 1976d: 53). By this definition, a household can incorporate the range from individuals living alone to large extended families residing in the same dwelling. Thus, data on households, which is gathered through census and survey mechanisms, are assumed to be proxies for the number of dwelling units being occupied in the West Bank.

Table 9 presents several salient household characteristics. The total number of households has fluctuated since 1967. In 1976 it amounted to 101,652 households or dwellings occupied. Over the ten year span, the average number of persons per household has increased from 5.0 in 1967 to 6.6 in 1976.⁹ At the same time, however, median dwelling density

⁹ There are several arguments that both support and cast doubt on the reliability of this increase in average household size. Household size may grow as married males leave the West Bank for work abroad; their families that are left behind often move in with other relatives creating a larger extended family household (in discussion with Vivian Bull). Too,

TABLE 9
Households in The West Bank

		<u>Number of Households</u>	<u>Average Persons per Household</u>	<u>Median Density (Persons per room)</u>
1967	Towns	30,332	5.1	...
	Villages	77,701	5.0	...
	Camps	11,115	5.0	...
	Total	119,153	5.0	...
1971	Towns	28,600	5.9	2.7
	Villages	68,200	5.8	3.6
	Camps	8,700 ^a	...	...
	Total	105,500	5.8	3.2
1972	Towns	27,500	6.0	2.6
	Villages	69,100	6.0	3.0
	Camps	8,900 ^a	...	...
	Total	105,500	6.0	3.0
1973	Towns	27,400	6.3	2.9
	Villages	65,200	6.1	3.4
	Camps	8,600 ^a	...	...
	Total	101,200	6.1	3.2
1974	Towns	26,800	6.3	2.4
	Villages	65,300	6.1	3.0
	Camps	9,100 ^a	...	...
	Total	101,200	6.1	3.2
1975	Towns	...	6.4	2.8
	Villages	...	6.3	3.3
	Total	106,469 ^b	6.4	3.2
1976	Towns	...	6.6	2.7
	Villages	...	6.5	3.3
	Total	101,652 ^b	6.6	3.1

^a Extrapolated from total household figures.

^b Extrapolated from total population and person per household figures.

Sources: Israel, (1977b, 1976d, 1975b, 1974b, 1973b, 1972d, 1968b, 1967c).

has remained constant at about 3.1 persons per room. If these figures are accurate, the average number of rooms per dwelling has probably increased slightly.

The distribution of households in towns, villages, and refugee camps is also presented in Table 9. As of 1974, 26 percent were residing in towns, 65 percent in villages, and approximately 9 percent in camps. There is only slight variation in household size among these regional groupings (all, except for refugee camps, on which there is no data, averaged 6.6 persons per household in 1976). There is some differential on median density among the regional groupings. Dwelling density appears to be greater in villages (3.3 in 1976) than in towns (2.7 in 1976).

The rate of increase in residential construction starts has been extensive (Table 10). The virtual halt in construction after the 1967 war was followed by gradual expansion until prewar levels were reached in 1971.¹⁰ Since then residential construction starts have almost trebled. Moreover, the figures in Table 10 represent only construction for which official building permits were obtained; they do not include estimates of private residential construction pursued on a self-help basis after hours and without official permit. According to the Israel Economist (1976), this unofficial construction amounted to about 50,000 square meters in 1976 alone -- approximately 10 percent of all residential starts.

as entire wealthier families emigrate from the West Bank, the poorer families that remain may constitute larger household units on the average or live in extended family situations for economic reasons. On the other hand, the low household size in 1967 may be a reflection of acknowledged inaccuracies and unreliabilities in the 1967 census data (Israel, 1967d). Moreover, initially low household size merely may be an artifact reflecting the fears of West Bank inhabitants that accurate admission of household size would increase the taxes levied against them by the Israeli military authority (in discussion with Vivian Bull).

¹⁰ Construction area completed in the West Bank in 1964 amounted to 150,000 square meters, of which the major part was for residential dwellings (Israel, 1967d).

TABLE 10
Residential Construction Starts,
West Bank

	<u>Residential Construction Starts (in 1,000 square meters)</u>	<u>Percent of Total Construction Starts</u>
1967	41	95
1968	51	76
1969	89	72
1970	101	72
1971	173	81
1972	282	80
1973	288	79
1974	452	81
1975	496	85

Source: Calculated from Bank of Israel (1976).

Adequacy

Do these figures suggest current adequacy of housing facilities in the West Bank? Accurate estimates of the number of existing dwellings available for the given number of independent households cannot be calculated since the initial stock of housing units in 1967 is not known.¹¹ Thus, from a quantitative perspective, it is difficult to assess currently whether there are sufficient numbers of adequate dwelling spaces to accommodate every household. However, overcrowding and insufficient housing conditions are more apparent in the refugee camps than in the villages or towns (United Nations, 1977; discussion with Vivian Bull, November 8, 1978). The share of permanent housing in the West Bank (built of stone, bricks, and cement blocks) has risen from 85 percent in 1961 to 95 percent in 1972 (Bregman, 1975). This indicates a decline in the number of temporary dwellings including mud huts, caves, shacks, and tents. On the other hand, while housing services such as provision of electricity, running water, and toilet facilities, have increased since 1967, the majority of households still do without electricity and running water (Table 11). There is a wide differential in housing services between the towns and villages. Overall, housing appears to be less adequate in villages and refugee camps than in towns.

Expenditure Estimates for Housing

Housing construction costs can be estimated by determining the average area required per dwelling for the average household. Shye (1972) and Tuma and Drabkin (1978) estimate that 10 square meters per person is adequate living space. Thus, for an average household of 6.6 persons, the required dwelling space should be at least 66 square meters.¹²

¹¹ There is no indication as to the number of dwellings abandoned by immigrants or destroyed by war. Moreover, there is no indication of housing shortages or surpluses in the pre-1967 period.

¹² This dwelling area per person is considered to be above average for most LDC's (World Bank, 1975b; Jones, 1969), but is considerably

TABLE 11
Dwelling Facilities, West Bank

		<u>Percent With Electricity</u>	<u>Percent With Running Water^a</u>	<u>Percent With Toilet Facilities</u>
1967	Total	23.1	24.5	58.4
1972	Towns	80.9	68.6	99.2
	Villages	18.4	15.9	73.2
	Total	34.9	31.4	81.2
1974	Towns	94.8	78.5	98.8
	Villages	28.6	23.1	69.0
	Total	45.8	40.6	78.9

^a Tap in courtyard or in dwelling.

Sources: Israel, (1975b, 1973b, 1967d).

Bregman (1975) estimates that residential construction cost per square meter in the West Bank is half that in Israel, or IL 835 at 1976 prices (excluding land costs). This estimate compares favorably with Jones' estimates (1969) for LDC construction costs for one-family low-quality, concrete block residences.

Given these figures, the estimated cost of constructing an average dwelling of 66 square meters at 1976 prices is IL 55,110 or U.S. \$6,906 each.¹³

<u>Dwelling Space Per Household</u>	<u>Construction Costs per m²</u>	<u>Estimated Cost Per Dwelling</u>
66 m ²	IL 835	IL 55,110 (U.S. \$6,906)

On this basis, the estimated housing construction costs per 1,000 additional residents (or 152 households of 6.6 persons each) approximates IL 8.38 million or U.S. \$1.05 million at 1976 prices.

The number of construction workers required to build 152 dwelling units for 1,000 migrants (a total of 10,032 square meters) depends on the productivity level per worker. Calculations in the construction chapter of this report indicate that the average yearly construction output per employed laborer is 71.1 square meters in the West Bank as of 1975. At that rate, 141 construction workers would be required to build dwellings to accommodate each 1,000 new residents.

However, this estimate does not take into account the additional 10 percent of residential construction that occurs without permit, and hence,

smaller than the average dwelling area constructed in the West Bank during 1976 (89.9 square meters) (Israel, 1977b).

¹³ This estimate excludes land costs, but presumably includes overhead, contingency costs, and utility hookups.

is not counted in the official figures (Israel Economist, 1976). This type of after-hours construction is becoming more prevalent in the West Bank as residents' savings increasingly are being invested in real estate (in discussion with Vivian Bull, November 8, 1978). If this phenomenon continues, the number of employed laborers required per 1,000 new migrants may range between 120 to 130 workers.

Evaluation of Costs

To summarize, the following housing costs have been estimated per 1,000 additional residents:

- IL 8.38 million (U.S. \$1.05 million).
- 120-130 construction workers required.¹⁴

These expenditure estimates are based on several assumptions:

- The estimates are based solely on the housing requirements for a new incoming population.
- The existing stock of housing is sufficient for the current population. There are no significant housing shortages or surpluses.¹⁵
- The quality of housing provided to the migrant is comparable in size and construction to the traditional stone and cement dwelling found in the West Bank.
- UNRWA housing in the refugee camps will continue to be maintained for the current refugee population in the West Bank. This assumption is reasonable given that UNRWA or a continuing authority is likely to maintain services until a settlement concerning the refugee situation is reached (United Nations, 1977).

¹⁴ Labor costs for these workers are included in the expenditure estimate.

¹⁵ This assumption is required because it is not possible to determine the current stock of available housing in the West Bank.

ELECTRICITY: WEST BANK.

Current Status

The West Bank is supplied electricity by a dozen municipal power stations, one private company -- the East Jerusalem Electricity Company -- and by Israel's national power grid. The municipal stations are moderate-sized autogeneration facilities,¹⁶ with diesel-powered generation. These local systems are not interconnected, and date mainly from the 1950's and before (IBRD, 1957: 348ff). The East Jerusalem Electricity Company, formerly the Jerusalem Electric and Public Services Corporation, was granted a concession during the British mandate covering the area within a radius of 20 miles from the center of Jerusalem (IBRD, 1957: 352). It still provides much of the power required by the municipalities of Ramallah, Bethlehem, Beit Jala, and Jericho, presumably in addition to East Jerusalem (Israel, 1974d: 142).

Table 12 provides information on the development of generating capacity in the West Bank between 1955 and 1968, the latest year for which complete data is available prior to incorporation of the Israeli power grid. Two points stand out. The first is the extremely low generating capacity per capita figures. These figures can be compared with estimates of about 75 kW/capita for Israel, 8.0 kW/capita for Libya, or 3.25 kW/capita for Morocco.¹⁷ Second, note the inefficient distribution of generating capacity among the municipalities in 1968 (comparing "capacity" and "peak demand" columns). Some towns, such as Jenin and Nablus, appear to have had considerable excess capacity, while others, Tulkarm and Hebron for example, possessed capacity barely adequate to meet peak demand.

¹⁶ The term autogeneration refers to power production by isolated generators, commonly powered by diesel engines, small steam turbines or micro-hydro turbines. The size of these generators can range from as low as 5 kilowatts (kW) to over 1,500 kW (World Bank, 1975d: 18).

¹⁷ Computed from data contained in United Nations (1976b: 1-4, 98-101).

TABLE 12
Electricity Generating Capacity
in the West Bank

Producer/Municipality	1955			1968			
	Capacity (kW)	Population ^a	Capacity Per Capita (kW)	Capacity (kW)	Peak Demand (kW)	Population ^a	Capacity Per Capita (kW)
East Jerusalem Elec. Co. (E. Jerusalem, Ramallah, Bethlehem, Jericho)	1,688	136,000	0.012	13,300	7,500	82,884 ^b	0.160
Nablus	900	60,000	0.015	3,500	1,900	41,799	0.084
Jenin	32	14,000	0.002	895	350	8,346	0.107
Hebron	148	39,000	0.004	900	700	38,309	0.023
Tulkarm	250	24,000	0.010	650	600	10,255	0.063
Qalqiliya	--	...	--	550	130	8,926	0.062
Slafit	--	...	--	160	60	...	...
Ya'abed	--	...	--	140	45	...	...

^a Population of municipalities receiving service.

^b Excludes East Jerusalem, but includes Jerusalem District, plus the towns of Ramallah, Bethlehem, Beit Jala, Jericho, and Bira.

Sources: IBRD (1957: 354), Israel (1967c: 36,37), Israel (1969f: 53).

Expansion of the Israeli Power Grid

In 1969, a Ministry of Defense publication (Israel, 1969f: 53) stated that there had as yet been no attempt by the Israeli authorities to alter existing electricity arrangements in the West Bank. However, it appears that in 1971, Israel began to connect West Bank municipalities into the Israeli grid, because the figures indicate that consumption in certain municipalities began to exceed their capacity in that year.¹⁸

Israeli budget figures show that in 1972/73, the Military Authority devoted almost IL 500,000 to electricity development projects. This is roughly enough to provide 15 kilometers of transmission line. In 1973/74, the figure rose to IL 1.6 million, or enough to erect about 55 km of transmission line¹⁹ (Israel, 1974d: 39). This was apparently the cost of linking up the towns of Hebron and Tulkarm with the Israeli grid. Unfortunately, there are no budget figures available since 1973/74 to indicate the extent to which the West Bank may now rely upon Israeli power. At a minimum, however, it seems likely that those towns near the border - Jenin, Qalqiliya, and Ramallah for example, in addition to Hebron, Tulkarm and possibly Bethlehem now receive much, if not most, of their power in this way.

¹⁸ The Israeli Military Authority has enacted regulations requiring official approval to install additional generating capacity in the territories. Meanwhile, the supply situation has become critical, perhaps inducing the municipalities to request a link-up with Israel's grid. A notable exception to this rule occurred last summer, when Nablus received permission to augment its generating capacity (discussion with Vivian Bull, November, 1978).

¹⁹ Calculated on the basis of \$7,000 per kilometer of transmission line.

Future Requirements and Estimates of Costs

The Alternatives. The electrical system of the West Bank could evolve along one of three different courses:

- Continue and ultimately complete integration with the Israeli national grid network,
- Expand indigenous autogeneration facilities, or
- Develop and expand a largely independent and unified West Bank grid network.

Each of these three possibilities entails different costs and offers different potential benefits to the West Bank. Integration with Israel's grid would require little, if any, investment in generation facilities. Given the relative scale of Israeli power generation, this option would afford the cheapest power, in terms of price per kWh, and could provide a significant stimulus to industrial development in the West Bank. It would seem the logical choice were it not for the possible political issue of excessive dependency upon Israel.

The second alternative, autogeneration, involves relatively low levels of capital investment, but fuel, operation, and maintenance costs are usually significantly higher than for a grid system.²⁰ The higher operating costs and the smaller scale of general production result in higher consumer prices, particularly for large consumers, such as industry and modern agriculture. This would place major constraints on the future development of these sectors.

The third alternative, the creation of a West Bank grid system, represents the highest capital costs of the three, but offers the potential of

²⁰ The World Bank (1975: 75-77) cites typical generation (running) costs of 0.5¢ per kWh for a 50kW grid system versus 6¢ per kWh for an autogeneration system of the same capacity.

relatively abundant and inexpensive power controlled by the West Bankers themselves. As opposed to hook-up with the Israeli grid, generation costs for a West Bank grid would constitute a significant portion of the total. This would be partially offset, however, by somewhat lower requirements for transmission lines. Local distribution costs, which include extension of the low-voltage network, house connections, and meters, would be about the same under all three alternative systems. This third alternative forms the basis of the cost estimates that follow.

Service

Components and their Costs. Establishing or extending a grid network requires investment in the three functional areas of generation, transmission, and subtransmission/distribution. Roughly speaking, generation costs are a function of total output capacity. Transmission costs reflect the distance between the producing and consuming centers, and subtransmission/distribution costs (hereafter, simply distribution) vary primarily according to the number of customer link-ups. We therefore need six areas of information to estimate the system's total capital costs:

1. Generator cost per kW of capacity,
2. Additional capacity necessary,
3. Transmission line cost per kilometer,
4. Total length of additional lines,
5. Distribution cost per additional consumer, and
6. Number of additional consumers.

Before beginning to tally the costs, it is necessary to set forth a few major assumptions. First, as noted above, we are assuming the cost to be that of purchasing and installing all facilities necessary for a public grid network. Second, given the considerable disparity between

urban and rural supply costs,²¹ we will assume that all new demand for electricity comes from the larger towns in the West Bank. This is not completely unrealistic, since most returning migrants will probably settle in areas offering both jobs and public services, which are the towns.

Third, as of 1974, almost 95 percent of all households in West Bank towns had electricity (Israel, 1976d: 701). We will relax this figure somewhat and assume an "adequate" service level of 90 percent of all households in towns. Fourth, we will adopt a consumption standard of adequacy somewhat higher than that currently prevailing in the West Bank, but commensurate with urban conditions typically found in other developing countries.

Average annual consumption of electricity per consumer²² in the West Bank has typically hovered around the 1000 kWh/year point.²³ This figure is extremely low, even for an area with a fairly low GDP per capita, and reflects, above all, minimal industrial consumption of electricity.²⁴

* We will therefore assume that all electricity consumption in the West Bank is residential, that is, that household consumption is in the neighborhood of 1,000 kWh per year.

²¹ The World Bank (1975d: 26) cites a typical disparity of approximately 200 percent between average total costs per kWh of urban versus rural supplies.

²² A consumer is a household, industrial, or commercial unit receiving electricity and being billed by the utility.

²³ Computed from Israel (1972f: 181), assuming a .90 consumption/production ratio.

²⁴ By way of comparison, Jordan averages about 3,000 kWh per consumer per year and Israel's overall average exceeds 6,000 kWh/year. Israeli households consumed an average of 1,900 kWh per year in 1969 (Israel, 1972a: 115; Jordan, 1976: 390). The World Bank (1975: 25) cites typical levels of per consumer annual consumption in urban areas of developing countries ranging from 2,000 kWh (Ethiopia) to 6,000 kWh (Costa Rica).

In summary, then, the following is assumed with regards to overall electricity consumption:

- Ninety percent of all households in towns will receive electricity, and
- Households serviced will consume an average of 1,000 kWh per year.

Cost Assumptions. Cost estimates will be based on the following simple relationship:

$$\begin{aligned} \text{Total Cost} &= \text{Generator Costs} + \text{Transmission Costs} \\ &+ \text{Distribution Costs} \end{aligned}$$

Taking each of the components in turn, generator costs, which are the cost of constructing new power stations, are assumed to be \$35 per kW of generating capacity (IL 279).²⁵ Transmission network costs will be assumed to run an average of \$7,000 per kilometer (IL 55,860), including substations.²⁶ Finally, distribution and connection costs are assumed to be in the neighborhood of \$140 per household serviced (IL 997.5).²⁷ These assumptions underlie the overall cost estimating procedure shown in Table 13.

²⁵ This estimate is based on a consideration of general costs calculated for other developing countries. New power stations in Tunisia, for example, are estimated to run \$37 per kW (Turvey, 1977: 79). Jordan's current five-year plan (1976-1980) assumes generator costs in the neighborhood of \$34-46 per kW (Jordan, 1976: 400).

²⁶ In 1973, it cost about \$400,000 to erect approximately 65 kilometers of high-tension transmission line in the West Bank (computed from Israel, 1974d: 142). This comes out to \$6,153 per km, which can be inflated to \$7,000 in 1976 prices. Similar costs for Jordan run just under \$5,000 per kilometer, reflecting the easier terrain and superior road network (Jordan, 1976: 407).

²⁷ Computations based on the West Bank's municipal development budget data yield an estimate of \$165 per additional household serviced (computed from Israel, Statistical Abstract, various issues). The World Bank (1975: 26) suggests \$100 per consumer, assuming a higher level of

TABLE 13
Electricity Cost
Estimation: Residential Use

<u>Net Increase In Population^a</u>	<u>Number of Additional Households^b</u>	<u>Number of Additional Consuming Households^c</u>	<u>Additional Annual Consumption^d (kWh)</u>	<u>Additional Required Generating Capacity^e (kW)</u>	<u>Generation Cost Per KW Gener- ating Capacity^f (\$U.S.)</u>	<u>(A) Total Gener- ator Costs (\$U.S.)</u>
100,000	16,667	15,000	15,000,000	5,025	\$35	\$175,875

<u>Estimated Length Additional Transmission Lines Needed^g (km)</u>	<u>Cost Per Kilometer^f (\$U.S.)</u>	<u>(B) Total Trans- mission Facility Costs (\$U.S.)</u>	<u>Distribution Costs Per Additional^f Household^f (\$U.S.)</u>	<u>(C) Total Distri- bution Costs (\$U.S.)</u>	<u>Total Cost (A+B+C)</u>
75	\$7,000	525,000	\$145	\$2,175,000	\$2,875,875

^a Using example data for population growth, not actual forecast. Amounts are constant 1976 dollars.

^b Assuming six persons per household.

^c At 90% of total households.

^d Assuming 1,000 kWh per year per household.

^e Determined by $0.000335 \times$ annual consumption in kWh, based on computations on data found in Ministry of Defence (1969: 53).

^f Assumption discussed in text.

^g Should be sufficient to interconnect all major towns in West Bank.

As can be seen, the total cost of developing additional facilities to service the domestic needs of 100,000 additional persons is roughly 2.875 million. This works out to \$28.75 (IL 229) per capita, or \$191.72 (IL 1530) per household serviced.

On top of this must be added the costs for satisfying the potential industrial demand resulting from an increase in population, and consistent with an overall 8 percent growth objective. There is virtually no data regarding industrial electricity consumption in the West Bank. We can, however, arrive at a rough estimate by assuming that industrial load will equal the domestic load for a population increase in the neighborhood of 100,000 settlers.²⁸ We will therefore assume that additional generator costs to satisfy this industrial demand will be \$175,875 (IL 1,403,483). This marginal increase in load should have little effect on requirements for transmission lines, and will be assumed to involve no additional cost over the requirements already set forth for residential use.

Estimating subtransmission and local distribution costs to the industrial sites is somewhat less certain. There will, of course, be fewer link-ups required than is the case for residences, but they will tend to be of medium voltage, and thus more expensive per connection. Overall, it would appear that these costs for industry might run in the neighborhood of one-fifth of the residential costs, or \$435,000 (IL 3,471,300). This yields a total additional cost for industrial and commercial use of \$610,875. Assuming a 40 percent labor participation

average consumption and probably greater housing density than are found in the West Bank. Thus, a compromise of \$140 per household appears reasonable.

²⁸ This assumption, used to prepare estimates of future electricity requirements for Jordan in the late 1950's, is cited by IBRD (1957: 355).

rate out of the 100,000 new settlers, capital costs for electricity per workplace are \$15.27.²⁹

Thus, the total additional capital cost requirements for both residential and industrial-commercial purposes amounts to \$3.486 million or almost \$35 per capita. Table 14 compares CACI's per capita estimate for accommodating the electricity requirements of an additional 100,000 people in the West Bank, with similar existing estimates.

A cursory examination of the GDP per capita and electrical utility costs per capita for El Salvador, Turkey, Ireland, and the United Kingdom reveals a fairly strong correlation between the two figures. As GDP per capita increases, electrical utility costs per capita also increase. CACI's estimate bears close resemblance to this relationship. However, this relationship was apparently overlooked by Tuma and Darin-Drabkin, who estimated per capita costs for the West Bank and Gaza Strip at a level between that of Ireland and the United Kingdom. CACI's estimate may prove to be somewhat on the conservative side if industrial demand expands rapidly.³⁰

Operating costs. Operating costs for West Bank electricity supplies can be estimated, albeit only very roughly, by comparing electricity expenditures in the ordinary budgets of the municipalities with the number of

²⁹ In a study prepared by an Israeli consulting firm, electricity costs of about \$5 per workplace in 1970 were calculated, assuming partial reliance upon Israeli grid supplies (Tahal Consulting Engineers, 1971: 12). This inflates to about \$9.00 per workplace in 1976 prices.

³⁰ The reader will note that the preceding computations are based only upon population increase and do not include replacement of capital stocks due to depreciation. Since we do not know the current extent of capital stocks, we cannot accurately take this factor into account. Given that the typical working life of autogeneration equipment is only about 20 years, and there has been little recent addition to capital stocks due to Israeli regulations, depreciation could be quite high (World Bank 1975d).

TABLE 14
Comparison of Estimates of Average
Capital Costs of Urban Electrical Facilities

Source	Year of Estimate	Country or Region	1976 GDP Per Capita at 1976 Prices ^a	Average Capital Cost Per Capita of Electrical Facilities at 1976 Prices	Notes
United Nations (1973)	1968	Turkey	\$1,016	\$ 98	\$116, including land cost
United Nations (1973)	1968	Ireland	2,468	107	Uncertain if land costs included.
Stone (1973)	1967	United Kingdom	3,950	365	Assuming half of houses have electric central heating and a doubling of industrial usage.
World Bank (1975 ^d)	1972	El Salvador ^c	530	61 ^d	Costs relatively high due to rural nature of project
Tuma and Darin-Drabkin (1978)	1977?	West Bank and Gaza	apx. 900	283 ^b	See discussion of apparent method of estimation in text.
CACI	1978	West Bank	apx. 900	35	- - -

^a Computed from International Financial Statistics and U.S. Department of State (1978: Table 1).

^b Given as \$300 in what are apparently 1977 prices. Assumed an influx of 1 million Palestinians.

^c Rural electrification (not urban) with supplies provided by public grid.

^d Assuming an average of ten persons per consuming household.

Sources: IMF (1978), Stone (1973: 120), Tuma and Darin-Drabkin (1978: 86,87), United Nations (1973: 168, 170), U.S. Department of State (1978: Table 1), World Bank (1975d: 75).

households receiving service.³¹ Computing this ratio for 1976 yields an average expenditure of (IL 893) per household receiving electricity in a municipality.³² Assuming an average of 6 persons per household this would imply an annual operating cost of \$19 (IL 149) per capita per consuming household.

Summary of Forecast

On the basis of all the assumptions concerning provision of additional electric services discussed above, the following cost estimates have been made:

<u>Item</u>	<u>Cost (U.S.\$)</u>	<u>Cost (IL)</u>
Capital costs (per capita)	28.75	229.4
Capital costs (per household serviced)	191.72	1,529.9
Additional capital costs (for industrial and commercial use)	610,875	4.87 million
Additional costs (per workplace)	15.27	121.9
Total per capita capital costs (for residential and industrial-commercial uses)	35.00	297.3
Annual operating costs (per household)	111.00	893
Annual operating costs (per capita per consuming household)	19.00	149

³¹ Since 1970, ordinary budget expenditures on electricity service by municipalities have increased by an average of 25 percent per year in real terms. Meanwhile, the number of households receiving electricity has increased by only about 5 percent per year. This large differential in growth rates is probably the result of several factors, including higher fuel costs, higher levels of consumption per household, aging capital stock causing more frequent breakdowns and higher transmission losses, and possibly a slight increase in industrial consumption of electricity (computed from Statistical Abstract, various issues).

³² Computed from Israel, (1976d: 702), (1977b: 741).

DOMESTIC AND INDUSTRIAL WATER SUPPLIES: WEST BANK.

Current Situation: Consumption

Table 15 describes recent changes in household water service in the West Bank. Two major trends are noteworthy. The first is a decrease in household reliance upon public wells or standposts from almost 50 percent in 1967 to nearly 26 percent in 1974. Second, domestic access to tap water either in the dwelling or in a courtyard has increased from 25 percent of the total in 1967 to over 40 percent in 1974. Also noteworthy is the slow growth of domestic use of private wells.

The picture is somewhat brighter when one focuses only upon West Bank towns. There, over 78 percent of all households have access to tap water either in the dwelling or in a courtyard. Only 11 percent of all households in towns receive their water from private wells, and only 10 percent from public wells or standposts (Israel, 1977b: 718).

Data are very spotty regarding domestic consumption levels and virtually nonexistent for industrial usage. It is known that aggregate industrial usage is far below domestic consumption (Israel, 1969f: 49). In 1967, the Israeli Hydrological Service estimated that the West Bank consumed a total of 80 million cubic meters of water. Of this, 6.5 million cubic meters were consumed by homes and industry. Given an approximate population level of 600,000 at that time, this would imply a yearly per capita consumption of 10.8 cubic meters, or a daily per capita consumption of 29.7 liters (Israel, 1967a: 286). A consumption level of 30 liters per capita per day (l/c/d) is low even by standards prevailing in most developing countries.

TABLE 15

Household Access to Water
by Source: West Bank

<u>Main Source of Water</u>	<u>1967</u>		<u>1972</u>		<u>1974</u>	
	<u>Number Households</u>	<u>Percent</u>	<u>Number Households</u>	<u>Percent</u>	<u>Number Households</u>	<u>Percent</u>
Public Well or Standpost	57,744	48.5	40,829	38.7	26,717	26.5
Private Well	32,214	27.0	31,544	29.9	33,396	33.0
Tap (in Courtyard or in dwelling)	29,207	24.5	33,127	31.4	41,087	40.6

Sources: Israel, (1977b: 718; 1974b: 695; 1967d: 6).

Availability of Resources

There is no current quantitative information available describing the overall availability of sweet water resources in the West Bank.³³

Nevertheless, it is known that the Israelis are very concerned about the declining level of the water table in the West Bank, and now require official permission to sink additional private wells. It is also known that saline solutions have recently begun appearing in shallow wells in the Jordan Valley, and thus, in the future, all wells must be deep-drilled (conversation with Vivian Bull, November 8, 1978). This factor alone will eventually result in considerable increases in water cost per capita.

Finally, as consumption in certain locales outstrips supplies, the Israeli national water carrier has begun to step in to augment supplies and to prevent more private wells from being drilled. Ramallah is known to be hooked up with the Israeli water system, and other towns in the Hebron district may be as well (conversation with Vivian Bull, November 8, 1978).

Estimating Cost Requirements

Adequacy Assumptions. The following assumptions are made concerning the adequacy of water resources:

- Most migrants will settle in towns.

³³ A 1967 Israeli source estimated that subterranean resources to the east of the main watershed were sufficient to provide 90 million cubic meters per year through drilling, and another 50 million from springs. The subterranean resources to the west of the watershed were estimated at 30 million cubic meters per year, and finally a further 7 million per year was to be found in a separate basin in the Nablus-Jenin area. Together, there were believed to exist water resources of 177 million cubic meters per year, plus another 50 million cubic meters of brackish water, not suitable for drinking or agriculture without undergoing desalination (Israel, 1969f: 49-50). The picture does vary considerably, however, depending upon the locale.

- The current mix of domestic water sources in towns is adequate and can be extended to any additional population. This implies that about 80 percent of all additional household will receive water via taps in the dwelling or courtyard and 20 percent will rely on public standpipes.
- No additional wells will be sunk in towns.
- Any additional population will consume (domestically) 100 l/c/d, or 36.5 m³ per year. This approximation is based on levels of urban (as opposed to rural) consumption in 1967, as well as water availability in urban areas (see footnote 33).

Estimation of Overall System Costs. The total cost of establishing or extending a modern water system can be roughly divided into two major components:

1. Source works, transmission costs, and storage costs, and
2. Distribution network and house connection costs.

In the absence of a recent hydrological surveys indicating the current supply situation in the municipalities (and therefore the relative cost of obtaining future supplies), source work and transmission line costs will be assumed to run 75 percent of total distribution costs.³⁴

Distribution costs are assumed to run \$230 per connected household, and \$15 per head of population relying upon public standpipe distribution.³⁵

³⁴ This figure is a very rough approximation, based on typical LDC cost data provided in Saunders (1976: 94-95) and adjusted upwards to take into account the need for higher future source costs due to deep drilling. For example, wells sunk in the Hebron area as early as 1971-1972 were as deep as 700-770 meters (Israel, 1972f: 70).

³⁵ Jones (1969: 59ff) estimates an average (1976 adjusted) \$245 per household connected for the case of Venezuela. An examination of the municipal development budget expenditures for water distribution in the West Bank between 1972 and 1974 indicates an average per household cost (1976 adjusted) of \$229 (computed from Israel. Statistical Abstract,

Since we are assuming that 80 percent of any additional population will be connected, and 20 percent will receive its supplies from public standpipes, the distribution cost function can be expressed as:

$$\begin{aligned} \text{Distribution Cost} &= (\$230 (.80) \times \text{Additional Households} \\ &\quad + (\$15 (.20) \times \text{Additional Population}) \\ &= (\$184 \times \text{Additional Households}) \\ &\quad + (\$3 \times \text{Additional Population}) \end{aligned}$$

Table 16 presents a sample iteration of the overall cost-estimating process per 100,000 additional population. It yields an estimated average per capita cost of \$46.67. This estimate for the West Bank is compared with other similar estimates for other countries in Table 17. Note that CACI's estimate is fairly close to that of Jones and the World Health Organization for the whole Eastern Mediterranean region. The disparity that does exist could easily be accounted for by the difference in service assumptions -- CACI assumes an 80 percent house connection rate, while the W.H.O assumes only 50 percent. Tuma and Darin-Drabkin's estimate appears too high, except possibly under very optimistic assumptions regarding industrial consumption of water. Given the current concern over water resources in this region, it is unlikely that the Israelis will encourage the establishment of new industries that have high water requirements. Thus, additional cost requirements due to industrial usage are likely to be slight in comparison to other countries, perhaps on the order of 30 percent greater than the residential per capita estimate of \$46.67. If so, total capital requirements for the system will be about \$60 per capita, with industry included.

Operating Costs. The only source available for estimating operating costs for water provision in the West Bank is the ordinary municipal

various issues). Costs of extending public hydrant access in the Eastern Mediterranean region are estimated at about \$15 (1976) per capita by the World Health Organization (Saunders 1976: 11).

TABLE 16

Capital Cost Estimate for Water System Per
100,000 Additional Population^a
(in 1976 U.S. Dollars)

<u>Additional Population</u>	<u>Additional Households^b</u>	<u>Source Works, Transmission, and Storage Costs^c (total)</u>	<u>Distribution, House Connections, and Hydrant Costs^d (total)</u>	<u>Total Cost</u>	<u>Cost Per Additional Head of Population</u>
100,000	16,667	\$2,000,040	\$2,666,720	\$4,666,760	\$46.67

^a Residential water use only.

^b Assuming an average of six individuals per household.

^c Estimated at 75% of distribution costs.

^d Based on assumptions discussed in text.

TABLE 17
Comparison of Capital Cost Estimates of
Extending Public Water Supply Network

<u>Source</u>	<u>Year of Estimate</u>	<u>Country or Region</u>	<u>Average Per Capita System Costs (1976 U.S. \$)</u>	<u>Notes</u>
World Health Organization	1970	Eastern Mediterranean	\$34.37	Assuming 50% of houses connected. Domestic use only.
Dieterich-U.N. (1963)	1962?	Asia -- General	28.95	Based on cost data developed for India, and reflecting conditions prevalent there in 1962.
Jones (1969)	1964	Venezuela	40.83	Cost of improving neighborhood (excludes source works and storage costs), given density of 17 dwelling units per acre, 1 floor per unit (1:17) assume six persons per household. Excludes industry.
Stone (1973)	1967	United Kingdom	16.41	---
Council of Europe	1968	Turkey	64.25	Including land costs; otherwise assumptions not given.
Tuma and Darin-Drabkin	1977?	West Bank-Gaza	94.32 ^a	"Other water development projects" - not including desalination project. Method of estimation uncertain.
CACI	1978	West Bank	46.67	Excludes industry. Domestic use only.
CACI	1978	Gaza Strip	28.00 ^b	Excludes industry. Domestic use only.

^a Assumed that original cost of \$100 per capita given in 1977 prices.

^b Explained later in this chapter.

Sources: Dieterich (1963: 53-55); Jones (1969: 61), Saunders (1976: 12); Stone (1973: 120); United Nations (1973: 170).

budget.³⁶ Taking the budget year of 1974-75, the latest year for which accurate household service data is available, the municipalities spent IL 405 (1976 prices) per household, or about \$50. Assuming 6 persons per household, this works out to IL 67.5 per capita, or \$8.45.³⁷

SEWAGE SYSTEMS: WEST BANK.

Current Situation

Sewage systems in the West Bank are rather primitive, as is the case in most areas of the Middle East. A fairly low population density, combined with a pervious soil type and a deep water table, allow West Bankers to rely largely upon leaching pits and septic systems, rather than requiring more expensive community sewage systems with oxidation pond treatment. No data are available regarding the relative proportions of various types of sewage disposal, but modern facilities appear to be few and far between. Furthermore, the unsanitary practice of discharging sewage into open trenches along roadsides, either directly or indirectly through septic tanks, is still observed (conversation with Vivian Bull).

In 1974, 79 percent of all households were equipped with a toilet (99 percent in the towns and 40 percent in the villages and rural areas), but only about 18 percent of all households were equipped with a flush toilet (26 percent in the towns, 9.6 percent in the villages)³⁸ (Israel, 1976d: 702, 1974b: 695). For our analysis it is assumed that the presence of a flush toilet indicates that a household is connected to a

³⁶ See the discussion of problems associated with this method of estimation under operating costs of electricity in the West Bank.

³⁷ This figure appears reasonable given similar U.S. costs per capita in the neighborhood of \$5-\$6, depending upon the scale of production (Saunders 1976: 91).

³⁸ The percentage of village households with flush toilets appears unreasonably high, and is possibly due to a sampling error.

pipied-in community sewage system.³⁹ Given our earlier assumption that virtually all refugees will return to towns, we might conclude that about 25 percent of the resulting new households would be connected to community systems under an assumption of current adequacy. However, it is likely that as population density in these towns increases, a greater percentage of houses will, of necessity, be linked to the common system.⁴⁰ We will therefore choose a standard of adequacy in which 50 percent of all additional households in the West Bank are connected to common sewage service. The remaining 50 percent would therefore rely upon simple leaching pits or septic tanks.

Estimating System Costs

The average cost of extending the public sewage system to an additional household is assumed to be \$720. The cost of constructing a single household-type sewage disposal system is assumed to be \$228.⁴¹ Thus, the average cost for all additional households in the West Bank is \$474 per household or \$79 per capita.⁴²

Table 18 presents comparative estimates of sewage system costs per capita. As is readily apparent, relative costs are largely a function of service levels, the latter being a function of settlement density and income levels. In comparison to these calculations, CACI's estimate appears reasonable.

³⁹ This indicator is likely to somewhat underestimate the actual percentage of sewage system connections, since a connection could be made to accommodate tap water runoff.

⁴⁰ This would be true for public health reasons as well as simple land availability. Also, as the system expands, economies of scale will begin to be realized, making it more attractive for others to link up as well.

⁴¹ Both are based on estimates by the World Health Organization for the Eastern Mediterranean region (Saunders, 1976: 14).

⁴² $.50 (720) + .50 (228) = \474 , assuming 6 persons per household.

TABLE 18
Comparison of Cost Estimates
of Average Sewage System Costs

<u>Source</u>	<u>Year of Estimates</u>	<u>Country or Region</u>	<u>Average Cost Per Capita (1976 U.S. \$)</u>	<u>Notes</u>
Stone (1973)	1967	United Kingdom	\$151.00	- - -
Council of Europe	1968	Turkey	137.00	Including land costs.
Council of Europe	1968	Ireland	124.00	Including land costs.
Jones (1969)	1963	Venezuela	30.00	Cost of sewer mains and house connection only, given settlement with low population density.
Jones (1969)	1963	Venezuela	9.00	Cost of sewer mains and house connection only, given settlement with high population density.
World Health Organization	1970	Eastern Mediterranean	120.00	Cost of public sewage system.
World Health Organization	1970	Eastern Mediterranean	38.00	Cost of household systems.
CACI	1978	West Bank	79.00	Assuming 50% public systems, 50% household systems.
CACI	1978	Gaza Strip	35.00 ^a	- - -

^a Discussion follows later in this chapter.

Sources: Jones (1969: 61); Saunders (1976: 14); Stone (1973: 120); United Nations (1973: 168, 170).

Operating Costs

As there are no recent budgetary data that break out operating expenses for sewage systems in either the West Bank or Gaza, no estimate has been attempted.

ALL OTHER PUBLIC SERVICES: WEST BANK.

Expenditures on education, health, housing, and utilities comprise approximately one half of all government expenditures in the West Bank. The preceding discussions have attempted to estimate the likely future expenditures for these services that will be incurred for additional population increments. In this section, the remaining public administrative and service programs on which the military authority and municipalities expend funds will be addressed in an aggregate fashion due to the lack of sufficient data to construct service-specific expenditure forecasts.

The remaining public programs include expenditures on police, labor, welfare, interior, justice, and licensing services, among many others. Table 19 presents the military government and municipality expenditures for these from 1969/70 to 1973/74. Government budgets for development aid to other economic sectors are not included in these figures, because they should already be included in the appropriate sectoral value added. During this period, these remaining public service expenditures have maintained a fairly constant percentage of total budgetary figures.

In order to estimate the likely future government expenditures for these services, past expenditures were calculated as a percentage of GNP. The intent was to establish a fixed ratio, based on historical trends, by which future expenditures for these government services might be estimated given total projected growth in GNP. The final calculations indicate that all other public services expenditures constitute a fairly constant 6.9 percent of GNP between 1969/70 and 1973/74.

TABLE 19

All Other Public Administration and Service
Expenditures, West Bank
(in 1976 prices, millions IL)

	<u>Other Military Authority Expenditures</u>	<u>Percent of Total Expenditures</u>	<u>Other Munici- pality Expenditures</u>	<u>Percent of Total Expenditures</u>	<u>Total Other Expenditures</u>
1969/1970	130.0	36.7	33.8	60.1	163.8
1970/1971	128.3	34.0	34.2	61.3	162.5
1971/1972	130.1	31.0	38.4	53.7	168.5
1972/1973	170.2	34.9	52.5	58.5	222.7
1973/1974	164.2	34.4	56.6	60.7	200.8

Sources: Israel, Statistical Abstracts, various issues; Administered Territories Statistical Quarterly; various issues; 1974d; 1972f.

Given projected GNP figures for the West Bank that meet an eight percent annual growth target, this percentage was employed to identify future "all other" public services expenditure levels. The results for the next five years are (in millions IL, 1976 prices):

1978	358.2
1979	386.9
1980	417.9
1981	451.3
1982	487.3
1983	526.3

SUMMARY OF ESTIMATED EXPENDITURES: WEST BANK.

Table 20 summarizes the cost estimates for public services derived from the preceding analyses. As one might expect, the highest capital cost to be incurred by the government is for housing -- U.S. \$1.1 million per additional 1,000 persons. In terms of capital costs, construction of sewage facilities per additional 1,000 persons (U.S. \$79,000) is the next most expensive publicly provided service. Health facilities (U.S. \$59,300 per 1,000 population) and educational facilities (approximately U.S. \$54,100 per 1,000 total population, adjusting the projection assuming that about 40 percent of the entire population in the West Bank is of school age -- 5 to 19 years old) are next in terms of capital expenditures to be incurred. Finally, water supply (U.S. \$46,700 per 1,000 population) and electricity (U.S. \$28,700 per 1,000 persons) capital costs are the least expensive public facilities required.

Summing all capital costs and including approximations of educational construction costs, the total government expenditure for public facilities (excluding housing) is estimated at U.S. \$267.8 million per additional 1,000 population. Total annual operational expenditures for these services are much lower, amounting to U.S. \$69,900 per 1,000 persons per year. Estimation of total cost projections with reference to population

TABLE 20
 Summary of Estimated Public Service
 Costs, West Bank
 (in 1,000 at 1976 Prices)

	<u>Capital Costs</u> (per additional 1,000 population)	<u>Operational</u> <u>Costs</u> (per 1,000 population)	<u>Notes</u>
Education (IL) (U.S.\$)	1,080.0 (432.0 ^a) 135.3 (54.1 ^a)	659.5 (263.8 ^a) 82.6 (33.0 ^a)	Per 1,000 <u>school age</u> population (urban)
Health (IL) (U.S.\$)	473.0 59.3	77.1 9.7	Per 1,000 persons
Housing (IL) (U.S.\$)	8,380.0 1,050.1	— —	Per 1,000 persons
Electricity (IL) (U.S.\$)	229.4 28.7	149.0 18.7	Per 1,000 persons (residential use only)
Water Supply (IL) (U.S.\$)	372.7 46.7	67.5 8.5	Per 1,000 persons (residential use only)
Sewage (IL) (U.S.\$)	630.4 79.0	— —	Per 1,000 persons
Total (excluding education (IL) and housing) (U.S.\$)	1,705.5 213.7	293.6 36.9	Per 1,000 persons
Total (including education, but excluding (IL) housing) ^a (U.S.\$)	2,137.5 267.8	557.4 69.9	Per 1,000 total population

^a Given that approximately 40 percent of the total West Bank population in 1975 was between 5 and 19 years old (Israel, 1976d), cost projections in parentheses and in total have been adjusted to a unit of "per 1,000 total population."

projections for the West Bank appear at the end of this chapter. Housing estimates are carried over to the construction sector.

Table 21 summarizes the projected employment levels in specific public services subsectors required to meet estimated adequate service levels per 1,000 additional population. These figures reflect productivity rates (for construction workers) and estimated adequacy standards per population served (for education and health) based on preceding historical trends, international organization standards, and cross-national comparisons.

GAZA STRIP

EDUCATION: GAZA STRIP AND NORTH SINAI.

Current Status

As is true in the West Bank, education in the Gaza Strip and North Sinai is offered by three major providers -- the government, UNRWA, and private organizations. As of 1967/77, the UNRWA schools served 57.8 percent of the student population (71,888 pupils), government schools served 38.9 percent (48,266 pupils), and private schools served 3.3 percent (4,180 pupils). These proportions have remained fairly constant since 1968 (Table 22).

On the average, there are 41.7 students per class in government schools in the Gaza Strip, which is 8 students per class more than in the West Bank. The student/teacher ratio is also substantially higher. These higher student densities are due, in part, to a chronic shortage of teachers brought on by the departure of Egyptian teachers after 1967 (Israel, 1972f).

The overall educational system is primarily situated in the densely populated urban areas. However, only 80 percent of the educational

TABLE 21
 Summary of Estimated Employment
 Requirements for Public Services, West Bank

	<u>Number of Workers Required Per 1,000 Persons</u>
Education	29 Teachers ^a
Health	.3 Doctors .53 Nurses
Housing	125 Construction workers

^a Per 1,000 school age population.

TABLE 22
Education in the Gaza Strip
(excluding North Sinai)

	<u>Government</u>		<u>UNRWA</u>		<u>Private</u>		<u>Total</u>
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	
1968/69							
Students	27,527	34.4	52,523	65.6	-	0.0	80,050
Teachers	833		1,314		-		2,147
Institutions	63		103		-		166
Classrooms	643		1,103		-		1,746
1969/70							
Students	38,725	39.2	58,876	59.6	1,242	1.2	98,843
Teachers	978		1,503		56		2,537
Institutions	69		108		11		188
Classrooms	781		1,231		37		2,049
1970/71							
Students	40,734	39.2	61,531	59.2	1,713	1.6	103,978
Teachers	1,051		1,589		74		2,714
Institutions	61		108		19		188
Classrooms	837		1,292		49		2,178
1971/72							
Students	41,683 ^a	39.2	62,391	58.7	2,215	2.1	106,289
Teachers	...		1,616		76		...
Institutions	61		112		8		181
Classrooms	1,174		1,321		55		2,550
1972/73							
Students	42,632	38.2	64,718	57.5	4,714 ^b	4.3	111,524
Teachers	...		...		173		...
Institutions	61		117		36		214
Classrooms	988		1,377		133		2,498
1973/74							
Students	43,928	38.4	65,786	57.6	4,557	4.0	114,271
Teachers	...		...		167		...
Institutions	62		121		33		216
Classrooms	1,197		1,419		129		2,745
1974/75							
Students	45,182	38.5	67,400	57.4	4,863	4.1	117,445
Teachers	...		...		...		...
Institutions	74		124		34		232
Classrooms	1,244		1,457		122		2,823

continued

Table 22
Education in the Gaza Strip
Continued

	<u>Government</u>		<u>UNRWA</u>		<u>Private</u>		<u>Total</u>
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	
1975/76 Students	47,284	37.5	73,704	58.5	4,984	4.0	125,972
Teachers	...		...		...		...
Institutions	70		140		31		249
Classrooms	1,301		1,603		132		3,036
1976/77 Students	48,266	38.9	71,788	57.8	4,180	3.3	124,234
Teachers	...		...		...		...
Institutions	70		131		31		232
Classrooms	1,219		1,551		121		2,891

^a Extrapolated from 1970 and 1972 figures.

^b Quaker kindergartens added to data series in 1972. It is unclear as to why they were uncounted previously.

... Not available.

Sources:

Ben-Ari, (1974).

Bregman (1975).

Israel (1978b; 1974d; 1973b; 1972f; 1970a; 1969b; 1968a; 1969a).

facilities are provided there in comparison to the total urban population distribution of 92 percent (Pielemeier, 1975). In these urban areas, the government schools serve just over 40 percent of the student population; the government system provides service to about 39 percent of the rural population.⁴³ The government's secondary role in education in the Gaza Strip and North Sinai is in sharp contrast to its dominant role in the West Bank. UNRWA's provision of educational services to the large numbers of refugee children in Gaza can explain this differential.

The budget and expenditures for the government system are presented in Table 23. Approximately 25 percent of the total budget for the Gaza Strip is allocated to educational operations and construction. Of that, 2 to 4 percent of the total educational budget is expended on the construction of new facilities.

Educational Requirements

Are these facilities adequate to meet the demands for education? Statistics on the UNRWA schools in the Gaza Strip indicate an increasing percentage of double shifting, amounting to 48.4 percent of all classes in 1975/76 (United Nations, 1977). Although figures are not available, government-run schools are also believed to have a high proportion of double shifted classes, but not to the same degree that UNRWA experiences (in unpublished material provided by Vivian Bull, October 25, 1978). Moreover, class crowding (39.6 students per class in 1976/77) and large teacher loads (38.8 students per teacher in 1970/71) point to the current inadequacy of education facilities in the Gaza Strip (calculated from Table 22).

What are the trends in student enrollment in Gaza and North Sinai? In Table 24, actual pupil attendance is compared to the total school age

⁴³ Calculated from Israel (1969b, 1970a).

TABLE 23

Government Education Budget and Expenditures
for the Gaza Strip (excluding North Sinai)
(in thousands IL, 1976 prices)

	<u>REGULAR BUDGET</u>		<u>DEVELOPMENT BUDGET</u>	
	<u>Total Approved</u>	<u>Total Implemented</u>	<u>Total Approved</u>	<u>Total Implemented</u>
1967/68	...	16,236.0	...	...
1968/69	26,019.0	...	...	...
1969/70	31,104.0	...	...	...
1970/71	...	31,578.3	...	880.9
1971/72	31,668.6	39,740.8	2,226.0	1,433.2
1972/73	...	48,952.4	...	...
1973/74	60,598.8	54,173.4	1,506.6	1,104.6

... Not available.

Sources: Israel. (1974d; 1972f).

TABLE 24

School Age Population and Pupil Attendance in
the Gaza Strip and North Sinai

	<u>School Age Population</u>		<u>Pupil Attendance</u>		<u>Percent Attending</u>	
	<u>5-14 Years^a</u>	<u>15-19 Years^b</u>	<u>Primary and Preparatory^c</u>	<u>Secondary^d</u>	<u>Primary and Preparatory^c</u>	<u>Secondary^d</u>
1967/1968	118,500	38,900	55,269	6,717	46.6	17.3
1968/1969	113,000	38,500	85,829	11,734	76.0	30.5
1969/1970	117,400	40,400	94,054	10,320	80.1	25.5
1971/1972	120,900	44,500	102,126	13,001	84.5	29.2
1972/1973	120,700	46,800	104,789	12,514	86.8	26.7
1973/1974	122,600	49,700	107,346	12,663	87.6	25.5
1974/1975	...	...	111,094	14,929	...	...
1975/1976	127,900	44,500	121,381	14,882	94.9	33.4
1976/1977	...	...	119,128	14,188	...	...

^a Average age groups attending primary and preparatory schools.

^b Average age groups attending secondary schools range from 15 to 17 years.

^c Excluding kindergartens.

^d Excluding teacher training schools.

Sources: Israel. (1976d; 1974b; 1973b; 1972f; 1970a; 1970b).

population to derive the percentage of the population taking advantage of the services provided. At primary and preparatory levels, the percentage of school age children attending school has risen dramatically, from a low of 46.6 percent in 1967/68 to 94.9 percent in 1975/76. In part, this increase can be viewed as a function of the establishment of compulsory education by the military authority in 1971. The percentage of school age persons actually attending secondary (noncompulsory) schools is much lower, but has increased over the ten year period.

What are the physical requirements for adequate government education facilities? Adequacy is defined here as a sufficient number of classrooms to eliminate double shifting. By using proportions of urban/rural/nomadic students per government classroom and adjusting for double shifting, an estimate of adequate school facilities can be calculated.

Type of Region	Average Number of Students Per Government Classroom ⁴⁴	Estimate of Single Shift Classes in Government Schools ⁴⁵	Calculation of Number of Students Per Classroom (without double shifting)
Urban areas	50.8	60%	30.5
Rural areas	45.6	70%	31.9
Nomadic areas	20.2	100%	20.2

The adjustment function for double shifting assumes that the situation in government-run schools is slightly better than in the UNRWA schools, and that double shifting occurs in urban areas more than in rural areas.

Assuming an overall enrollment rate of 79.0 percent in primary through secondary schools,⁴⁶ estimates of the total number of school age persons

⁴⁴ Source: Israel, (1970a, 1969b).

⁴⁵ Proportions estimated by CACI on the basis of UNRWA data.

⁴⁶ Calculated by dividing total pupil attendance by total school age population (5-19 years) for 1975/76 from Table 24.

required to justify construction of one additional classroom can be derived by region:

<u>Type of Region</u>	<u>Estimate of total school age persons (5-19 years) required for each additional "adequate" classroom</u>
Urban area	38.6
Rural area	40.4
Nomadic area	25.6

These estimates suggest that for each additional 38.6 persons between the ages of 5 and 19 years in urban areas, an additional classroom is required to maintain "adequate," or 100 percent single shifted, classes. In rural regions, 40.4 persons within this age group are required, and in nomadic regions, 25.6 persons are required.

Expenditure Estimates for Education

On the basis of these calculations of adequate (single shift) classes, construction costs for adequate numbers of classrooms can be estimated for each additional 1,000 school age residents:

<u>Estimate of student age persons per additional adequate classroom</u>	<u>Number classrooms required per 1,000 new school residents (by region)</u>	<u>Cost per classroom (1976 prices)⁴⁷</u>	<u>Calculated construction cost per 1,000 new school age residents (in thousands IL)</u>
38.6 (urban)	25.9	IL 29,730	IL 770.0
40.4 (rural)	24.8	IL 29,730	IL 737.3
25.6 (nomadic)	39.1	IL 29,730	IL 1,162.4

⁴⁷ Based on construction estimates for 37 classrooms in Gaza in 1973/74 at IL 1.1 million (at 1976 prices) (Israel, 1974d). This averages to IL 29,730 per classroom.

Table 25 presents the average expenditure per student in government schools from 1967/68 to 1973/74 at 1976 prices. The estimate for 1973/74 operational expenses is IL 1,233.2 per student. Taking this per student cost and assuming that the overall attendance rate of school age persons remains constant at its 1975/76 level (79.0 percent, from Table 24), the following annual operational expenditure estimates can be made.

<u>Annual operational expenditures per student (1973/74 base)</u>	<u>Overall attendance rate (1975/76 base, in percent)</u>	<u>Calculated annual operational costs per 1,000 new school age residents</u>
IL 1,233.2	79.0	IL 974,228

Finally, estimates of the number of teachers required per 1,000 new school age residents can be calculated by using the teacher/student ratio in government schools from 1970/71 (0.026 teachers per student, see Table 22) and adjusting for the overall attendance rate:

<u>Number Teachers Required per Student (at 1970/71 base)</u>	<u>Overall attendance rate (1975/76 base, in percent)</u>	<u>Calculated number teachers per 1,000 new school residents</u>
0.026	79.0	20.5

This estimate results in somewhat smaller class sizes than at present.

Evaluation of Estimate

The following estimates have been made for the provision of educational services per 1,000 new school age residents (between 5 and 19 years old):

- **Constructions costs**

- (per 1,000 urban school age residents)
IL 770,000 (US \$96,491)

TABLE 25

Average Expenditure Per Student, Government Schools in the
Gaza Strip (excluding North Sinai)
(using implemented regular budget figures at 1976 prices, IL)

	<u>Average Expenditure Per Student</u>
1967/1968	672.9
1968/1969	945.1 ^a
1969/1970	803.1 ^a
1970/1971	775.2
1971/1972	953.5
1972/1973	1,148.4
1973/1974	1,233.2

^a Using approved regular budget figures

Source: Data in Tables 22 and 23.

- (per 1,000 rural school age residents)
IL 737,300 (US \$92,393)
- (per 1,000 nomadic school age residents)
IL 1,162,400 (US \$145,664)
- Annual operational costs--IL 974,228 (US \$122,084)
- Teachers--20.5

Several assumptions were made in developing these estimates:

- Currently provided services will be maintained for current residents.
- Teacher to student ratios in 1970/71 can be used to estimate the provision of new services over the next five years.
- Operational expenses per student in 1973/74 can be applied to the provision of services over the next five years.
- Capital cost estimates are based on construction of a sufficient number of classrooms to avoid double-shifting for new residents over the next five years.
- Private and UNRWA (or a continuing authority) schools will maintain educational services at current levels for their current students over the next five years.⁴⁸

HEALTH SERVICES: GAZA STRIP AND NORTH SINAI.

Current Status

The government and UNRWA provide the majority of health care services in Gaza (see Table 26). Only one private hospital is maintained. The government runs six hospitals with a total of 995 beds (as of 1977) and 18 clinics (as of 1973). UNRWA conducts comprehensive preventive, curative,

⁴⁸ See the West Bank education section for further justification of this point.

TABLE 26

Indices of Health Services, Gaza Strip and North Sinai

<u>Facilities</u>	<u>1966</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
No. of Hospitals - Total	...	...	...	5	7	6	6	7	7	7	7
- Government	...	...	...	...	...	...	5	6	6	6	6
No. of Hospital Beds - Total	...	...	...	694	967	886	1065	1004	1062	1065	1070
- Government	...	...	...	...	...	...	773	993	987	990	995
Total Beds/1,000 population	...	...	...	1.9	2.6	2.3	2.2	2.6	2.6	2.6	2.5
No. of Hospital Beds available to UNRWA patients	...	...	...	...	...	...	...	657	654	662	659
Total no. of clinics	...	...	...	...	23	...	27	...	...	...	...
<u>Personnel</u>											
No. of Doctors -- Government institutions	90	31	42	43	49	80	117	119	...	...	...
Government Doctors/1,000 population	.20	.09	.11	.12	.13	...	.29	.29	...	...	...
No. of Nurses -- Government institutions	267	212	211	227	259	...	299	308	...	...	...
Government Nurses/1,000 population	.59	.59	.57	.61	.68	...	.74	.76	...	...	...
Total Medical Staff/Bed Government Institutions	...	...	...	...	...	...	.54	.46	...	...	...

continued

Table 26
 Indices of Health Services, Gaza Strip and North Sinai
 Continued

Usage

Admissions -- Total (in 1000's)	...	...	...	...	42.4	35.4	31.5	34.0	50.0	53.1	49.8
Occupancy Rate -- Government (%)	...	...	...	70.0	66.0	72.1	68.8	67.2	75.7	69.7	68.4

Sources: Israel, Administered Territories Statistics Quarterly, various issues, 1974d; 1972f; 1970d; 1968a; Shye (1972); Pielemeier (1975).

and rehabilitative services in nine clinics in the refugee camps and can refer patients to 659 beds available in the government and private hospitals. A tuberculosis hospital is jointly administered by the government and UNRWA. All government health services were provided free to Gaza Strip residents as of 1973 (Pielemeier, 1975).

While the number of hospital beds per 1,000 residents has kept pace with natural population increases, new hospital facilities have not been constructed; additional beds have been moved into existing hospitals. There was a severe shortage of doctors and nurses between 1967 and 1973. Israeli medical staff were called upon to fill many of the health care posts left vacant when the entire Egyptian staff returned to Egypt in 1967. As of 1974, there were 2.9 government doctors and 7.6 nurses per 10,000 persons. More recently, there has been a gradual return of medical school graduates to the Gaza Strip from Arab universities. Israeli hospitals have also provided advanced training to Gazan doctors (Israel, 1968a, 1970d, 1972f).

The annual health services budget for Gaza (see Table 27) as a percentage of the total approved budget has increased from 6 percent in 1969 to 26 percent in 1973. Per capita expenditures for health care have also increased and are approximately 30 percent greater than per capita expenditures in the West Bank. The higher cost for Israeli medical staff in Gaza is the principal reason for this gap (Israel, 1974d).

Health Services Requirements

Are these health services provided at a satisfactory level? Major communicable diseases, infant mortality, and death rates have been reduced. An increased percentage of births are occurring in hospitals. While standards of hygiene and sanitation have been maintained, they are still at low levels (Pielemeier, 1975; Stebbing, 1977). Overall, medical staff supply has not kept up with demand. Clinics and hospitals

TABLE 27
Annual Health Services Budget: Gaza Strip
(at 1976 prices)

Regular Budget

	<u>Approved Budget</u> (in millions IL)	<u>Implemented</u> <u>Budget</u> (in millions IL)	<u>Per Capita</u> (IL)	<u>Approved</u> <u>Development Budget</u> (in millions IL)
1967/68	9.7	--	--	--
1968/69	21.1	26.0	72.7	--
1969/70	28.2	35.9	98.2	--
1970/71	30.9	28.3	76.0	--
1971/72	30.9	40.9	107.1	--
1972/73	--	39.5	101.1	--
1973/74	49.4	48.3	119.1	7.0

Sources: Israel. (1974d; 1972f; 1970d); Shye (1972).

are overcrowded and professional personnel is insufficient (Israel, 1972f), although there has been improvement in staffing levels.

On the basis of these observations and current trends, the minimum health care requirements for an additional 10,000 residents can be estimated as:⁴⁹

0.15 Hospitals/10,000 population.

24.2 Hospital beds/10,000 population.

2.9 Doctors/10,000 population.

7.6 Nurses/10,000 population.

0.68 Clinics/10,000 population.

Expenditure Estimates for Health Care Services

Development cost estimates can be based on hospital and clinic construction costs in the West Bank (Tahal Consulting Engineers, 1971):⁵⁰

Per hospital bed ⁵¹	IL 77,143
Per clinic (serving 4,400 persons)	IL 556,500

Recurrent operational expenditures can be estimated from regular budget items for health care (see Table 27). By 1973/74, per capita health service expenditures reached IL 119.1 (in 1976 prices).

Summary of Costs

The following capital costs have been estimated for 10,000 new residents.

⁴⁹ Estimates are based on calculations from Table 26.

⁵⁰ See West Bank health services section for further discussion.

⁵¹ Includes all construction, design, equipment, training, and contingency costs entailed in capital investment for hospital facilities.

<u>Requirements/10,000 persons</u>	<u>Per unit cost estimate</u>	<u>Cost/10,000 persons</u>
24.2 Hospital Beds	IL 177,143	IL 4.29 million (U.S. \$537,201)
0.68 Clinics	IL 556,500	IL 378,420 (U.S. \$47,421)

In addition, annual operational costs have been estimated at IL 119.1 per capita or IL 1,119,000 per 10,000 persons. On the basis of current trends, 2.9 doctors and 7.6 nurses are also required per 10,000 persons.

These cost estimates are based on several assumptions:

- Current health services are minimally adequate for the current population.
- Provision of health services to additional residents can be based on levels of service currently provided.
- UNRWA or alternate health services will continue to the current refugee population at current levels.

HOUSING: GAZA STRIP AND NORTH SINAI.

Current Status

The current status of housing in the Gaza Strip and North Sinai differs from that in the West Bank in several respects. First, a much larger percentage of the population (about 40 percent as opposed to less than 10 percent in the West Bank) live within refugee camps. Second, Gaza is much more urbanized than the West Bank; 92 percent of all inhabitants live in urban settlements or large refugee camps. Moreover, population density exceeds 1,000 persons per square kilometer, one of the highest densities in the world (Pielemeier, 1975). Third, whereas West Bank housing tends to be traditional, privately built, single family dwellings, new housing being constructed in Gaza is primarily publicly financed multifamily housing projects. Construction methods borrow from

Israeli techniques -- poured concrete and pre-fab components. Fourth, as of 1972, 12 percent of all dwellings were temporary (that is, mud huts, shacks, tents, and caves) which is more than in the West Bank (Bregman, 1975).

After the war, residential construction declined sharply from pre-1967 levels (see Table 28), but gradually regained those levels by 1973 (Bregman, 1975). Most of this construction was aimed at rehousing refugees from the camps. However, due to Israeli resettlement policies in Gaza that require demolition of current refugee shelters to obtain new government housing, the stock of available housing has probably not increased substantially despite increased construction levels (United Nations, 1977).⁵² Moreover, these policies do not allow the refugee families remaining in the camps to benefit from these vacated dwellings.

Table 29 presents data on the number of households, household size, and median density of dwellings. It is assumed that the number of household counted in the population can be used as a proxy for the number of dwelling units being occupied.⁵³ While the overall number of households fluctuates over time, the 1976 estimate is 62,188 units. As was found in the West Bank data, the average number of persons per household increased over the ten year period to 6.9 persons (see footnote 9 for possible explanations). At the same time, housing density remained constant at about 2.9 persons per room. If these figures are accurate, the average number of rooms per dwelling must have increased slightly.

A comparison of town and refugee camp households (see Table 29) suggests that town families are growing at a faster pace (7.1 persons per household) than camp families (6.6 persons per household). However, there are only slight differences between the two concerning housing density.

⁵² The apparent objective of this "bulldozer" policy is to reduce the number of persons identifiable as "refugees."

⁵³ For an explanation, see discussion in West Bank housing.

TABLE 28
Residential Construction Starts,
Gaza Strip and North Sinai

	Residential Construction Starts (in 1,000 square meters)	Percent of Total Construction Starts
1967	0	0
1968	4	19
1969	10	67
1970	19	73
1971	48	94
1972	96	86
1973	130	90
1974	105	93
1975	170	87

Source: Bregman (1975).

TABLE 29
Households in Gaza Strip and North Sinai

		<u>Number of Households</u>	<u>Average Persons Per Household</u>	<u>Median Density (persons per room)</u>
1967	Towns	36,662	5.8	...
	Camps	30,159	5.9	...
	Total	66,821	5.8	...
1971	Towns	26,600	6.1	2.0
	Camps	27,600	6.2	2.9
	Total	60,000	6.1	3.0
1972	Towns	29,000	...	3.0
	Camps	27,500	...	2.7
	Total	62,400	...	3.0
1973	Towns	28,000	6.3	3.0
	Camps	25,600	6.4	2.9
	Total	59,400	6.0	3.0
1974	Towns	28,800	6.5	2.9
	Camps	25,200	6.4	2.9
	Total	59,600	6.4	2.9
1975	Towns	...	6.9	2.7
	Camps	...	6.6	2.9
	Total	63,353 ^a	6.8	2.9
1976	Towns	...	7.1	3.0
	Camps	...	6.6	2.8
	Total	62,188	6.9	2.9

^a Extrapolated.

Sources: Israel, (1977b, 1976d, 1975b, 1974b, 1973b, 1972d, 1968b, 1967c).

Adequacy

Is available housing in the Gaza Strip adequate? Housing conditions are generally considered to be overcrowded, inadequate, and in short supply (United Nations, 1977). Camp shelters constructed by UNRWA were built as temporary structures and are generally inferior to other public and private housing that is available. As of 1972, 12 percent of all housing in Gaza was classified as temporary dwelling space (mud huts, caves, tents, or shacks). While the Israeli bulldozer policy works against a natural increase in the stock of available housing in Gaza and does not enable reduction of overcrowded conditions, it probably does have the salutary effect of gradually eliminating inadequate and substandard camp dwellings.

Qualitatively, housing services have improved (see Table 30). Approximately 80 percent of all dwellings have toilet facilities. Running water is available in about 70 percent of all dwellings, and electricity has been connected to about 36 percent. The differential in electric and water services is most prominent between the towns and camps. Overall, housing conditions appear worse in Gaza than in the West Bank.

Expenditure Estimates for Housing

Construction costs are dependent on dwelling size. Shye (1972) and Tuma and Drabkin (1978) use 10 square meters per person as their rule of thumb for adequate dwelling space. Given an average of 6.9 persons per household, the required dwelling area should be at least 69 square meters.⁵⁴

Using figures presented by Jones (1969) on four-story, low quality multi-family construction with reinforced concrete, it was estimated that new

⁵⁴ This rule of thumb comes fairly close to the actual average area per dwelling constructed in the Gaza Strip and North Sinai in 1976 -- 74.7 square meters (Israel, 1977b: 737).

TABLE 30
Dwelling Facilities, Gaza
Strip and North Sinai

		<u>Percent with Electricity</u>	<u>Percent with Running Water^a</u>	<u>Percent with Toilet</u>
1967	Total	17.7	29.3	44.0
1972	Towns	43.6	89.1	83.8
	Camps	5.9	51.3	82.0
	Total	22.8	69.5	78.1
1974	Towns	58.9	88.0	86.2
	Camps	14.6	61.2	77.6
	Total	35.7	75.4	79.0

^a Tap in courtyard or in dwelling.

Sources: Israel, (1975b, 1973b, 1967d).

apartments built in Gaza using Israeli construction techniques are likely to cost about 1.7 times that for simpler single family dwellings in the West Bank.⁵⁵ With this proportional increase in costs, expenditures for housing construction in Gaza can be estimated (in 1976 prices):

<u>Dwelling Space Per Household</u>	<u>Construction costs per m² (West Bank)⁵⁶</u>	<u>Construction cost with Escalation for Gaza Strip Methods per m²</u>	<u>Estimated Cost per Dwelling</u>
69m ²	IL 835	IL 1420	IL 97,980 (US \$12,278)

On this basis, the estimated housing construction costs per 1,000 additional residents (or 145 households of 6.9 persons each) approximates IL 14.21 million or US \$1.78 million at 1976 prices. (While projections for housing are estimated in this sector, the results will be incorporated in the construction chapter for addition to the forecast of investment requirements).

How many construction workers are required to build 145 dwellings for 1,000 new residents (a total of 10,005 square meters)? Calculations in the construction chapter of this report put productivity per indigenous construction worker at 97.5 square meters per year (as of 1975). At that rate, approximately 103 construction workers would be required to build the dwellings to house 1,000 new residents.

Evaluation of Costs

To summarize, the following housing cost estimates have been calculated per 1,000 additional residents:

- IL 14.21 million (US \$1.78 million).

⁵⁵ Bregman (1975) states that Israeli construction costs are generally twice those found in the West Bank.

⁵⁶ See West Bank housing section.

- 103 construction workers required.⁵⁷

Several assumptions are incorporated in these estimates:

- Housing requirements are based on potential immigrant influx.
- The current population will not require additional housing.⁵⁸
- The quality of housing to be provided to the migrants is comparable in size and quality to current public multifamily housing in Gaza.
- UNRWA housing in the refugee camps will be maintained for the current refugee population.

ELECTRICITY: GAZA STRIP.

The Gaza Strip is entirely dependent upon Israel for the provision of its electrical power supplies.⁵⁹ Like the West Bank, virtually all electricity is destined for domestic uses and public lighting. Industrial usage is almost nil, although irrigation pumpsets undoubtedly consume a measurable portion of the total.⁶⁰

Residential electrification is significantly lower in Gaza than in the West Bank. As of 1974, 14.6 percent of all households in camps were

⁵⁷ Labor costs for these workers are included in the expenditure estimate.

⁵⁸ This assumption is required since it is not possible to estimate the current stock of housing available in Gaza.

⁵⁹ It is estimated that the last village in Gaza was connected to the Israeli grid in 1976 (conversations with Vivian Bull, November 9, 1978).

⁶⁰ The World Bank (1975d: 25) reports that irrigation pumpsets in India, for example, consume about 3,000 kilowatt-hours per year, roughly equivalent to the annual power needs of three households in the Gaza.

electrified, and 58.9 percent of all households in towns. In all, 35.7 percent of all households in Gaza received electricity (Israel, 1976d: 702). There is no information regarding per household or per capita consumption levels.

Given this lack of data, estimating the costs to accommodate additional population is a highly uncertain undertaking. Overall, we might assume that costs would be one-third lower per capita than in the West Bank. This is due partly to a 60 percent rate of electrification in Gaza towns versus nearly 100 percent in the West Bank. Per household consumption would also probably be lower, given the lower per capita income in Gaza. We will therefore assume a capital cost of \$20 per capita for additional population (in comparison to \$28.75 per capita for the West Bank).

Operating costs for electricity in Gaza have been rising at a rate similar to that found in the West Bank. The latest year for which municipal budget data is available, indicates an average per household cost of IL 1,000 per year, or about \$125 (Israel, 1977b: 742).

DOMESTIC AND INDUSTRIAL WATER SUPPLIES: GAZA.

Current Status

The Gaza Strip possesses substantial ground water reserves, but they are being over-pumped and there is now a serious risk that the supply will become saline through the seepage of sea water (Stebbing, 1977: 38). Therefore, the Israeli Military Administration has decided that there should be no further increase in the rate of ground water depletion. Additional supplies to satisfy the increasing demands of a growing population must now come from the Israeli national carrier⁶¹ (conversation with Vivian Bull).

⁶¹ Stebbing (1977: 38) states that experts advise not only that additional increases in water consumption be supported by the Israeli

Household service levels in Gaza are comparable to the West Bank's. The percentage of total households enjoying access to running tap water is 75 percent in Gaza versus an overall 40 percent in all of the West Bank (Israel, 1976d: 702). However, the percentage of households in towns in the West Bank with tap water was about 78 percent. Considering the high urban concentration in Gaza, the level of service appears comparable in both territories. To maintain consistency with the West Bank analysis, an assumed adequacy level of 80 percent will be employed for household tap water access in the Gaza Strip as it was for the West Bank. Also, it will again be assumed that there will be no additional wells sunk to serve domestic water demand.

As noted earlier, the cost of providing public water supplies is largely a function of two components -- the cost of reaching the water supply and transmitting it to a populated area, and the cost of establishing a local distribution network to service individual dwellings. In the case of Gaza, the ultimate source of the additional water is assumed to be in Israel. Little is known about the costs of Israel's source works and transmission facilities. In the absence of better information, we will again assume that, as in the West Bank, source works, transmission, and storage facility capital cost requirements are 75 percent of total distribution costs.⁶²

There is, however, a substantial difference in distribution costs per household between the West Bank and Gaza, arising from the difference in housing density per square kilometer. Denser settlements would, of course, imply lower per household costs. This relationship between

system, but also that the current annual rate of groundwater pumping of 65 million cubic meters be reduced by half.

⁶² This assumption does not appear unreasonable, given that deep drilling will be required to extract supplies for both the West Bank and Gaza, and that lengthy transmission lines are also likely to be needed in both cases.

public utility capital cost requirements and settlement density has been estimated by Jones (1969) on the basis of Venezuelan data. He concludes that the cost of improving (or extending) a water supply system in a settlement with four floors per domestic structure and 36 such structures per acre (roughly describing the situation in Gaza) would be about 60 percent the cost of doing the same in a settlement where the norm was one floor per domestic structure and 17 structures per acre (roughly describing the situation in West Bank towns) (Jones, 1969: 61).

Since our assumptions will otherwise remain the same as before, the distribution cost function for additional water supplies in Gaza can be given as:⁶³

$$\begin{aligned} \text{Distribution Costs} &= .60 (\$184) = \$110 \\ &\text{per additional household} \end{aligned}$$

Source works and transmission costs are assumed to be:

$$\begin{aligned} \text{Source Works} &= .75 (\$110) = \$82 \\ &\text{per additional household} \end{aligned}$$

Thus the total cost amounts to $\$110 + \$82 = \$192$ per additional household. Assuming 6 persons per household, we have an average per capita cost of \$32 or IL 255.

As for estimating cost requirements to satisfy potential industrial demands in Gaza, which is likely to be sparse over the next five years, it would appear reasonable for a 30 percent cost addition to be applied, as it was for the West Bank estimate. If this assumption is made, the total capital cost per capita of additional population would be \$36.40 or IL 290.5, including industrial service.

⁶³ See West Bank water service sector for derivation of cost estimates.

Operating Costs

The operating costs of Gaza's water utility was computed from the ordinary municipal budget. According to this method, operating costs are estimated at IL 126.5 or \$15.85 per household for 1976. Assuming an average of 6 persons per household, the per capita cost then becomes IL 21.08 or \$2.64 per year.

SEWAGE SYSTEMS: GAZA.

Current Situation

The Gaza Strip, being much more densely populated than the West Bank, also has a greater need for an adequate public sewage system. As of mid-1978, a major East-West line was being completed by the Municipality of Gaza with its own source of funds. In addition, American Near East Refugee Aid (ANERA) has been requested to assist in the development of two North-South spurs reaching into the poorer sections of town (ANERA, 1978: 61ff). This latter project was expected to extend sewage service to an additional 10,000 persons at a total cost of \$170,000, or about \$17 per capita. This low per capita cost is to be achieved through various self-help techniques, such as the use of local volunteer labor. The cost includes the provision and installation of 2500 meters of sewer pipeline, with concrete manholes, joints, and house connections (ANERA, 1978: 65).

For the purpose of future estimates, it will be assumed that once this project is completed, the sewage system in Gaza will be "adequate" for the current population. Thereafter, additional population will entail a \$35 per capita cost requirement for additional sewage facilities.⁶⁴

⁶⁴ The figure is substantially higher than the earlier-mentioned \$17 in order to cover the need for more expensive extensions into less densely populated areas of Gaza, to cover additional treatment and

ALL OTHER PUBLIC SERVICES: GAZA STRIP.

As indicated in Table 31, public expenditures on education, health, housing, and utilities have comprised about one-half of all military authority and municipality expenditures through 1973/74. While the preceding sections have estimated the likely future costs for these services, this section attempts to estimate future government expenditures for all other public administration and services in the remainder of the budget. These other services include expenditures for police, labor, welfare, interior, justice, licensing, and so on. (The budget devoted to development aid to other economic sectors is not included here, as it would be included already in value added for the other sectors.) Due to the absence of sufficient specific information on these other services, they will be treated in aggregate fashion.

To estimate the likely public expenditures for these programs, past expenditures were calculated as a percentage of GNP. By looking at historical trends between these two items, a fixed ratio can be established to project future expenditures, assuming that the same relationship between public expenditures and GNP continues. The final calculations indicate that between 1970/71 and 1972/73, all other public services expenditures constituted 9.8 percent of the GNP in Gaza. This percentage is assumed to be a reasonable estimate of the proportions of GNP associated with all other public services expenditures in the future.

Given projected GNP figures for the Gaza Strip that increase at a target eight percent annual rate of growth, future "all other" public services expenditure levels can be estimated. The results for the next 5 years are as follows (in millions IL, 1976 prices).

1978 234.7

storage facilities (not included in the current project), and to cover higher labor costs in future projects.

TABLE 31

All Other Public Administration and Services
Expenditures, Gaza Strip
(in 1976 prices, millions IL)

	<u>Other Military Authority Expenditures</u>	<u>Percent of Total Expenditures</u>	<u>Other Municipality Expenditures</u>	<u>Percent of Total Expenditures</u>	<u>Total Other Expenditures</u>
1970/1971	102.4	41.6	6.7	44.4	109.1
1971/1972	112.6	39.2	8.6	39.7	121.2
1972/1973	130.9	42.7 ^b	20.7	58.5	151.6
1973/1974	50.7 ^a	18.8 ^a	23.2	41.3	73.9 ^a

^a Budgetary figures exclude expenditures for police services.

^b Estimated.

Sources: Israel, Statistical Abstracts, various issues; Administered Territories Statistics Quarterly, various issues; (1974d; 1972f).

1979	253.5
1980	266.2
1981	287.4
1982	310.5
1983	335.3

SUMMARY OF ESTIMATED EXPENDITURES: GAZA STRIP.

Table 32 summarizes the cost estimates for public services, derived from the preceding analyses. In terms of capital costs per 1,000 population, public housing comprises the highest potential expenditure (U.S. \$1.78 million per 1,000 persons). Housing is followed by health, education, sewage, water supply, and electricity facilities, in order of expenditure magnitude. In terms of annual operational costs per 1,000 population, education comprises the highest potential annual expenditure (U.S. \$48,800 per 1,000 total population).

Summing all capital costs (except for housing, which is carried over for inclusion in the construction sector) and including approximations of educational construction costs, the total government expenditure for public facilities is estimated at U.S. \$184,100 per additional 1,000 population. Total annual operational costs for these services sum to U.S. \$87,200 per 1,000 persons. Extrapolation of these expenditures against the population projection for the next 5 years is presented in the following conclusion section.

Table 33 summarizes the projected employment in specific public services subsectors that is required to meet estimates of adequate service levels per 1,000 additional population. These figures reflect productivity rates (for construction workers) and estimated adequacy standards per population served based on historical patterns in Gaza, international organization standards, and cross-national comparisons.

TABLE 32
Summary of Estimated Public Service
Costs, Gaza Strip
(in thousands, at 1976 prices)

	<u>Capital Costs</u> (per additional 1,000 population)	<u>Operational</u> <u>Costs</u> (per 1,000 population)	<u>Notes</u>
Education (IL)	770.0 (308.0) ^a	974.2 (389.7) ^a	Per 1,000 <u>school age</u> population (urban)
(U.S.\$)	96.5 (38.6) ^a	122.1 (48.8) ^a	
Health (IL)	466.8	119.1	Per 1,000 population
(U.S.\$)	58.5	14.9	
Housing (IL)	14,210	--	Per 1,000 population
(U.S.\$)	1,780	--	
Electricity (IL)	159.6	166.7	Per 1,000 persons (residential use only)
(U.S.\$)	20.0	20.9	
Water Supply (IL)	255.0	21.1	Per 1,000 persons (residential use only)
(U.S.\$)	32.0	2.6	
Sewage (IL)	279.3	--	Per 1,000 persons
(U.S.\$)	35.0	--	
Total (IL)	1,160.7	306.9	Per 1,000 population
(excluding U.S.\$)	145.5	38.4	
education and housing)			
Total (IL)	1,414.7	694.6	Per 1,000 population
(including U.S.\$)	184.1	87.2	
education, but exclud- ing housing) ^a			

^a Given that approximately 40 percent of the total Gaza population in 1975 was between 5 and 19 years old (Israel, 1977b), cost projections in parentheses and in total have been adjusted to a unit of "per 1,000 total population."

TABLE 33
 Summary of Estimated Employment
 Requirements for Public Services, Gaza Strip

	<u>Number of Workers Required Per 1,000 Persons</u>
Education	20.5 Teachers ^a
Health	.29 Doctors .76 Nurses
Housing	103 Construction Workers

^a Per 1,000 school age population.

SUMMARY: FIVE YEAR PROJECTIONS OF PUBLIC SERVICES EXPENDITURES, GOVERNMENT INVESTMENT, AND LABOR REQUIREMENTS

Five year projections of public services expenditures, investment, and labor requirements are estimated in this section using the cost parameter derived in the preceding analysis and population forecasts for the West Bank and Gaza Strip (see Appendix C). The projections provide a range of public expenditures that is required if adequate standards of services are to be delivered to a growing population. Estimates include all public services expenditures except for housing costs (that will be dealt with in the construction sector). Capital cost projections are based on annual forecasts of additional increments to the population from in-migration and its natural increase, as well as natural increase increments to the resident population. As discussed earlier, it is assumed that the current resident population already has sufficient infrastructure and will not require additional facilities. Operational costs are estimated on the basis of total population projections that include migrants, residents, and their natural increase. All other public services expenditures were projected earlier in this chapter on the basis of average annual share of GNP.

WEST BANK.

In the West Bank, total capital cost parameters (excluding housing construction) were estimated at U.S. \$267,800 per 1,000 persons. Operational costs were estimated at U.S. \$69,900 per 1,000 persons per year. The large difference between these capital and annual costs per 1,000 persons suggests the high level of investment that is required to provide infrastructure development. High and low projections for total expenditures are presented in Table 34 based on high and low estimates of population. The estimates range from U.S. \$110 to \$114 million in 1979 to U.S. \$140 to \$149 million in 1983 to support the projected increases in population at adequate levels of service. The average annual rate of

TABLE 34

Summary of Total Projected Government Expenditures
in The West Bank,^a 1978 — 1983
(in thousands of U.S. dollars at 1976 prices;
in 1,000 population)

Year	Projected Annual Number of Migrants ^b (includes cumulative natural increase at 3 percent annually)		National Increase Increment to Resident Population ^b	Projected Annual New Population (migrants and natural increase)		Projected Capital Costs (including education) at U.S. \$267.8/1,000 Persons ^c		Total Projected Population ^b		Projected Operational Costs (including education) \$69.9/1,000 Persons ^c		All Other Public Services Expenditures ^d	Total Projected Government Expenditures ^e	
	High	Low		High	Low	High	Low	High	Low	High	Low		High	Low
1978	0.0	0.0	21.8	21.8	21.8	5,838	5,838	713.5	713.5	49,874	49,874	44,887	100,599	100,599
1979	26.4	12.6	22.8	49.2	35.4	13,176	9,480	762.7	748.9	53,313	52,348	48,484	114,973	110,312
1980	27.2	13.0	24.0	51.2	37.0	13,711	9,909	813.9	785.9	56,892	54,934	52,368	122,971	117,211
1981	28.0	13.4	25.0	53.0	38.4	14,193	10,284	866.9	824.3	60,596	57,619	56,554	131,343	124,457
1982	28.8	13.8	26.4	55.2	40.2	14,783	10,766	922.2	864.4	64,462	60,422	61,065	140,310	132,253
1983	29.7	14.2	27.5	57.2	41.7	15,318	11,167	979.4	906.1	68,460	63,336	65,952	149,730	140,455
Average Annual Rate of Growth													8.3%	6.9%

^a Excludes housing costs.

^b From population projections in Appendix C.

^c From Table 20.

^d From previous section on "All Other Public Services Expenditures".

^e Summation of Projected Capital and Operational Costs plus All Other Public Expenditures; proxy for sector value added.

growth for the high projection is 8.3 percent, and for the low projection, 6.9 percent.

Table 35 presents the government investment requirements necessary to facilitate sustained growth in the provision of public services in the West Bank. Three growth scenarios are presented. The first two (8.3 and 6.9 percent) are based on the results of calculations in Table 34 and suggest growth rates in public services based on projected population increase. The third growth scenario is based on the historical average annual growth rate of the public services sector in the West Bank (6 percent). The first two growth scenarios are more realistic since they include assumptions about population growth. For each scenario, the lower ICOR value (0.9) is appropriate due to the high labor intensity of most public services in the West Bank.

A comparison of the investment requirements implied by these three growth scenarios suggests wide differences among them. The historical 6 percent rate requires comparatively low, but steadily increasing levels of government investment. The 6.9 and 8.3 percent scenarios exhibit uneven rates of growth over the next 5 years.⁶⁵ That is, the combination of (a) establishing higher standards for the provision of adequate public services and (b) developing additional infrastructure for anticipated migrants, results in the requirement for very high investment in 1979. Subsequently, a fairly steady investment level is needed to keep up with population requirements for adequate public services. From a conservative perspective, the 6.9 percent growth scenario is considered the most reasonable of the three alternatives.

⁶⁵ The population growth and public service adequacy criteria included in Table 34's calculations result in a major jump in value added between 1977 (the last year for which there is historical data) and 1978 (which is estimated in the calculations). Data for 1978 are not likely to be available before mid-1979. However, at the time of writing (November, 1978), there is no indication that there has been any change whatsoever in the historical trend of value added for public services. Therefore, current trends have been extrapolated through 1978 in Table 35.

TABLE 35

Investment Requirements For Alternative Target Growth Rates and Alternate ICOR Values^a: Public Services, West Bank (millions, U.S. dollars, 1976 prices)

Year	Value Added	High Growth Rate ^c 8.3%		Value Added	Low Growth Rate ^c 6.9%		Historical Average Growth Rate 6%		
		Investment ICOR = 0.9	Investment ICOR = 1.5		Investment ICOR = 0.9	Investment ICOR = 1.5	Value Added	Investment ICOR = 0.9	Investment ICOR = 1.5
1977 ^b	49.5	—	—	49.5	—	—	49.5	—	—
1978	52.9	3.1	5.1	52.9	3.1	5.1	52.5	2.8	4.5
1979	115.0	55.9	93.2	110.3	51.7	86.1	55.6	2.9	4.8
1980	123.1	7.2	12.0	117.2	6.2	10.3	58.9	2.9	4.9
1981	131.3	7.4	12.4	124.6	6.7	11.1	62.5	3.3	5.5
1982	140.4	8.1	13.5	132.3	7.0	11.7	66.3	3.4	5.6
1983	149.7	8.5	14.1	140.5	7.3	12.2	70.2	3.5	5.9

^a See Appendix B, Part II, for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistics Quarterly, 1968-1977.

^c 8.3 percent and 6.9 percent are average annual rates of growth for 1978-1983 (see Table 34); rates of growth are uneven since they are based on population projections and criteria for the provision of adequate services in the future.

As for employment requirements in public services, the annual need for additional teachers, doctors, and nurses is presented in Table 36. These requirements are based on adequacy assumptions that were discussed earlier. To keep up with continual population growth over the next 5 years, approximately 400 to 600 new teachers, 11 to 17 new doctors, and 19 to 30 new nurses will be required each year. These may be extremely difficult goals to attain. For example, between 1972/73 and 1973/74, (the last two years for which data on teachers in government schools are reported) only 122 additional teachers were employed. While it is probable that some professionals will immigrate, it is not likely that the standards of adequacy assumed earlier in the chapter can be achieved in the short term.

GAZA STRIP.

In Gaza, total capital costs (excluding housing) were estimated at U.S. \$184,100 per 1,000 persons and annual operational costs were U.S. \$87,200 per 1,000 persons. Table 37 presents the public services expenditures required to support the increased population at adequate standards, based on the previous assumptions. Projections of public services expenditures range from to U.S. \$77 million in 1979 to U.S. \$95-97 million in 1983. The average annual rate of growth of expenditures is around 6 percent.

Table 38 presents the government investment requirements to sustain growth in the provision of public services in the Gaza Strip. Three growth scenarios are presented. Two (6.1 and 5.7 percent) are based on the results of Table 37 and population growth projections. The third scenario is based on the historical average annual growth rate of 8 percent in Gaza. The first two scenarios are considered to be more realistic since they consider population growth in projected public services. For each scenario, the lower ICOR value (0.9) is appropriate due to high labor intensity in the provision of most public services.

TABLE 36
Projected Labor Requirements For Selected
Services, West Bank, 1978 -- 1983

<u>Year</u>	<u>Projected New Annual Population^a</u>		<u>Annual Number of New Workers Required^b</u>					
	<u>High</u>	<u>Low</u>	<u>Teachers</u>		<u>Doctors</u>		<u>Nurses</u>	
	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>
1978	--	21.8	--	253	--	7	--	12
1979	49.2	35.4	571	411	15	11	26	19
1980	51.2	37.0	594	429	15	11	27	20
1981	53.0	38.4	615	445	16	12	28	20
1982	55.2	40.2	640	466	17	12	29	21
1983	57.2	41.7	664	484	17	13	30	22

^a Includes new population increment annually: migrants and natural increase increment in resident population (see Appendix C).

^b Includes number of new workers required annually to maintain equivalent services at levels considered adequate.

^c Estimate of 29 teachers/1,000 school age population translates to 11.6 teachers/1,000 total population based on the assumption that 40 percent of the total population will continue to be in the eligible school age population group (5-19 years).

^d Based on estimate of 3 doctors/10,000 population.

^e Based on estimate of 5.3 nurses/10,000 population.

TABLE 37

Summary of Total Projected Government Expenditures
in the Gaza Strip^a, 1978 — 1983
(in thousands of U.S. dollars at 1976 prices;
in thousand population)

Year	Projected Annual Number of Migrants ^b (includes cumulative natural increase at 3 percent annually)		Natural Increase to Resident Population ^b	Projected New Annual Population (migrants and natural increase increment)		Projected Capital Costs (including education at U.S. \$184.1/1,000 persons ^c)		Total Projected Population ^b		Projected Operational Costs (including education) at U.S. \$87.2/1,000 persons ^c		All Other Public Services Expenditures ^d	Total Projected Government Expenditures ^e	
	High	Low		High	Low	High	Low	High	Low	High	Low		High	Low
1978	0.0	0.0	16.2	16.2	16.2	2,982	2,982	460.6	460.6	40,164	40,164	29,411	72,557	72,557
1979	4.6	2.2	17.0	21.6	19.2	3,977	3,535	482.3	479.9	42,057	41,847	31,767	77,801	77,149
1980	4.7	2.3	17.9	22.6	20.2	4,161	3,719	504.9	500.1	44,027	43,609	33,358	81,546	80,686
1981	4.9	2.3	18.8	23.7	21.1	4,363	3,885	528.7	521.3	46,103	45,457	36,015	86,481	85,357
1982	5.0	2.4	19.8	24.8	22.2	4,566	4,087	555.3	543.5	48,422	47,393	38,910	91,898	90,390
1983	5.2	2.5	20.8	26.0	23.3	4,787	4,290	579.5	566.8	50,532	49,425	42,018	97,337	95,733
Average Annual Rate of Growth												6.1	5.7	

^a Excludes housing costs.

^b From population projections in Appendix D.

^c From Table 20.

^d From previous section on "All Other Public Services Expenditures".

^e Summation of Projected Capital and Operational Costs plus All Other Public Expenditures; proxy for sector value added.

TABLE 38

Investment Requirements For Alternative Target Growth Rates and Alternate ICOR Values^a: Public Services, Gaza Strip (millions, U.S. dollars at 1976 prices)

Year	High Growth Rate ^c 6.1 percent			Low Growth Rate ^c 5.7 percent			Historical Average Growth Rate 8 percent		
	Value Added	Investment ICOR = 0.9	Investment ICOR = 1.5	Value Added	Investment ICOR = 0.9	Investment ICOR = 1.5	Value Added	Investment ICOR = 0.9	Investment ICOR = 1.5
1977 ^b	35.0	—	—	35.0	—	—	35.0	—	—
1978	37.0	1.8	3.0	37.0	1.8	3.0	37.7	2.5	4.1
1979	77.8	36.7	61.0	77.1	36.1	60.2	40.7	2.8	4.5
1980	81.5	3.3	5.5	80.7	3.3	5.5	44.0	2.9	4.9
1981	86.5	4.5	7.5	85.3	4.2	7.0	47.6	3.3	5.5
1982	91.0	4.1	6.8	90.4	4.5	7.5	51.4	3.4	5.6
1983	97.2	5.6	9.4	95.7	4.8	8.1	55.5	3.8	6.3

^a See Appendix B, Part II, for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistical Quarterly, 1968-1977.

^c 6.1 percent and 5.7 percent are average annual rates of growth for 1978-1983 (see Table 37); rates of growth are uneven since they are based on population projections and criteria for the provision of adequate services in the future.

As with the West Bank results, the two scenarios based on population increase indicate early requirements for very high investment, while the historical growth scenario indicates gradually increasing, but steady, investment needs.⁶⁶ Again, this is due to assumptions about the immediate need for infrastructure when the early migrants arrive and higher criteria for adequate public services. From a conservative standpoint, the 5.7 percent growth scenario is considered the most reasonable of the three alternatives.

Between 157 and 213 additional teachers, 5 and 7 additional doctors, and 12 and 20 additional nurses are needed per year to maintain adequate services for the expanding population (Table 39). Although these requirements are more modest than those of the West Bank (due to lower immigration projections), it will probably be extremely difficult to attract and retain sufficient numbers of professionals in Gaza.

CONCLUSION

A major difficulty in projecting realistic levels of public service spending stems from the fact that it is basically a matter of policy. It is usually considered an exogenous variable, rather than one that can be predicted. In this case, however, the projected levels of government expenditure are keyed to estimated population growth and criteria that will maintain adequacy standards in public services. Thus, the projections are meant to provide baseline requirements for total public services spending to maintain and expand adequate services to the resident and immigrant population.

⁶⁶ As described above for the West Bank, current historical trends have been extrapolated through 1978 in Table 38 (see footnote 65).

TABLE 39
Projected Labor Requirements For Selected
Public Services, Gaza Strip, 1978 -- 1983

<u>Year</u>	<u>Projected New Annual Population^a</u>		<u>Annual Number of New Workers Required^b</u>					
	<u>High</u>	<u>Low</u>	<u>Teachers^c</u>		<u>Doctors^d</u>		<u>Nurses^e</u>	
			<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>
1978	--	16.2	--	133	--	5	--	12
1979	21.6	19.2	177	157	6	6	16	15
1980	22.6	20.2	185	166	7	6	17	15
1981	23.7	21.1	194	173	7	6	18	16
1982	24.8	22.2	203	182	7	6	19	17
1983	26.0	23.3	213	191	8	7	20	18

^a Includes new population increment annually: migrants and natural increase increment in resident population (see Appendix C).

^b Includes number of new workers required annually to maintain equivalent services at levels considered adequate.

^c Estimate of 20.5 teachers/1,000 school age population translates to 8.2 teachers/1,000 total population based on the assumption that 40 percent of the total population will continue to be in the eligible school age population group (5-19 years).

^d Based on estimate of 2.9 doctors/10,000 population.

^e Based on estimate of 7.6 nurses/10,000 population.

CHAPTER 6. AGRICULTURE

CONCLUSIONS

	<u>West Bank</u>	<u>Gaza Strip</u>
<u>Minimal Investment Requirements</u> <u>(1978-1983):</u>		
<u>Reasonable Growth Scenario</u>		
Sector Growth (percent)	6.0	4.0
Investment (millions U.S. \$)	165.5	56.8
<u>Overall 8 Percent Growth Scenario</u>		
Sector Growth (percent)	8.0	8.0
Investment (millions U.S. \$)	329.0	177.6
<u>Minimal Employment Requirements</u> <u>(by 1983)</u>	30,900	13,700-15,700

WEST BANK

Agriculture is the most important productive sector of the West Bank economy. It provides more than a third of all domestic employment and is second only to Israeli industry as a source of employment for the West Bank labor force. In good years, incomes generated in agriculture represent 40 percent of total domestic product. In bad years, the share can drop to 30 percent.

TRENDS IN AGRICULTURAL PRODUCTION.

Agricultural production is largely determined by two indicators: annual rainfall and olive yields. Only 5 to 6 percent of the cultivated area is irrigated. As a result, the yields of all crops vary with the timing and volume of rain during the agricultural season. Weather cycles are reinforced by inherent cycles in the yield of the olive crop. As roughly

a third of the cultivated area is devoted to olive trees, it is largely true that olives determine the degree of success achieved in the sector from year to year.

Table 1 estimates agricultural production and income for the years of Israeli occupation and a single prewar year. The data are in current rather than constant prices, and since inflation rates have been substantial, particularly from 1973 onward, it is not clear to what extent the "nominal" increases are only nominal. It is also to be expected that pre-1967 relative prices differed (perhaps considerably) from postwar prices. Consequently, it is impossible to distinguish "real" gains attributable to altered and changing price structures given unchanged production, and equally difficult to assess changes in production patterns induced by "economic" responses to an altered price structure.

Several approaches to remove the inflation component of nominal increases are possible (see Table 2). The official Israeli data for production (in quantity units) offer some indication of physical production in the sector. The extent of physical output fluctuations for olives is clear, but otherwise, the level of aggregation is too gross. A mild effort to provide an overall measure of real output changes is reported by the two indices of production that appear in Table 2. To the extent that these indices register real output increases,¹ they suggest that the sector has grown at an average annual rate of approximately 8 percent.²

¹ It must be emphasized that these are crude approximations. The aggregation levels are quite high, hence the limitations on the tonnage data continue to apply. Further, the value series for many of the items do not correspond to the tonnage data. As an example, the field crop tonnage consists of wheat, barley, tobacco, and pulses -- the latter a collective used to cover chick peas (reasonable) and vetch (unreasonable) for some years but not others (unreasonable), while the field crop value includes unspecified crops for all years. See, for example, Israel (1974a: 72-3).

² The same procedure was used by Van Arkadie (1977: 134) for 1971/72 and 1972/73. He includes egg production as well as the items in Table 2.

TABLE 1
West Bank Agriculture, Output and Income at Current Prices,
1965/1966 - 1975/1976^a
(millions of IL)

	1965/66	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76
Total Output	145.0	135.0	180.4	171.9	238.7	347.1	403.5	893.1	911.0	1535.1
Crops	95.0	87.9	121.4	101.7	151.0	233.3	256.7	662.7	558.5	1038.7
Field crops	25.0	11.0	21.5	18.4	28.9	37.2	48.7	99.2	99.8	118.2
Vegetables and Potatoes	25.0	19.5	23.5	27.0	32.4	54.4	60.9	132.6	182.2	270.4
Melons and pumpkins	5.0	6.0	4.6	2.1	3.2	1.5	1.5	2.2	2.8	3.4
Olives		19.6	34.8	16.5	40.8	73.5	52.5	308.0	60.0	300.0
Citrus	40.0	10.5	13.9	13.4	10.0	18.1	27.1	34.5	65.8	144.7
Other fruit and produce		21.3	23.1	24.3	34.8	48.6	66.0	86.3	147.9	222.0
Livestock	50.0	45.0	56.4	67.2	84.2	110.5	143.7	226.9	347.5	469.9
Meat	nr	25.1	32.6	41.4	49.7	70.1	90.2	145.2	216.2	314.9
Milk	nr	15.7	18.0	19.9	27.7	32.5	43.1	69.7	113.1	133.0
Eggs	nr	3.2	5.8	5.9	5.3	6.0	8.4	9.9	16.0	19.0
Miscellaneous	nr	1.0			1.5	1.9	2.0	2.1	2.2	3.0
Investment in for- estation and new fruit plantations	nr	2.1	2.6	3.0	3.5	3.3	3.1	3.5	5.0	6.5
Purchased inputs	23.0	21.4	27.0	30.9	35.3	42.9	63.5	97.6	197.4	292.2
(as % of output)	16	16	15	18	15	12	16	11	22	19
Income originating in agriculture	121.0	113.6	153.4	141.0	203.4	304.2 ^b	340.0 ^c	795.5	713.6	1242.9

^a Agricultural years: October 1 - September 31.

^b Reported as 307.1 in original source. Apparently, the income figure was not altered to reflect revised production estimates.

^c Reported as 371.9 in original source. The previous year's issue reported 336.0 and a total output figure of 399.5. It has not been possible to deduce the cause or source of discrepancies.

nr = not reported or not reported separately.

Sources: Data for 1965/66 from Bregman (1975) Table IV-4, pp. 52-3. Other year's from various issues of Israel, Statistical Abstract of Israel.

1967/68: No 27, 1976, Table xxvii/27, p. 7.6;

1967/69: No 22, 1971, Table x/23, p. 641;

1969/70: No 23, 1972, Table xxvii/23, p. 664;

1970/71: No 24, 1973, Table xxvi/27, p. 720;

1971/72: No 25, 1974, Table xxvi/24, p. 708;

1972/73: No 26, 1975, Table xxvi/26, p. 710; and,

1973/74, 1975/76: No 27, 1977, Table xxvii/26, p. 731.

TABLE 2
West Bank Agriculture,
Indicators of Real Output, 1967/1968 - 1975/1976^a

	<u>Prices Per^b</u>		<u>Output in Thousands of Metric Tons</u>								
	<u>Ton For</u>		<u>1967/68</u>	<u>1968/69</u>	<u>1969/70</u>	<u>1970/71</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>	<u>1974/75</u>	<u>1975/76</u>
Field Crops	468	3387	23.5	42.0	29.5	46.5	55.3	43.3	63.9	38.3	34.9
Vegetables and Potatoes	325	1836	60.0	65.0	87.0	85.4	103.1	93.4	138.5	139.9	147.3
Melons and Pumpkins	167	756	36.0	20.5	12.7	14.0	8.0	3.3	4.2	3.6	4.5
Olives	700	6000	28.0	53.5	15.0	30.0	70.0	21.0	110.0	10.0	50.0
Citrus	350	1953	30.0	33.0	35.2	38.0	47.6	58.6	61.5	63.8	74.1
Other Fruits	445	2898	47.9	44.1	45.8	50.0	56.5	61.8	71.0	78.1	76.6
Meat	2437	14058	10.3	12.9	15.3	15.7	18.7	20.2	22.0	21.4	22.4
Milk	518	3205	30.3	34.9	37.1	38.2	43.8	44.3	44.7	46.0	41.5
Approximate Real Output Indices^c											
(for the above groups, totaled)											
in 1967/68 prices			100.0	126.2	111.8	129.4	170.6	144.6	219.5	158.6	183.4
in 1975/76 prices			100.0	131.4	108.5	129.5	177.4	141.5	232.0	151.4	182.8
(for the above groups, excluding olives)											
in 1967/68 prices			100.0	114.5	122.3	133.4	156.3	157.1	188.4	180.6	184.3

^a Agricultural years: October 1 - September 31.

^b Prices computed from the value series reported in the previous table and tonnage figures reported in this table.

^c These are crude indices. For each index, the prices of the respective years were used to compute values corresponding to the tonnages reported in the table. The sum of each year's items was taken and expressed as a ratio of the 1967/68 total multiplied by 100. For both sets of prices, the same "base year ratio" has been used to make comparisons easier.

Sources: Same as Table 1. See also notes b and c above.

Interested readers can, if they choose, deflate the nominal values of total output and income by any one of the price indices presented in Appendix D to produce alternative measures of real growth.

Apart from the overall growth rates suggested by the production data in Tables 1 and 2, some indications of Israeli policies toward West Bank agriculture are discernable. The effort to shift production away from melons, a traditional cash (and export) crop has had an effect,³ as have the inducements to encourage certain classes of vegetable production. Generalized efforts to improve standards in animal husbandry have apparently registered steady if not remarkable gains in production.⁴

Other Israeli policies may be broadly suggested by the data but interpretations are the subject of some controversy. As examples, it has been suggested that the encouragement of tree crop cultivation was intended to be labor saving and that the encouragement of selected labor intensive crops (sesame is an example) was intended to exploit the lower

His resulting index values are 169.6 and 145.2 in 1967/78 prices. The relevant data were not available for all years, hence the omission. It should also be noted that the "1975/76 prices" series represents a small move toward controlling for altered product mixes and should be interpreted as such. It does not capture relative price changes nor does it indicate stability of relative prices.

³ In the immediate postwar period, the Israeli concern was that West Bank melon production, at levels far above local and Israeli consumption expectations, might require substantial welfare subsidies should the traditional East Bank market be lost. Policy was directed toward encouraging less perishable crops, crops suitable for industrial processing, and crops salable in nontraditional (for the West Bank) export markets.

⁴ Generally, these efforts were directed toward inoculation of existing livestock, later marketing to increase sale weights, and some efforts to improve the stock by importing breeds from Israel. See Israely (1971) and Bregman (1975) for more discussion.

(compared to Israel) wage structure of the West Bank.⁵ Both of these suggestions are similar to the questions raised of any set of policies that accompany apparently significant changes in an economy's agricultural sector. In essence, the questions address the profitability of agriculture and, in the absence of fairly extensive information about relative produce prices, factor costs, and production techniques the questions will not be answered satisfactorily.

It can be argued that a more central question for the future of agriculture in the West Bank is the change, if any, that has occurred in production techniques. It is known that the Israelis made efforts to introduce better yielding varieties of some crops, exposed the West Bank farmers to information about cultivation methods, and explained the potential advantage from some forms of mechanization. In essence, the question should be whether or not the capabilities of West Bank agriculture have changed. If it is possible to relate measures of input usage to measures of output, an assessment of agricultural productivity could be attempted.

Table 1 contains an annual estimate for the value of purchased inputs during each year. An increase in the proportion of purchased inputs to output would suggest a more sophisticated agricultural technique. However, interpreting the data is difficult. The fluctuations are sizeable, and in comparing the percentages to the indices of real output, it would seem that weather and olives are the factors responsible for the shifting proportions. Without a disproportionate increase in the share of purchased inputs, the judgment must be that no change in technique has occurred. However, it is true that small changes in purchased inputs can accompany technological progress. Consequently, an alternate

⁵ The arguments quickly expand beyond the ability of the data to support them. Lesch (1970) provides a measured discussion as does Van Arkadie (1977). An open attack on the Israeli policies is provided by Ryan (1974). Footnote 4 cites two defenses of the Israeli case.

means of judging advances in technique is to examine the relation of "traditional" inputs to output. If there are smaller labor and land components associated with rising or constant output levels, it would tend to support a judgment of improved technique.

The available data on employment in agriculture in the West Bank are presented in Table 3. While there is a clear downward trend since 1969-1970, there are also grounds to believe the trend is not necessarily associated with productivity gains.

1. It is typically the case that agriculture in a developing economy supports a substantial volume of underemployment because other income opportunities do not exist. Given an alternate employment opportunity, in this case the Israeli economy, the downward trend is only measuring a reduction in underemployment.
2. While official employment figures in agriculture have declined, in part because male heads of households have left the farm for salaried jobs, women and children often assume the farming tasks, but are not counted officially as agricultural workers (conversation with Vivian Bull, November 16, 1978).⁶
3. The data are based on surveys with significant sampling errors.
4. The survey design elicits primary employment with no registration of continued agricultural work despite an income earned elsewhere.
5. The relation of employment to output, while declining, is not as dramatic as might be hoped.

The ratio of the previous output index to a labor index (see Table 3) does show a significant increase over the period. Unfortunately, the

⁶ Moreover, associated with this shift in male employment away from agriculture and the maintenance of crop cultivation by unpaid family workers is the removal of the crop yield from the cash market. While the land may officially be removed from the register of cultivated farmland, its yield is used to supplement personal income by providing sustenance for the family (in conversation with Vivian Bull, November 16, 1978).

TABLE 3

West Bank Agricultural Employment

	<u>1966</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Total West Bank labor force employed in Israel (thousands) ...	...	...	...	14.7	25.6	34.9	38.6	42.6	40.4	37.0
Total employment in West Bank (thousands) ...	...	84	100	99.8	91.2	90.3	87.7	94.9	91.9	92.0
Total employment in West Bank in Agriculture (thousands) ...	65	32.7	46.9	42.4	36.6	34.2	30.0	36.0	32.0	30.9
West Bank agriculture employment index, 1968=100			100.0	143.4	129.7	111.9	104.6	91.7	110.1	97.9
Ratio's of output indices to employment index										
67/68 prices (include olives)		1.00	0.88	0.86	1.16	1.63	1.58	1.99	1.62	1.94
67/68 prices (exclude olives)		1.00	0.80	0.94	1.10	1.49	1.71	1.71	1.84	1.95
No. of employees in West Bank agriculture (thousands)			...	...	8.6	...	5.6	3.9	3.5	2.8

Sources:

Total persons employed data for 1966-1969 from Bregman, 1975, Table II-3, p. 32, and Table IV-4, p. 52-3. Other years from Israel, Statistical Abstract of Israel 1977, No. 27, Table xxvii/22, p. 726. Data for agricultural employees from Israel, Statistical Abstract of Israel, 1977, No. 27, Tables xxvii/23, p. 727 and xxvii/25, p. 730. The reported data are number of persons resident on the West Bank who are employees in agriculture (regardless of location) and persons resident on the West Bank who are employees in agriculture in Israel.

limitations of the output index mean that the increasing ratio could be the result of a shifting crop pattern. In itself, that would certainly suggest an improvement in agriculture, but not necessarily an improvement in agricultural technique. On a cautious assessment however, some improvement does seem to have occurred.

A final note regarding the decline in hired workers should be made. Typically, a decline such as the one shown in Table 3 is not induced by a reduction in employment opportunities (for example, farmers no longer needing the labor). Generally, the pattern is that agriculture cannot match the wages paid elsewhere.

The last available way to judge agricultural productivity is by examining crop yields. The basic data in land use are presented in Table 4. It should be noted that far more detailed information is available for 1974/75 than is presented, but the detail is available for only one year. Many of the previously mentioned trends in production are consistent with the land use pattern. The melon decline is clear, the increase in olive area is clear, and the proportionately smaller but steady rise in vegetable production compared to field crops is matched by the data for land use.

The specific crop data needed to compute yields are reported on a different basis from the land use data. As a result, only two specific field crops can be compared over time. Table 5 shows five observations for wheat and sesame yields over an 8-year period. The sesame figures would suggest no change. The wheat data does show a significant improvement. The real difficulty is that neither is consistent with the commentaries on yield levels that have been offered in most Israeli publications.

The data for wheat illustrate the problem:

- The Israeli estimate of 1966 wheat yields was 100-110 kg/dunam (Israel, 1967a: 149).

Table 4
West Bank Agriculture, (and Use Patterns)
(thousands of dunams^a)

	1963 ^b	1966 ^b	1967/68	1968/69	1969/70	1970/71	1973 ^c	1974/75	1974/75
Number of faras (1000's)	nr	nr	52.7	52.7	58.7	nr	nr	nr	
Physical area	nr	nr	2630.1	2630.1	2715.0	2669.0	nr	nr	
Uncultivated	nr	nr	569.2	558.0	637.6	600.0	nr	nr	-
Unirrigated ^d	nr	1,400.0	1980.9	2018.0	1996.9	nr	1936.0	1461.2	66.0
Irrigated	nr	105.4	80.0	80.5	80.5	nr	81.0	82.8	34.3
Field crops	895.3	868.6	890.0	1072.1	901.8	914.5	827	537.9	44.7
Wheat	491.2	459.8	464.9	570.0	450.0	450.0	430	256.8	42.5
Barley	196.4	195.9	231.0	280.8 ^e	220.0	225.0	150	133.6	2.0
Pulses	85.9	98.9	94.0	105.0	100.0	108.0	130 ^f	101.6	-
Chick peas (karsina or karsenneh)	nr	nr	47.6	55.3	60.0	65.0	80	nr	-
Sesame	34.1	22.5	18.0	36.0	30.0	30.0	40	12.9	-
Field crops, n.e.c.	87.7	91.5	34.5	40.0	41.8	36.5	31	26.6	-
Vegetables and potatoes	249.9	255.7	70.0	75.0	85.0	78.9	80	101.1	15.9
Melons and pumpkins	77.2	70.7	43.0	26.0	26.0	15.0	10	3.2	0.2
Fruit plantations	451.0 ^g	476.1 ^g	680.0	685.3	710.6	710.6	765	875.3	5.4
Olives	499.6	546.0	479.6	485.0	520.0	520.0	580	635.3	-
Citrus	10.2	24.0	20.0	20.0	22.0	22.0	24	23.7	2.8
Other fruits	240.2	271.6	180.4	180.3	168.6	168.6	161	217.5	2.6
Fallow	nr	nr	362.0	238.0	354.0	350.0	335	nr ^h	nr

^a One dunam = 1000 sq meters = 0.247 acres.

^b The original source views these as probable overestimates, particularly as vegetables interspersed with olive trees would each be counted for the same land use (that is, an approximate net figure).

^c Data have been rearranged, and at times aggregated to correspond to other information (other years).

^d Unirrigated land includes fallow land for all years except 1974/75. It is probably excluded but it is not clear in the original source. Fallow land may also be excluded for 1974/75.

^e A revised figure, 26.5 was in the 1972 issue (see below). It may mean 265 is the correct figure.

^f The sum of vetch and lentils in original source.

^g See note b above. Reported data are from original source. The sum of the 3 items immediately below provides another estimate.

^h See note d above.

nr = not reported or not reported separately.

Sources:

1963 and 1966 data from Israel (1967a: 136-139).

1967/68 and 1968/69 from Israel, Statistical Abstract of Israel, 1971, Table x/24, p. 642.

1968/69 and 1969/70 from above source (1972) Table xxvi/24 p. 605 (also corrections for 67/68 and 68/69).

1973 from Van Aardie (1977), Table V2-4, p. 129.

1974/75 from Israel, Q5AA, Vol II, No. 3 (1976), Appendix 1, Table 11, pp. 73-4.

TABLE 5
West Bank Agriculture
Wheat and Sesame Yields

<u>Year</u>	<u>Wheat</u>		<u>Sesame</u>	
	<u>Tons (thousands)</u>	<u>kg/dunam</u>	<u>Tons (thousands)</u>	<u>kg/dunam</u>
1967/1968	18.0	40	0.7	39
1968/1969	33.6	49	(1.7) ^a	47
1969/1970	22.5	50	0.7	23
1970/1971	...	...	...	...
1971/1972	45.0	...	1.1	...
1972/1973	36.0	84	0.8	20
1973/1974	52.0	...	1.0	...
1974/1975	30.0	117	0.6	46

^a Estimate.

... Not available.

Source: Land use data in Table 4 and production output from Israel, (1976c: 61-72).

- The Bank of Israel variously estimated wheat yields at 80-150 kg/dunam for old strains and 300-400 kg/dunam for new strains in 1970/71 (Bank of Israel, 1971: 22); and 250-400⁷ in 1971/72 (Bank of Israel, 1972: 20).
- Bregman reported 1973 yields as in the neighborhood of 150 kg/dunam (Bregman 1975: 49).

It is obviously impossible for all these estimates to be correct, provided of course that they all measure the same thing. It is possible (but pure speculation) that the above estimates of improved yields refer to Israeli-run demonstration plots and not to the West Bank average production.

In any case, the comparative annual figures for aggregate product groups (see Table 2) do suggest⁸ an increase in yields. Overall however, no one figure is particularly convincing. Production seems to have definitely increased. Labor utilization has decreased compared to output and possibly decreased compared to land (but the tree crop issue returns to upset a neat conclusion). Total land use appears to have declined but only if the 1974/75 data are assumed to be consistent with the late 1960's information.

FORECASTS BY ASSUMPTION.

It would appear that the most reasonable procedure to follow in order to assess future agricultural output would be to make a series of clearly stated assumptions and construct a forecast on the basis of those assumptions. As a first step, the animal husbandry branch of agriculture can be treated quickly.

⁷ There is a note warning that these 1971/72 figures apply to specific plots.

⁸ But with extreme caution -- a shift within the vegetable group toward tomatoes could, for example, boost the aggregate yield figure yet correspond to no technical change.

Progress in increased production from livestock and products is assumed to have already achieved the quick gains available. The increases of the late 1960's were attributable to altered feeding/slaughter standards. Once this class of changes has been made, further increases must come from much slower developments to improve the existing animal stocks and from efforts to insure sound feeding programs and veterinary practices. Consequently, an annual increase in real production of 6 to 7 percent would represent a reasonable projection. It is somewhat higher than has been achieved since 1971/72 but lower than the dramatic gains for the overall period.

The growth of fruit plantation production is largely determined for the next 5 years by existing trees. The increased land area committed to orchards beginning in 1969/70 will affect production over the next 5 years but the influence will only begin to be substantial in the last 1 or 2 years. As a result, the peak production of 1973/74 represents a reasonable maximum for olives over the period. The bare citrus output (and all other fruits) can be accepted as the 1973/74-1975/76 average production. Citrus gains on an annual basis can be set at 4 percent (Shahar, et al., 1971: 72 and recent Gaza performance trends) over the forecast period.

The two remaining branches are field crops and vegetables. As long as the winter production in the Jordan Valley continues to be outside West Bank agriculture,⁹ no radical changes in rates of output growth are to be expected. Consequently, the opportunities for increased yields must be developed from continuing advances in irrigation techniques and increased use of purchased inputs.¹⁰ The net effects of potential

⁹ Apparently controlled completely by Israeli settlements. It may or may not be excluded from the data. Statements (but not table notes) suggest the settlements are excluded. The land use data for 1974/75 does definitely count at least one Israeli settlement.

¹⁰ It is apparently true that efforts to introduce new varieties have been judged completed (see Israel, 1972f, 1974d).

developments in these areas are difficult to assess. From the fragmentary available information, the impact of the "classic" purchased input, chemical fertilizers, does not appear to be great enough to cause significantly increased yield. In a similar vein, there is no apparent extension of irrigation that registers in the data. No doubt there have been improvements in yields because better techniques are being followed but that must be judged a relatively small contribution compared to the potential for gains from the extension of irrigation to a larger proportion of the cultivated area. There is frankly no way to determine what is reasonable and what is not. From the record, a 1 percent per annum expansion of irrigated area would appear to be the most that could be expected over the short term.¹¹ With this increase, the rate of growth could reach 10 percent over the next 5 years. Without it, the 8 percent historical average for the entire sector would appear to be an optimistic estimate.

Taken together these assumptions suggest that a real output growth rate of 6 percent would be the most reasonable estimate. A slightly faster growth rate, on the order of 7.5-8 percent could also be reasonable were there to be an increase in the irrigated area. Accepting these rates of real output increase, employment opportunities would be expected to remain very near the average 1974-1976 levels. There is a potential for further employment decreases as the process of withdrawing marginal land from cultivation continues. Similarly, small decreases could result from

¹¹ The only published hydrological estimates date from 1967 (Israel, 1967a). At that time the estimated water consumption by agriculture was less than 60 percent of available supplies (not including the Yarmuk River-East Ghor Canal proposal). Presumably water is not the problem but rather storage facilities and distribution equipment. For irrigated vegetables and melons, the West Bank water use figure is 580 cubic meters/dunam (Shahar, 1971: 71). Based on the existing water estimates, an additional 20 to 50 thousand dunams could be supported. It is clearly unrealistic to suppose that such an extensive area be irrigated over the next 5 years. The 1 percent estimate would add an additional 4 to 5 thousand dunams over a 5-year period.

a continuation of the painfully slow process of mechanization. On the other side, continued shifts from field crops to vegetables would induce employment increases, as will greater use of intermediate products requiring more labor during the planting/cultivation periods. Finally, it should be remembered that these changes assume there will not be a return to the 1967-69 levels of underemployment in the agriculture sector.

Finally, there remains the question of investment levels required by the expected production increases. Unfortunately, little is known regarding existing investment levels or existing capital values. It is probably true that the fragmented patterns of land holdings will force government action if there is to be progress on expanding the irrigated area.¹² Once major portions of projects have been completed, a shift in emphasis to a program extending financing to farmers for purchase of the necessary distribution equipment would probably be successful. The costs however, remain unknown. Necessarily, the only recourse is to extrapolate from capital-output ratios drawn from other economies, a procedure carried out in Table 6.

FIVE YEAR PROJECTIONS FOR INVESTMENT AND EMPLOYMENT.

Table 6 presents a range of projected investment requirements for agriculture given various potential growth rates in the agricultural sector and two assumptions concerning the capital-output relationship. The table shows yearly projections of agricultural value added if the most optimistic growth rate (10 percent) is realized. At this rate of growth, the 1983 output level would be almost double the 1977 level. As argued above, in order for this 10 percent annual growth rate in agriculture to be reasonable, irrigation would have to be expanded at an annual rate

¹² The issue of land reform must be dealt with. The aggregation of small land parcels would enable efficient mechanization and planning for rational capital investment and result in greater productivity (Aresvik, 1976).

TABLE 6

Projected Investment Requirements For Alternate Target Growth Rates and Alternate ICOR Values^a: Agriculture, West Bank (IL millions)

Year	High Growth Rate (10 percent)			Low Growth Rate (6 percent)			Historical Average Growth Rate (8 percent)		
	Value Added	Investment (ICOR=3.16)	Investment (ICOR=4.48)	Value Added	Investment (ICOR=3.16)	Investment (ICOR=4.48)	Value Added	Investment (ICOR=3.16)	Investment (ICOR=4.48)
1977 ^b	998	—	—	998	—	—	998	—	—
1978 ^c	1098	316	448	1058	190	269	1078	253	358
1979	1208	348	493	1121	199	282	1164	272	385
1980	1328	379	538	1189	215	305	1257	294	417
1981	1461	420	596	1260	224	318	1358	319	452
1982	1607	461	654	1336	240	340	1466	341	484
1983	1768	509	721	1416	253	358	1584	373	529

^a See Appendix B, Part II for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistical Quarterly, 1977-1978.

^c 1978-1983 are projections.

of at least 1 percent per year. It is also assumed that some of the increased irrigated area would be shifted from field crop cultivation to vegetable cultivation, which yields higher value per irrigated land area.

Given these assumptions for rapid growth, the higher ICOR value (4.48) is more relevant to matching required production methods (that is expanding irrigated land which requires high additional capital investment) than the lower ICOR value. Therefore, the yearly investment projections based on ICOR=4.48 should be considered relevant to realizing 10 percent annual growth in agricultural output. This means that in 1979, IL 493 million in investment will be required in agriculture. By 1983, the investment requirement will jump to IL 721 million in constant 1976 prices.

The 6 percent annual increases in value added are based on assumptions of continued, though minimal, increases in irrigated area and gradual mechanization. Under this scenario, it is also assumed that there will be no radical shift from field crops to vegetables, and no rapid increase in the application of purchased inputs, such as fertilizer. Given these assumptions, the investment projections based on the lower ICOR (3.16) are probably more realistic (assuming requirements for minimal additional capital investment). Annual investment requirements for this growth scenario ranges from IL 199 million in 1979 to IL 253 million in 1983. These projections may be considered the minimum requirements to achieve limited progress in agriculture, with little transition from traditional to modern techniques. As argued above, this 6 percent annual growth rate may offer the most realistic prospects for the agricultural sector.

The final growth scenario for agriculture uses the historical 8 percent average rate of growth. Sustained annual growth at this rate assumes some increase in irrigated land and no radical shift in crop patterns. The higher ICOR value (4.48) is probably reasonable if the historical average growth rate is to be sustained, due to the need for capital-intensive irrigation systems). Thus, required investment for an annual

8 percent growth rate ranges from IL 385 million in 1979 to IL 529 million in 1983.

Projected employment requirements for West Bank agriculture vary depending upon assumptions of labor intensity implied by the alternate growth rates (see Table 7). As for the 10 percent annual growth rate, it was assumed that

- The irrigated area must expand by 1 percent per year (the historical maximum rate of expansion), and
- Most of the newly irrigated area must be devoted to vegetable cultivation that can yield higher value crops per unit of land.

Despite the heavy capital investment in terms of irrigation systems required to achieve this goal of 10 percent annually, vegetable cultivation is highly labor-intensive. On the basis of historical figures from the Israeli economy in which these production methods are used for vegetable cultivation (Gaathon, 1971; Ben Shahr, et al., 1971; calculated from the Statistical Abstract of Israel, various issues), the labor required is projected to increase 50 percent more than the overall increase in output for the vegetable crop. Thus, assuming a 10 percent annual rate of increase in this scenario, a 15 percent increase in employment for agricultural cultivation is projected, with employment in all other branches of agriculture remaining constant. Given these parameters, the total projected employment for this agricultural scenario amounts to 34,033 employed persons in 1979 and increases to 43,700 in 1983.

As for the 6 and 8 percent growth scenarios, it was assumed that these could be achieved reasonably with no major shift in the types of crops cultivated. It was also assumed that recent trends in declining underemployment will not be reversed, but that the departure of surplus labor from agriculture will slow down. These factors, combined with the assumption of gradual technical progress in agricultural production methods

TABLE 7
**Total Projected Labor Requirements
 For Agriculture: West Bank
 (thousands of persons)**

<u>Year</u>	<u>Alternative Annual Growth Rates in Output</u>		
	<u>10 percent^a</u>	<u>6 percent^b</u>	<u>8 percent^b</u>
1978	33.4	30.9	30.9
1979	34.9	30.9	30.9
1980	36.7	30.9	30.9
1981	38.7	30.9	30.9
1982	41.0	30.9	30.9
1983	43.7	30.9	30.9

^a In order to achieve a 10 percent annual growth rate, it is assumed that most of the growth must be caused by a shift to the labor-intensive cultivation of intensively-irrigated vegetables. Employment would need to increase in vegetable cultivation by 15 percent annually to permit an overall increase in agricultural output of 10 percent (see text).

^b In order to sustain 6 to 8 percent annual growth rate, it is assumed that no increase in employment will be necessary.

lead to the conclusion that these modest growth rates may be realized with no substantial increase in agricultural employment. Thus, maintenance of the 30,900 employed persons in the agricultural sector (the 1977 level) is sufficient to sustain these growth rates in output.

GAZA STRIP

Agriculture in the Gaza Strip and North Sinai is not subject to the cycles influencing West Bank production. Citrus is the main crop, contributing one-half of the sector's total output, and irrigation rather than rainfall is the major component of water supply. Of the estimated 100 million cubic meters of water used in agriculture, some 70 percent is drawn from wells. The Gaza problem is that pumping rates have been sufficiently high to lower the area's water table. To a substantial degree, the future of the sector is dependent on, and perhaps limited by, additional water sources.

This section provides a brief review of the agriculture sector of the Gaza Strip. Unfortunately the available data for the sector are quite limited and generally not sufficient to provide more than an overview of major trends. The crucial questions regarding water resources cannot be answered directly from what is known. Consequently, a substantial degree of faith must be placed in the tangential remarks of other writers, some of whom may have been facing the same deductive problem, to estimate general constraints on future progress.

TRENDS IN AGRICULTURAL PRODUCTION.

The available estimates summarizing the value of agricultural output and income are presented in Table 8. The relative importance of the citrus branch in the sector's total output is clear as is the unimportance of field crops. A decline of melon production, although obscured in later years by the overall inflationary trend, is visible in the early part of the series.

TABLE 8
Gaza Strip and North Sinai Agriculture, Output and
Income at Current Prices, 1967/1968 -- 1975/1976^a
(IL millions)

	<u>1967/1968</u>	<u>1968/1969</u>	<u>1969/1970</u>	<u>1970/1971</u>	<u>1971/1972</u>	<u>1972/1973</u>	<u>1973/1974</u>	<u>1974/1975</u>	<u>1975/1976</u>
Total Output	53.3	63.3	76.5	105.3	149.5	191.1	256.7	445.3	691.5
Crops	41.3	49.1	58.8	83.0	113.8	140.9	186.4	328.6	532.3
Field Crops	0.3	0.9	0.8	1.0	1.3	1.7	3.0	4.4	6.3
Vegetables and Potatoes	9.3	10.3	10.3	11.4	16.9	20.6	27.5	44.4	68.8
Melons and Pumpkins	2.5	1.4	1.2	1.8	2.5	3.4	4.0	7.3	10.3
Citrus	21.6	27.4	37.8	56.8	75.6	92.0	120.5	223.9	383.9
Other Fruit ^b	7.6	9.1	8.7	12.0	17.5	23.2	31.4	48.6	63.1
Livestock and Products	10.9	12.9	15.9	20.8	33.9	48.4	68.5	113.6	154.1
Meat	3.6	4.7	5.8	8.6	12.7	17.3	23.6	35.3	47.5
Milk	3.3	3.4	3.6	4.3	7.3	11.1	16.7	29.1	41.8
Fish	2.7	3.0	4.3	4.8	9.8	14.6	19.4	32.7	45.9
Eggs	1.1	1.8	2.2	2.8	3.8	4.9	7.8	13.4	16.2
Miscellaneous	0.2			0.3	0.3	0.5	1.0	3.1	2.7
Investment in Forestry and New Fruit Plantations	1.1	1.3	1.8	1.5	1.8	1.8	1.8	3.3	5.1
Purchased inputs (Percent of output)	17.0 32	22.2 35	25.6 34	34.1 32	42.1 28	57.7 30	80.6 31	141.4 32	206.9 30
Income Originating in Agriculture	36.3	41.1	50.9	71.2	107.4 ^c	133.4	176.1	304.1	484.6

^a Agricultural years: October 1 -- September 30.

^b Includes olives.

^c Reported as 105.5 in original source. Apparently the income figure was not adjusted to reflect revised output estimates.

Sources: Israel, *Statistical Abstract of Israel*.
1967/1968: No. 27, 1976, Table xxvii/27, p. 716;
1968/1969: No. 22, 1971, Table x/23, p. 641;
1969/1970: No. 23, 1972, Table xxvii/23, p. 664;
1970/1971: No. 24, 1973, Table xxvi/27, p. 720;
1971/1972: No. 25, 1974, Table xxvi/26, p. 708;
1972/1973: No. 27, 1975, Table xxvi/26, p. 710; and,
1973/1974 -- 1975/1976: No. 28, 1977, Table xxvii/26, p. 731.

The basic problem of distinguishing the real output growth from inflationary increases in these current price values is not easily solved. The aggregate physical output measures reported in official data are not necessarily representative of the constant price output measures that would be preferred, but they are all that are available. Table 9 presents output data in tons for some of the same aggregates used in Table 1.

Although detailed production and price data are not published, fragmentary comments and limited information regarding 1974/75 suggest that both the product mix and relative prices have fluctuated wildly over the period covered by the data in Tables 8 and 9. As a result it has been judged misleading to attempt to construct rough indices of real output to "control" for inflation. All available reports¹³ suggest that prices in Gaza moved quite rapidly toward the prevailing Israeli price structure. Deviations caused by trading restrictions and poor harvest years were of short duration but nonetheless substantial. As a result, the only possible recourse is to deflate the nominal income figure by either the price index (consumer's) for Gaza or another index, probably one for the Israeli economy. Bregman (1976: 41) has prepared an estimate of farm owners' incomes after payment of wages. His data suggest a 14 to 15 percent annual real income increase over the period corresponding to a 10 percent real annual increase in total output.

One obvious trend in the production data is the substantial increase in citrus production, in both value and tonnage measures. In large part, the increases are attributable to maturing citrus orchards. At the start of the data period, over 50 percent of citrus orchards were too young to be productive, a direct result of the phenomenal rates of planting that occurred in the early and mid-1960's. Table 10 provides the only published accounts of land use in the Gaza Strip. Allowing 5 years for the groves to mature, a 70 percent increase in production would be reasonably

¹³ In particular the following reports by the Military Coordinator of Civilian Affairs (Israel, 1974d, 1972f, 1970d).

TABLE 9

Gaza Strip and North Sinai Agriculture: Output
in Tons by Major Commodity Groups
(thousands of metric tons)

	<u>1967/1968</u>	<u>1968/1969</u>	<u>1969/1970</u>	<u>1970/1971</u>	<u>1971/1972</u>	<u>1972/1973</u>	<u>1973/1974</u>	<u>1974/1975</u>	<u>1975/1976</u>
Vegetables and Potatoes	31.8	33.2	36.4	36.8	38.9	40.5	37.9	46.0	48.0
Melons and Pumpkins	12.5	8.0	7.1	7.9	4.6	5.0	6.1	4.7	3.0
Citrus	91.0	106.0	142.0	175.0	178.0	205.2	207.0	201.4	243.7
Other Fruits	19.0	20.0	18.4	19.0	26.3	21.4	26.5	25.2	20.9
Meat	1.7	1.9	2.4	2.6	3.0	3.5	3.4	3.7	4.4
Milk	2.8	6.9	7.4	7.2	9.7	10.2	11.7	12.9	12.8
Fish	3.7	3.8	3.4	3.2	4.2	4.6	3.5	4.9	4.7

Source: Same as Table 1.

TABLE 10
Gaza Strip Agriculture, Land Use
(thousands of dunams)

	<u>1966</u>	<u>1967/1968</u>	<u>1968/1969</u>
Number of Farms (thousands)	...	8.0	8.0
Physical Area	...	210.0	210.0
Uncultivated	...	19.0	10.0
Unirrigated	114.0	101.0	...
Irrigated	90.0	90.0	...
Field Crops		56.0	59.0
Wheat		4.5	...
Barley		48.2	...
Others	86.0	3.3	...
Vegetables		7.0	14.0
Melons and Pumpkins		6.0	5.0
Citrus	70.0	70.0	70.0
mature	30.0	30.0	...
young	40.0	40.0	...
Other Fruit Plantations	48.0	48.0	50.0
Fallow	...	4.0	2.0

... Not available.

Source: 1968/1969 from Israel, Statistical Abstract of Israel, 1970, No. 21, Table x/15, p. 638.
1967/1968 from Israel, Statistical Abstract of Israel, 1969, No. 20, Table x/10, p. 640.
1966 from Shahar, et al, 1971, pp. 45-46.

attributable to these areas by 1973 with an eventual doubling of production, assuming no other changes (see Ben-Shahar, et al., 1971, Chapter IV, especially p. 65).

The second noteworthy point in the aggregate production data is the share of animal husbandry contributed by fishing.¹⁴ The industry is split between vessels operating from the port of Gaza and those operating from El Arish. The numbers are split approximately evenly between the two ports and the total catch similarly distributed. Of the half of total tonnage from El Arish, only 10 percent is caught in the open sea. The bulk is caught in Bardawill Lake (Israel, 1974: 59, 61).

Following production estimates and land use, the only other available data describing agriculture are employment. The basic pattern of employment (see Table 11) follows essentially the same trend observed in the West Bank. The declining agricultural labor force appears to be the result of Gaza residents taking employment in the Israeli economy for wages presumably above the Gaza agriculture sector levels.

Agricultural Productivity

The basic problem is as before: Can inputs be compared to output levels to deduce rates at which improved production techniques have been adopted? It would appear that the key issues are water and irrigation technique. If, in 1966-1967, the Gaza agricultural water consumption was 100 million cubic meters, "50 percent...obtained by overpumping" (Ben-Shahar, 1971: 46), then it must certainly be the case that more water has been found or irrigation techniques have improved.

The answer is probably a mixture of both but with the larger benefit derived from better irrigation systems. First, the difference between

¹⁴ An admittedly awkward classification but the one adopted throughout official records.

TABLE 11
Gaza Strip and North Sinai Agricultural Employment

	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Total Gaza Strip Labor Force Employed in Israel (thousands)	...	...	5.8	8.1	17.5	22.7	26.1	25.9	27.8
Total Employ- ment in Gaza Strip (thousands)	...	...	52.9	51.5	46.0	45.7	46.9	46.5	48.3
Total Employ- ment in Gaza Strip in Agriculture (thousands)	12.0	17.2	16.8	16.0	12.4	11.9	12.0	12.0	12.8
Total Employees in Gaza Strip in Agriculture (thousands)	...	...	10.6	...	7.5	7.1	6.1	6.6	5.8

... Not available.

Source: Israel, Statistical Abstract of Israel, 1977, No. 27, Tables xxvii/23, p. 727 and xxvii/25, p. 730.

Israeli and Gaza water use for citrus is 500 cubic meters per dunam, 800 versus 1300. Differences for other crops are not as large but they are significant. Certainly, the opportunity for improvement has existed. It is known that 4500 dunams were converted to drip and sprinkler systems in 1973 (Israel, 1974d), that water meters were installed on approximately 40 percent of agricultural wells by the same year and that pumping charges had resulted in reduced water demand (Israel, 1974d). Further, simple changes in the timing and volume of irrigation are thought to have reduced consumption per dunam (Weigert, 1977). A portion of the Israeli agriculture budget for Gaza was devoted to reducing the toxicity of brackish water to crops actually grown. New strains were tried, experiments with trace nutrient solutions were conducted and new crops showing better tolerance to brackish water were introduced. While all these measures have had an effect, it apparently remains true that water is the effective limit on agriculture in Gaza and North Sinai.

Even though water is a constraining factor, production can continue to rise. As noted in Table 8, purchased inputs are in greater use in Gaza than in the West Bank.¹⁵ The Israeli advisors have apparently made substantial progress in teaching how different classes of inputs can be better used. Proper fertilization rates and pesticide application are probably responsible for the increases in citrus production beyond what would have been expected as newer orchards began bearing fruit. Continued gains from existing orchards are far less likely, however, because yields per dunam, approaching 3.5 metric tons/dunam are on a par with those achieved in Israel.

In terms of physical product, it is probably reasonable to expect the Gaza crop production to expand at roughly 2 to 4 percent per year for almost all crops. The value of production can conceivably increase faster

¹⁵ Some care must be exercised in the comparison. The packing and crating expenses for citrus are included in the input figures of Table 8, an expense that essentially does not exist in the West Bank.

As an example, it is apparently the case that strawberries perform well and generate higher income/dunam than do more common crops in the area. A slow but steady conversion to products yielding larger net returns could permit agricultural income to increase on the order of 3 to 5 percent per year.

In animal husbandry, fishing offers a potential increase above recent trends. Israeli work to restore water flows into Lake Bardawill apparently forestalled an increase in salinity that had reduced the 1973/74 catch. Improvements in fishing techniques and equipment could easily increase the catch by 5 to 6 percent per year assuming sales to either Israel or the West Bank are not interrupted by protective policy actions.

Overall it would appear than an annual real output growth rate of from 2 to 6 percent can be expected over the next 5 years. Within that range, a 4 to 5 percent rate would appear the most likely.¹⁶

Employment in agriculture is unlikely to change markedly over the next 5 years. Compared to the West Bank, the recent declines have been more modest, particularly after the drops of 1970 and 1972. Production levels for the dominant product, citrus, currently approach those of Israel and it is at least reasonable to assume that any remaining differences in labor inputs to land vary by crop, some higher and some lower than Israel. Consequently, minimal changes, approximately one-third of the rate of growth of output, would be a credible limit on employment changes.

FIVE YEAR PROJECTIONS FOR INVESTMENT AND EMPLOYMENT.

Summarizing the previous discussion of growth prospects, the following conclusions were reached:

- Four percent annual growth is the most probable future growth rate (2 percent is the low end of this range).

¹⁶ There seem to be no opportunities for greater water supplies.

- Six percent growth appears to be the maximum sustainable growth rate for the next 5 years given constraints on water supply.
- Eight percent growth is the historical average, but sustaining this rate of growth is outside the range of possibility given the available data (this high rate may be an artifact of a low initial base from which growth performance is measured).

As with the West Bank projections, it is reasonable to expect that a rapid annual increase in output would require increased capital investment (see Table 12). It has been noted above that purchased inputs are greater in Gaza than in the West Bank. This means that the relevant investment projections are those based on the higher ICOR (4.48). Given these assumptions, it is projected that an annual 6 percent rate of growth would require IL 152 million in 1979, increasing to IL 193 million by 1983.

To achieve the lower growth rate (4 percent), less capital investment would be required, so the projections based on the lower ICOR (3.16) are probably realistic. Given these assumptions, investment requirements range from IL 99 million in 1979 to IL 116 million by 1983.

As for employment requirements (see Table 13) to meet these projected growth rates, it has been argued earlier that employment will have to increase at only about one-third of the rate of growth of output. Thus, labor requirements in agriculture range from 13,200 to 14,000 in 1979 and from 13,700 to 15,700 in 1983.

TABLE 12

Projected Investment Requirements For Alternate Target Growth Rates and Alternate ICOR Values^a: Agriculture, Gaza (IL millions)

Year	Value Added	High Growth Rate (6 percent)		Value Added	Low Growth Rate (4 percent)		Historical Average Growth Rate (8 percent)		
		Investment (ICOR=3.16)	Investment (ICOR=4.48)		Investment (ICOR=3.16)	Investment (ICOR=4.48)	Value Added	Investment (ICOR=3.16)	Investment (ICOR=4.48)
1977 ^{bc}	538	—	—	538	—	—	538	—	—
1978	570	101	143	560	70	99	581	136	193
1979	604	107	152	582	70	99	628	149	211
1980	641	117	166	605	73	103	678	158	224
1981	679	120	170	629	76	108	732	171	242
1982	720	130	184	655	82	116	790	183	260
1983	763	130	193	681	82	116	854	202	287

^a See Appendix B, Part II for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistical Quarterly, 1977-1978.

^c Base year.

TABLE 13
 Total Projected Labor Requirements
 For Agriculture: Gaza^a
 (thousands of persons)

<u>Alternative Growth Rates of Output</u>			
<u>Year</u>	<u>6 percent</u>	<u>4 percent</u>	<u>8 percent</u>
1978	13.3	13.1	13.6
1979	13.6	13.2	14.0
1980	13.9	13.3	14.4
1981	14.1	13.5	14.8
1982	14.4	13.6	15.3
1983	14.7	13.7	15.7

^a It is assumed that to sustain any of the growth rates considered, employment will increase at about 1/3 of the rate of growth of output.

CHAPTER 7. INDUSTRY

CONCLUSIONS

	<u>West Bank</u>	<u>Gaza Strip</u>
<u>Minimal Investment Requirements</u> <u>(1978-1983):</u>		
<u>Reasonable Growth Scenario</u>		
Sector Growth (percent)	6.0	8.0
Investment (millions U.S. \$)	13.9	14.6
<u>Overall 8 Percent Growth Scenario</u>		
Sector Growth (8 percent)	7.0	12.0
Investment (millions U.S. \$)	16.6	24.3
<u>Minimal Employment Requirements</u> <u>(by 1983)</u>	16,400-17,400	13,800-17,200

Several critical factors have delayed industrialization in the West Bank and Gaza Strip: political uncertainty; limited domestic markets for industrial products due to low purchasing power; lack of expertise, entrepreneurship, and willingness to invest capital; out-of-date technology; low levels of education and vocational training; the absence of complementary services and developed infrastructure, including electricity; and the lack of adequate natural resources, which results in an increase in the import of raw materials. The prospects for future growth involve small establishments for food processing, building stone, pharmaceuticals, and furniture.

WEST BANK

CURRENT STATUS.

Investment in industry by the Jordanian Government prior to 1967 was concentrated primarily in East Jordan. This may explain, in part, why

expansion in industrialization lagged behind agriculture in the West Bank. Moreover, the basic composition and structure of industry in the West Bank has changed little since 1967 (Stebbing, 1977).

According to a post-war report of the Central Bank of Jordan, the West Bank accounted for about 20 percent of Jordan's industrial output (Ma'ariv, May 22, 1968, p. 21). Industry in the West Bank was, even within the context of Jordan's economy, generally small-scale and undeveloped. At the time, there were 5 enterprises employing 100 or more persons.

The gross value of industrial output was estimated at U.S. \$34 million in 1966, of which about 40 percent was value added (gross production minus purchased inputs) (Kanovsky, 1969). Industry accounted for about 6 percent of the West Bank's gross output, which was half of the corresponding percentage in the East Bank. About 7 percent of the employed labor force of the West Bank was engaged in industry and crafts (Kanovsky, 1969).

Postwar Industry

Industry came to a virtual standstill during the 1967 war and immediately thereafter. However, within a few months after the war, regulations restricting trade between Israel and the West Bank (other than for most agricultural products) were rescinded. With few exceptions, the ability to conduct sales with the East Bank required no special permits. However, free trade between Israel and the West Bank put a number of the latter's producers at a competitive disadvantage due to their higher prices.

Unusually rapid postwar recovery in Israel, especially in the industrial sector, benefited many West Bank producers. The growing labor shortage in Israel persuaded a number of textile, clothing, and furniture firms to engage in subcontracting with West Bank enterprises. The construction

boom, especially in the Jerusalem area, increased demand for production in the West Bank stone quarries. By some reports (Kanovsky, 1969), many of the larger enterprises and many workshops had, by the beginning or middle of 1969, either fully recovered from the postwar slump or exceeded prewar production levels.

A number of new enterprises that pack tea, or produce textiles, plastic shoes, pharmaceuticals, glass, gift items, and cigarettes were established. Some firms producing wood items, textiles, chocolates, arak (a liqueur), and jewelry expanded or modernized their plants (Stebbing, 1977). By and large, these investments appear to have been made without recourse to loans offered by the government. However, firms have utilized to a limited extent the credit made available to them for working capital.

According to the Ministry of Commerce and Industry for the West Bank (Israel, 1974d, 1972f), expansion of industry might have occurred more rapidly had political uncertainties not made local entrepreneurs wary of entering into partnerships with Israeli firms. On the other hand, Israeli firms did not (until the end of 1969) locate plants in the West Bank, despite political guarantees offered by the Israeli government to investors in the area. The reasons for this seem to be the greater financial incentives offered by the government to those investing in Israeli development towns. The lower wage rates in the West Bank were not enough to offset these advantages.

CONSTRAINTS AND OPPORTUNITIES.

Growth in Value Added

Gross value added in manufacturing increased at an average rate of 7 percent during 1968-77 in real terms (see Table 1). The pace of growth in real value added accelerated slightly towards the early 1970's, averaging

TABLE 1
Growth of Manufacturing Value Added
in the West Bank

	<u>1968-1974</u>	<u>1974-1977</u>	<u>1968-1977</u>
Gross value added	14	-1.5	7
Share in GDP	8.5	7	8

Source: Estimated from Table 2 in Chapter 3.

14 percent during 1968-74, while the share of the industrial sector in GDP increased from 7.5 percent in 1968 to 9.3 in 1973 and after that decreased to 6.1 percent in 1977.

The share of industrial value added to total GDP shows the relative insignificance of this sector in the overall economy. This is not surprising. The lack of skilled labor, the lack of capital, and the lack of infrastructure have been major bottlenecks and limitations on the growth performance of what amounts to an undeveloped cottage industry.

Production, Structure, and Employment

West Bank industry is concentrated mainly around the supply of essential goods such as food processing, beverages, tobacco, textile goods, clothing, and furniture. The number of enterprises that employ several dozen workers and market their products to the East Bank and Israel is rather small. There are many small and medium-sized workshops, based primarily on manual labor. Ninety percent of all plants engage up to 10 employees, of which two-thirds engage no more than 5 workers (Bregman, 1975).

The volume of industrial production in the West Bank is largely a function of the olive crop. For example, in 1970 when agricultural output declined due to bad weather, output of olive oil declined by 50 percent, and so did the output of other foodstuffs. In that year, the output of both branches -- industry and agriculture -- declined at the same rate (Bregman, 1975).

Table 2 indicates the vital role of the olive oil industry in the West Bank. It has an important effect on the area's level of employment and income. Bad years for olives are associated with high rates of unemployment (as in 1969/70, 1972/73 and 1974/75). In good years, like 1971/72, 1973/74 and 1975/76, employee income increases and usually has an inflationary impact in the West Bank. This relationship is substantiated by comparing the figures in Table 2 and the GNP deflator (see Appendix D) in the years mentioned above.

The volume of industrial production in the West Bank also depends on the level of demand in Israel. The importance of this demand has increased each year as labor shortages in Israel have grown more acute (Bregman, 1975). The major products for the Israeli market are clothing (subcontracted), wood products, wicker and other types of furniture, woven textiles (carpets), plastic goods (mattresses, sandals, and kitchenware), and building materials (tiles and blocks).

An interesting feature of the industrial sector is the stability of employment (see Table 3). The average productivity of labor has increased by an average rate of 12 percent per year during the period 1970-76. This rate of growth indicates improvements in the productivity of each laborer in the industrial sector, but the general level of productivity is low, since most employment is of the cottage industry type and not capital intensive.

There is no information available on productivity and employment in each sub-branch of industry in the West Bank. However, the distribution of sales in manufacturing is provided by Bregman (1975) and Bull (1975) for a few years (see Table 4).

Table 4 confirms that West Bank industry specializes in food processing, which is typical for developing countries. Moreover, sales have remained extremely stable over the years. In other words, there have been few changes in the structure of production during the 1970's.

TABLE 2

Olive Presses: Production and Employment

	<u>1968/69</u>	<u>1969/70</u>	<u>1969/71</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>	<u>1974/75</u>	<u>1975/76</u>
Active Olive Press Establishments	236	214	251	300	172	294	102	250
Total Employed Persons	2,089	1,681	3,826	3,017	1,088	3,087	633	2,335
Average Number of Employees per Establishment	9	8	15	10	6	10	6	9
Total Wages Paid to Employees (IL 1,000)	560	225	1,011	2,223	407	6,948	401	4,580
Oil Output (tons)	10,842	2,843	6,418	15,468	2,180	22,136	981	8,304

Source: Israel, Statistical Abstract of Israel (1968-1977).

TABLE 3

Industrial Sector Performance, West Bank

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Value Added (IL million in 1976 prices)	146	176	209	225	268	258	238
Number of Persons Employed (1,000)	14.6	13.4	13.2	14.4	14.3	14.5	13.8
Average Productivity of Labor (IL 1,000)	10.00	13.13	15.83	15.63	18.74	17.79	17.25

Source: Israel. Statistical Abstract (1968-1977).

TABLE 4
 Distribution of Sales in Manufacturing in the
 West Bank, 1969-1972
 (percent)

	<u>1969</u>	<u>1971</u>	<u>1972</u>
Food, beverages and tobacco	47	47	38
Olive presses	31	26	37
Textiles	3	3	3
Clothing	2	3	3
Leather and leather products	1	1	1
Wood and wood products	2	2	2
Paper, paper products, printing and publishing	3	3	3
Chemicals, fuel, rubber and plastics	6	8	7
Nonmetallic minerals	1	2	2
Basic metals and metal products	4	4	4
Machinery, electrical appliances and vehicles	-	1	-
	—	—	—
Total Industry	100	100	100

Source: Bregman (1975), Bull (1975).

PROSPECTS FOR THE FUTURE.

The industrial sector has played a rather insignificant role in the economic growth of the West Bank. Rapid economic development given the current level of industrial production is almost impossible, especially over the next five years. However, several prospects for future growth can be suggested for the longer term.

The potential for industrial development in the West Bank is a function of rapidly increasing private investment (see Chapter 3) to compensate for decreasing government investment. Domestic investment is still at a comparatively low level. Domestic saving has largely been channelled to Amman banks, real estate, gold, or has simply been hoarded. Perhaps a major change in the political environment will alter domestic investment patterns, as well as attract foreign investment.

Future development will probably expand existing industry. The West Bank is basically agrarian, and changes in its agriculture will naturally affect those industries that are based on agricultural products. Thus, the transition of agriculture towards industrial crops could facilitate the development of a preserves industry, and factories processing such crops as beets and cotton. There has been a major shift toward producing crops for canning. However, the present Israeli canning industry will have a major competitive advantage over any fledgling canning industry developed in the West Bank. The dairy industry also shows room for expansion, but again is currently faced with a highly protected market in Israel.

Other industrial areas with prospects for development include building stone, pharmaceuticals, and furniture. However, it is unlikely that expansion in these fields will produce large factories. Future potential exists for small establishments. Efforts should be made to identify those areas in which West Bank products may have a comparative advantage over highly competitive or protected Israeli products.

A major limitation to industrial growth in the West Bank involves the lack of entrepreneurial skills. Investment has generally been channelled to real estate rather than into more risky industrial ventures. Moreover, entrepreneurial skills and spirit appear to be isolated in only a few large family businesses.

A solid infrastructure for modernization of the industrial sector is necessary. This involves a complex mixture of physical objects, systems, and personal capabilities, without which development is likely to fail. It includes the provision of utilities, adequate communications, basic services such as banking and education, and the availability of the entire range of skilled manpower. The creation of this infrastructure is quite costly, and it must be completed in a coordinated fashion to ensure that all elements are provided. This is where the freeze in government expenditures may be felt the most. Private investment in industry will be limited by the degree of government investment focused on developing sufficient electrical generating capability, water supply, communication facilities, and other necessary services.

A final area that will affect future prospects in industry is the development of markets. Local consumption of industrial goods is at a low level and does not, at present, constitute a viable market for such products. As the economy develops and wages rise, the potential for higher consumption will increase. Nevertheless, since the local market is important for developing industries, policies to improve and expand the market should be adopted. While the major market center for the West Bank is still located in East Jerusalem, attempts have been made to locate regional market centers in Nablus and elsewhere. The export market via Amman must also be examined for export expansion of certain West Bank products that might have a competitive advantage in the Arab world, including chocolate and vegetable oil.

FIVE YEAR PROJECTIONS OF INVESTMENT AND EMPLOYMENT REQUIREMENTS.

Table 5 presents the five year projections for investment in industry. Alternate growth rate scenarios are presented for the historical average annual growth rate (7 percent), a more conservative 6 percent target, and a more optimistic 8 percent target. Eight percent annual growth is probably attainable only if there is major investment in infrastructure required for industry. A sustained 7 percent growth is possible only if the agricultural sector maintains high yields and has good seasons. Thus, although the 6 percent growth target is considered conservative, perhaps it represents the most reasonable rate of growth.

The lower ICOR value (1.23) is probably most relevant given the low capital intensity of West Bank cottage industry. Thus, to achieve an even 6 percent annual rate of growth, U.S. \$2 million in investment would be required in 1979 and U.S. \$2.8 million in 1983. These investment requirements will enable growth to be sustained almost at current rates, however, at this rate of growth, industry cannot be expected to develop into a major factor in the West Bank economy.

As for employment to meet the requirements of 6 or 7 percent annual rates of growth in industrial output, Table 6 presents projections through 1983. These figures suggest modest annual increases in the industrial labor force over current levels. By 1983, the labor requirements for the industrial sector in the West Bank should reach between 16-17,400 persons.

Table 5
Investment Requirements For Alternate Target Growth
Rates and Alternate ICOR Values^a: Industry, West Bank
(millions, U.S. dollars at 1976 prices)

Year	Value Added	High Growth Rate (8 percent)		Value Added	Low Growth Rate (6 percent)		Historical Average Growth Rate (7 percent)		
		Investment (ICOR=1.23)	Investment (ICOR=1.68)		Investment (ICOR=1.23)	Investment (ICOR=1.68)	Value Added	Investment (ICOR=1.23)	Investment (ICOR=1.68)
1977 ^{bc}	26.8	--	--	26.8	--	--	26.8	--	--
1978	28.9	2.6	3.6	28.4	2.0	2.8	28.7	2.3	3.1
1979	31.2	2.8	3.8	30.1	2.0	2.8	30.7	2.5	3.4
1980	33.7	3.1	4.3	32.0	2.3	3.1	32.8	2.6	3.6
1981	36.5	3.4	4.6	33.8	2.3	3.1	35.1	2.8	3.8
1982	39.3	3.5	4.9	35.8	2.5	3.4	37.6	3.1	4.3
1983	42.5	3.9	5.3	38.1	2.8	3.8	40.2	3.3	4.4

^a See Appendix B, Part II for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistical Quarterly, 1977-1978.

^c Base year.

TABLE 6
 Projected Labor Requirements
 in Industry, West Bank^a
 (in thousands of persons)

	<u>Historical Average Rate of Growth - 7 Percent</u>	<u>Reasonable/Conservative Rate of Growth - 6 Percent</u>
1978	12.4	12.3
1979	13.3	13.0
1980	14.2	13.8
1981	15.1	14.6
1982	16.2	15.5
1983	17.4	16.4

^a Projections based on average output/labor ratio for 1974-1975.

GAZA STRIP

CURRENT STATUS.

Prewar Industry

The only two industrial plants of any major size in prewar Gaza were related to citrus, one for packing and the other for the manufacturing of citrus products. The remaining industry took place in small and primitive workshops. The most important of these, in terms of output and employment, produced woven goods. Other workshop products were carpets made from goats' hair, tobacco products, and soft drinks. An estimated 3,000 workers were engaged in this sector (excluding workshops), not including seasonal workers in citrus packing (Kanovsky, 1970).

Postwar Industry

In March 1969, there were 3,934 employed in industry as compared with about 3,000 before the war (Israel, 1969f). Almost half were employed in the manufacture of carpets (as compared to 500 before the war) exported to Israel and the West Bank, and shipments were initiated to overseas markets as well.

Toward the latter part of 1968, manufacturing in Gaza began to expand rapidly. Several factors accounted for this change. The booming Israeli economy meant an expanding market for Gazan products, and the shortage of labor in Israel persuaded many firms to enter into subcontracting arrangements with Gaza firms -- a development similar to that which took place in the West Bank. Among the industries that have developed are a copper ingot plant, bamboo and straw furniture, food processing, and building materials.

CONSTRAINTS AND OPPORTUNITIES.

Growth in Value Added

The gross value added in industry has increased at an average annual rate of 20 percent between 1968 and 1977 in real terms (see Table 7). One explanation of this high rate of growth is the low base from which development is measured. This high rate of growth cannot be sustained too far into the future, since as the economy grows, maintaining a high rate of growth requires greater investment commitments. That is why, since 1974, the economy has only grown at a rate of 12 percent per year, as compared to the much higher rate of growth (25 percent) experienced between 1968 and 1974.

TABLE 7
Growth of Manufacturing Value
Added In Gaza
(percent)

	<u>1968-1974</u>	<u>1974-1977</u>	<u>1968-1977</u>
Gross value added	25	12	20
Share in GDP	5.6	9.8	7.7

Source: Estimated from Table 2 in Chapter 3.

During 1968-74, the share of industry in total GDP was at a low level, 5.6 percent, but it increased to 9.8 percent in the period from 1974-77. In general, industry has played a very insignificant role in the overall growth pattern of the Gazan economy.

Production and Employment

Industrial output in the Gaza Strip doubled during 1968-73 (Bregman, 1975), thanks to the expansion of existing plants and to the establishment of new ones. Special note should be made of the establishment in

Israel of an industrial zone surrounding Gaza in the early 1970's to take advantage of Gazan labor. Most plants in this zone are owned by Israelis and produce metal goods, textiles, and wood and rubber items. They provide employment for about 500 Gaza Strip residents. These plants involve low-level, labor-intensive technology.

Several branches of industry have expanded rapidly. In 1968-69, ten clothing and sewing plants existed employing over 200 workers. Work under subcontract to Israeli manufacturers amounted to IL 300,000 per annum. By 1974, the number of these enterprises increased to over 100 and totaled IL 1,721,000 (Israel, 1974d). The pottery industry has also grown as a result of increased Israeli tourism.

The latest data available on industry establishments and level of employment are provided by the military authority and presented in Tables 8 and 9. Of the 663 enterprises in Gaza in 1974, 647 were owned by Gazans and the remaining 16 firms were probably owned by Israelis; 4561 people were employed in these industrial establishments -- 4062 were local and 499 from the West Bank or Israel.

The majority of firms are small units, employing less than 5 workers. Twenty-four percent of all workers are in the textile industry -- probably most of them employed in weaving carpets. Twenty-one percent are employed in clothing and footwear, with work subcontracted from Israeli firms. Fourteen percent work in the cement industry, which has a large market due to the boom in housing construction in Gaza.

As for overall sector performance, Table 10 presents the following trends:

- The value added in the industrial sector has increased by an average rate of 16 percent per year (1970-76).
- The number of employees has been quite stable in the sector between 1970-76.
- The productivity of labor has increased by an average rate of 10 percent.

TABLE 8
Workers and Enterprises, Gaza, 1972-1974

	<u>1972</u>	<u>1973</u>	<u>1974</u>
Total number of workers	5,193	4,833	4,561
Total number of enterprises	633	641	663
Total number of enterprises employing up to 5 workers	349	348	405
Total number of enterprises employing over 5 workers	264	293	258

Source: Israel, 1974d.

TABLE 9
Local Workers and Enterprises -- March 1974

<u>Enterprise</u>	<u>Total Enterprise</u>	<u>Up to 5 Workers</u>	<u>Over 5 Workers</u>	<u>Total Workers</u>
Food (including soft drinks)	73	55	18	296
Textiles (including carpets)	56	24	32	972
Clothing and footwear	105	35	70	873
Furniture and carpentries	79	67	12	300
Paper and printing	9	6	3	35
Metal	95	73	22	333
Garages	109	67	24	530
Cement products	86	49	37	592
Miscellaneous	<u>35</u>	<u>28</u>	<u>7</u>	<u>131</u>
Total 1974	647	404	225	4,062

Source: Israel, 1974d.

TABLE 10
 Industrial Sector Performance
 in the Gaza Strip

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Value Added (IL million 1976 prices)	42	48	65	80	97	126	149
Number of persons employed (1,000)	6.4	6.4	5.9	5.8	5.7	5.7	6.5
Average productivity of labor (per 1,000 workers per year)	6.56	7.50	11.02	13.79	17.01	22.10	22.92

Source: Israel, Statistical Abstract of Israel (1968-72).

Prospects for the Future

Future growth prospects for industry in the Gaza Strip are constrained by factors similar to those described for the West Bank:

- Large amounts of required investment are lacking.
- Entrepreneurial skill is lacking.
- The infrastructure for industry is underdeveloped.
- Markets must be expanded and competitive advantage vis-a-vis Israeli products identified.

Over the next five years, it is unlikely that industry in Gaza will be able to make sufficient inroads on these constraints to sustain even the 12 percent annual rate of growth which has been achieved in recent years.

FIVE YEAR PROJECTIONS OF INVESTMENT AND EMPLOYMENT REQUIREMENTS

Table 11 presents five year projections for investment in industry. Three alternate growth scenarios are presented. While the recent historical rate of growth is 12 percent, this rate has been decreasing steadily since 1968. Only with continually increasing investment, which does not appear forthcoming over the short term, will this 12 percent rate of growth be sustained. The 10 percent growth target is also attainable only if large amounts of investment are focused on developing infrastructure. The 8 percent growth target appears to be the most reasonable and conservative, assuming no extensive increase in the capital and investment available to industry, and continuation of labor-intensive production methods.

Due to the labor-intensive nature of cottage industry, the lower ICOR value (1.23) is more reasonable than the higher one. Given the 8 percent scenario, a modest and gradual increase in investment is required to maintain growth at this rate, from U.S. \$2.1 million in 1979 to U.S. \$2.9

TABLE 11
 Investment Requirements For Alternate Target Growth
 Rates and Alternate ICOR Values^a: Industry, Gaza
 (millions, U.S. dollars at 1976 prices)

Year	Value Added	High Growth Rate (10 percent)		Value Added	Low Growth Rate (8 percent)		Historical Average Growth Rate (12 percent)		
		Investment (ICOR=1.23)	Investment (ICOR=1.68)		Investment (ICOR=1.23)	Investment (ICOR=1.68)	Value Added	Investment (ICOR=1.23)	Investment (ICOR=1.68)
1977 ^{bc}	20.3	—	—	20.3	—	—	20.3	—	—
1978	22.3	2.5	3.4	21.9	2.0	2.8	22.7	2.9	4.0
1979	24.6	2.8	3.8	23.7	2.1	3.0	25.4	3.4	4.6
1980	27.1	3.1	4.3	25.6	2.3	3.1	28.6	3.9	5.3
1981	29.7	3.3	4.4	27.6	2.5	3.4	32.0	4.1	5.6
1982	32.7	3.8	5.0	29.8	2.8	3.8	35.7	4.6	6.3
1983	36.0	4.0	5.5	32.2	2.9	4.0	40.1	5.4	7.4

^a See Appendix B, Part II for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistical Quarterly, 1977-1978.

^c Base year.

million in 1983. However, at this rate of increase, industry will not become a major factor in the Gazan economy.

Table 12 projects the number of workers needed to sustain an 8 or 12 percent growth rate in output. Given the 8 percent scenario, the labor required in industry will more than double from 1976 levels, necessitating a work force of about 14,000 by 1983.

TABLE 12
 Projected Labor Requirements
 for Industry, Gaza^a

	<u>Historical Average Rate of Growth (12 percent)</u>	<u>Reasonable/conservative Rate of Growth (8 percent)</u>
1978	9.7	9.4
1979	10.9	10.2
1980	12.3	11.0
1981	13.7	11.8
1982	15.3	12.8
1983	17.2	13.8

^a Projections based on average output/labor ratios for 1974-75.

CHAPTER 8. CONSTRUCTION

CONCLUSIONS

	<u>West Bank</u>	<u>Gaza Strip</u>
<u>Minimal Investment Requirements</u> <u>(1978-1983):</u>		
<u>Reasonable Growth Scenario</u>		
Sector Growth (percent)	11.8	6.5
Investment (millions U.S. \$)	553.9 ^a	962.8 ^a
<u>Overall 8 Percent Growth Scenario</u>		
Sector Growth (percent)	12.0	17.0
Investment (millions U.S. \$)	466.9	932.8
<u>Minimal Employment Requirements</u> <u>(by 1983)</u>	9,751-12,333	4,168-4,495

^a Based on uneven growth assumptions.

WEST BANK

CURRENT STATUS.

By 1971, employment in the building industry and total building starts in the West Bank approached pre-1967 levels. This gradual increase in private construction, especially for housing, can be viewed as an indication of a renewed sense of political and economic security among West Bank residents, increases in disposable income, and a renewed desire to invest in the region (Bull, 1975). However, a majority of employed persons in the construction sector work in Israel due to higher wages there and do not directly contribute to improving the physical infrastructure of the West Bank. Despite this shortage of construction labor in the West Bank, the growth of the sector, as demonstrated by an increasing contribution

to the gross national product, has been due primarily to the increased productivity of the remaining workers, the use of unpaid family laborers, after-hours unofficial work, and increased use of modern machinery.

EMPLOYMENT AND PRODUCTIVITY.

Prior to the Israeli occupation, the building industry employed between 20,000 and 25,000 persons (Israel, 1967a). Table 1 indicates that this overall employment level was not achieved again until 1972 due to a virtual standstill in construction starts between 1967 and 1970. By 1976, sectoral employment grew to about 28,600 persons or 21.8 percent of the total labor force in the West Bank.

These figures are somewhat deceptive. They conceal the fact that between 60 and 75 percent of West Bank residents involved in the construction sector work in Israel, not in the West Bank. This trend took a dramatic jump in 1971 when over 70 percent of West Bank construction workers were employed in Israel, attracted by wide wage differentials (see Table 2) and greater employment opportunities. More recent problems in the Israeli economy have resulted in increased layoffs of West Bank workers during 1975 and 1976. As of 1976, only about one-third of all construction workers (about 10,000 workers) were employed in the West Bank proper.

Despite this shortage of labor, building activity has expanded, as indicated in Table 1. Increased starts for residential construction have also necessitated growth in construction of physical infrastructure for other economic sectors. Skill levels among workers have increased. By 1975, over one-half of West Bank construction workers were skilled or semi-skilled (ILO, 1977). Productivity estimates indicate that the average construction worker in the West Bank in 1975 could build over 70 square meters, annually, while in 1968 he averaged just over 7 square meters, a 90 percent increase in productivity per worker. Labor productivity can also be examined in terms of the ratio of GDP per worker employed in the

TABLE 1
West Bank: Employment and Productivity in the Construction Sector

	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Total Employed										
Thousands	13.7 ^d	11.6 ^a	13.1	16.8	20.2	26.3	28.2	30.7	29.7 ^a	28.6 ^a
Percent of Labor Force	...	...	11.9	14.7	17.3	21.0	22.3	22.4	22.2	21.8
Employees Working in Israel										
Thousands	...	2.5	4.5	8.0	14.3	19.1	20.9	23.1	21.5	18.0
Percent of Total	...	21.6	34.4	47.6	70.8	72.6	74.1	75.2	72.4	62.9
Employees ^b Working in West Bank										
Thousands	...	9.1	8.6	8.8	5.9	7.2	7.3	7.6	8.2	10.6
Percent of Total	...	78.4	65.6	52.4	29.2	27.4	25.9	24.8	27.6	37.1
Total Construction Begun in West Bank										
Thousand m ²	43	67	123	140	213	352	365	558	588	620
Percent Residential	95	76	72	72	81	80	79	81	82	74
Percent Nonresidential	5	24	28	28	19	20	21	19	18	26
Average Yearly Square Meters Per Employee ^c										
Thousands	...	7.4	14.3	15.9	36.1	48.9	50.0	73.4	71.0	58.5
Sector GDP at Factor Cost Million IL ^d	...	56	94	96	127	178	187	334	469	511
Labor Productivity Thousand IL ^e	...	6.2	10.9	10.9	21.5	24.7	25.6	44.0	57.2	48.2

^a Estimate.

^b Including those self-employed and without other paid employees.

^c For those employed in the West Bank only. Area of construction begun.

^d In constant 1976 prices

^e Ratio of sector GDP per worker employed in the West Bank. Values in constant 1976 prices.

... Not available.

Sources: Compiled and estimated from Israel, Statistical Abstract of Israel, various issues.

TABLE 2
 Average Daily Wages of
 West Bank Residents in Construction
 (IL in constant 1976 prices)

	<u>Working in West Bank</u>	<u>Working in Israel</u>
1970	34.4	57.0
1971	47.3	57.9
1972	51.0	60.3
1973	49.6	57.9
1974	47.6	52.3
1975	54.4	61.7
1976	57.4	58.7

Sources: Compiled and estimated by CACI from Statistical Abstract of Israel, various issues.

West Bank. As indicated in Table 1, this ratio has increased dramatically since 1973.

Despite these improvements in productivity, construction methods are still simple and labor intensive. Early Israeli attempts to introduce more capital intensive methods (poured concrete techniques) met with strong resistance. Such Israeli methods, while cheaper and less labor intensive, could not faithfully produce the traditional West Bank stone and cement dwelling and were, therefore, resisted.

Housing constitutes the major proportion of construction in the West Bank (about 75 percent). Remaining construction (nonresidential building starts) is mainly of public facilities. A very small percentage of construction is for industrial or commercial use.

CONSTRAINTS, OPPORTUNITIES, AND REQUIREMENTS.

The data presented in Table 1 include only official construction starts for which there were building permits. According to the Israel Economist (1976), over 50,000 square meters of residential construction were completed on the West Bank during 1976 for which there were no building permits and which are probably not included in the official data. Thus, growth in this sector is most likely underestimated. The building boom since 1974, which has been captured in part in the official figures, may be a reflection of two different phenomena, an increase in demand for construction or an increase in investment in construction. While there are no quantitative data on demand or investment, real estate is a traditional form of investment in the Arab world. This provides some reason for optimism concerning future private investment in construction for industrial and commercial building as well.

Another area of opportunity involves labor. Probably through exposure to Israeli techniques of construction, the skill level of the majority of West Bank workers in this sector is increasing (ILO, 1977). Moreover, as

the wage differential between the West Bank and Israel decreases, it is likely that the attraction of Israel for West Bank construction workers will decline and the surplus will be available for new construction starts (Table 2). If the West Bankers continue to resist more capital intensive methods, an increased labor force will be required to meet new demands for construction.

The requirements for increased construction in the future will depend on the in-migration flow. A concerted effort should probably be made to avoid housing new immigrants in temporary refugee quarters. However, this would require extensive coordination, investment, and labor over a short period of time, which may not be available. Too, there is probably insufficient capital stock in the West Bank to institute a rapid construction program for a large in-migration. Existing housing, by itself, would be insufficient to settle the immigrants at proper living standards; in addition, other public facilities and infrastructure must be developed to service this additional population.

FIVE YEAR PROJECTIONS OF INVESTMENT AND EMPLOYMENT REQUIREMENTS.

Table 3 projects construction costs for the West Bank from 1978 to 1983 based on forecasts of population increase (see Appendix C). It is assumed that additional housing will be required for new immigrants, as well as for increments added to the resident population due to natural increase. It is also assumed that current residents are adequately housed and there is no critical shortage of dwellings (see housing section in Chapter 5).

On the basis of the cost analysis in Chapter 5, projected housing construction costs are estimated at U.S. \$1.05 million per 1,000 additional population.¹ Given the projected increase in population, residential

¹ This cost estimate includes costs for labor, materials, machinery use, utility hookups, and contingency costs, but not land costs.

Table 3
Total Projected Construction Costs
Continued

^a Construction costs include housing and nonresidential building required by additional increments to the population.

^b See Table 34 in Chapter 5.

^c This total figure assumes the historical West Bank proportion of 75 percent residential building starts to 25 percent nonresidential building starts. This percentage conforms to urban planners' rules of thumb (Ben Shahar, *et al.*, 1971; Tuma and Drabkin, 1978) of required nonresidential facilities required per unit of residential construction. It is assumed that nonresidential construction costs are identical to residential costs per square meter, due to the lack of independent cost estimates. Israeli accounting methods for allocating school and hospital construction are unclear, so there may be some double-counting of such nonresidential building starts in the construction and public expenditure estimates in this volume.

^d The low cost estimate has a higher growth rate than the high cost estimate due to the higher base for the high cost estimate in 1978.

^e See Appendix C; assumes no in-migration.

^f Deterioration rate is set at 2 percent per year by Shye (1972) who estimated this figure for the occupied territories. Gaathon (1971) estimates deterioration in Israel at 2.5 percent per year. Deterioration and replacement are assumed for housing only; non-residential building deterioration is assumed to be zero.

^g Difference between 1979-83 and 1978-83 growth rates is due to the drastic increase in in-migration registered in 1979.

^h Land development and raw land cost estimates at 50 percent of total housing costs based on single-family low income housing in Madras, India, and Mexico City (World Bank, 1975b). Total is a proxy for value added in construction.

housing costs range from U.S. \$37.2-\$51.7 million in 1979 to U.S. \$43.8-\$60.1 million in 1983 depending on assumptions of high or low in-migration.²

As indicated in Table 1, residential construction constitutes about 75 percent of all building starts and nonresidential construction picks up the remainder. Due to the fact that no independent cost estimates for nonresidential construction could be found, it is assumed that the cost structure is similar and projections were calculated according to the above proportions of construction starts.

Another element to calculating total construction costs involves replacement of deteriorated housing among the current resident population. Projections of the current population, assuming no immigration, were calculated (see Appendix C). Shye (1972) and Gaathon (1971) estimate deterioration of existing housing at about 2 percent per year. This rate was used to project the number of persons for which new replacement housing would probably be required per year. Costs for replacement housing were again estimated at U.S. \$1.05 million per 1,000 persons.

The final element in developing projections of total construction costs involves estimating the cost of raw land and land development. On the basis of surveys of single family housing construction in LDC's, the World Bank (1975b) estimates these land related costs at about 50 percent of total construction costs. These estimates are added in to obtain a total expenditure figure.

Summing across these cost estimates, the total projected construction costs, given population increase forecasts, range from U.S. \$130.0-\$168.6 million in 1979 to U.S. \$152.0-\$195.4 million in 1983. These figures are a proxy for value added for the construction sector. Using the 1978 to

² There is a major increase in population projected between 1978 and 1979 due to the commencement of in-migration in 1979.

1983 period as the base, the projected annual average rate of growth in total construction expenditures is between 11.8 and 20.0 percent, depending on low or high projections of population increase. These rates of growth include the major shift from the pre-migration period through initial years of projected in-migration. Since there will still be some political and economic uncertainties in the West Bank over the next 5 years, the lower migration projection is most likely the more reasonable. Hence, the lower growth rate in the construction sector, 11.8 percent is considered the most reasonable or conservative projection.

This 11.8 percent growth rate coincides with the historical average annual growth rate, 12 percent. The investment requirements, given this rate of growth, are presented in Table 4. The value added is based on the calculations in Table 3 and indicate an uneven rate of growth, as a function of in-migration flow. A higher annual rate of growth (20 percent) is also projected, under the assumption that efforts may be exerted to resettle all current refugee camp dwellers in permanent noncamp housing. For either of these growth assumptions, the lower ICOR value (6.8) is appropriate given the highly labor-intensive construction methods used in the West Bank.

Due to the uneven growth in the 11.8 percent annual target, extremely large amounts of investments are required in 1979, when the first major wave of immigrants are projected to arrive.³ While it is likely that the construction sector will peak during the initial years of in-migration, it may not be realistic to conceive of so much investment being mobilized in such a short period of time. Moreover, even if such investment were forthcoming, there is still a lag in the construction process from the conception stage of a project to the actual completion of usable facilities. Ideally, construction would have to commence immediately, or

³ Due to the fact that investment trends for 1978 do not appear to have changed from previous years (as of the time of writing) and do not approach the levels suggested by value added calculations in Table 3, current investment trends were extrapolated through 1978 in Table 4.

TABLE 4
Investment Requirements For Alternate Target Growth
Rates and Alternate ICOR Values^a: Construction, West Bank
(millions, U.S. dollars)

Year	High Growth Rate (20 percent)			Low Growth Rate (11.8 percent)			Historical Average Growth Rate (12 percent)		
	Value Added	Investment (ICOR=6.8)	Investment (ICOR=18.16)	Value Added	Investment (ICOR=6.8)	Investment (ICOR=18.16)	Value Added	Investment (ICOR=6.8)	Investment (ICOR=18.16)
1977 ^{bc}	71	--	--	71	--	--	71	--	--
1978	85	95	257	79	54	145	79	58	155
1979	169	571	1522	130	347	926	88	64	171
1980	175	41	58	136	41	109	99	72	193
1981	182	42	111	140	27	73	111	81	216
1982	189	48	127	147	48	127	124	90	241
1983	195	46	123	152	34	91	139	101	271

^a See Appendix B, Part II for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistical Quarterly, 1977-1978.

^c Base year.

temporary, refugee-style shelters would have to be available, if there is to be sufficient housing for incoming migrants when they arrive.

As for projected employment in the construction sector, calculations in Chapter 5 resulted in estimates of 125 workers per 1000 additional persons to be housed. This estimate is based on recent labor productivity trends. Using the same population projections and proportional differences between residential and nonresidential construction, forecasts of employment requirements to meet output projections are presented in Table 5. Assuming that these trends continue into the future, these labor requirements are about on par with current manpower in active construction in the West Bank. However, productivity levels in the West Bank have fluctuated (see Table 1) and 15-16,000 construction workers may be required by 1983 if productivity decreases (that is, if workers produce only about 50 square meters of completed construction on an average per year as opposed to 71.0 square meters per year which is the basis of the projection in Table 5.)

GAZA STRIP

CURRENT STATUS.

In Gaza, most housing construction activity is initiated by the public sector due to the lack of private investment. Much of the housing construction is part of a program to resettle refugees from the camps. Despite the fact that sectoral value added has grown in real terms by an annual average of about 38 percent, the total number of employed construction workers in Gaza and North Sinai decreased by half in 1971 and has remained at a fairly constant and low level ever since (see Table 6). The total number of Gazans involved in construction has increased continuously, however, but this increase has been felt only in terms of an expansion of Gazans working in Israel. As of 1976, the ratio of Gaza construction workers employed in Israel to those employed locally was

TABLE 5
Total Projected Construction Workers Required, West Bank

	<u>Projected New Annual Population, Plus Population Requiring Replacement Housing^a</u>		<u>Number of Workers Required for Housing at 125 Workers/ 1000 Population^b</u>		<u>Total Projected Construction Workers Required, Including Additional Workers Required for Nonresidential Construction at 25 Percent of Total Construction^c</u>	
	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>
1978	36.1	36.1	4,513	4,513	6,017	6,017
1979	63.9	50.1	7,988	6,263	10,651	8,351
1980	66.4	52.2	8,300	6,525	11,067	8,700
1981	68.7	54.1	8,588	6,763	11,451	9,017
1982	71.4	56.4	8,925	7,050	11,900	9,400
1983	74.0	58.5	9,250	7,313	12,333	9,751

^a See Table 3.

^b See Table 21 in Chapter 5.

^c See Table 3 footnote.

TABLE 6
Gaza Strip and North Sinai: Employment and Productivity in the Construction Sector

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Total Employed							
Thousands	7.3	5.5	8.2	11.6	23.2	16.2	16.6
Percent of Labor Force	12.4	9.2	12.9	17.0	31.8	22.3	21.8
Employees Working in Israel							
Thousands	2.8	3.1	6.3	9.8	12.2	13.8	14.4
Percent of Total	38.4	56.4	76.8	84.5	52.6	85.2	86.7
Employees Working in Gaza-N.S.							
Thousands	4.5	2.4	1.9 ^a	1.8	1.9	2.4	2.2
Percent of Total	61.6	43.6	23.2	15.5	47.4	14.8	13.3
Total Construction Begun in Gaza							
Thousand m ²	24	59	125	150	124	220	264
Percent Residential	79.4	84.5	85.1	89.7	92.6	88.3	82.1
Percent Nonresidential	20.6	15.5	14.9	10.3	7.4	11.7	17.9
Average Yearly Square Meters Per Employee^c							
Thousands	5.3	24.6	65.8	83.3	65.3	91.7	120.0
Sector GDP at Factor Cost							
Million IL ^d	44	50	86	110	169	217	285
Labor Productivity							
Thousand IL ^e	9.8	20.8	45.3	61.1	89.0	90.4	129.6

^a Estimated.

^b Including those self-employed and without paid employees

^c Construction begun. For those employed in Gaza-North Sinai.

^d In constant 1976 prices

^e Ratio of sector GDP per worker employed in the West Bank. Values in constant 1976 prices.

Source: Compiled and estimated from Statistical Abstract of Israel, various issues.

6.5 to 1. This is not surprising when one views the extreme wage differential that existed through 1973, but has gradually narrowed over the years between construction jobs in Gaza and in Israel (Table 7).

Although the number of workers in Gaza has remained constant, the productivity of labor has improved dramatically since 1970 (see Table 6). The average yearly square meters of construction begun by each employed worker has increased from 5.3 in 1970 to 120.0 in 1976! The ratio of sector value added per worker has also increased from IL 9,780 in 1970 to IL 129,550 in 1976 in constant prices. The probable reasons for this change in productivity are the gradual adoption of Israeli capital-intensive methods of construction and the increased use of unpaid family workers.

Unlike the West Bank, almost all of the housing constructed in Gaza is of the multifamily type due to the scarcity of land. This necessitates the employment of Israeli construction techniques and improves the training of Gazan workers in these skills. Finally, the proportion of residential to nonresidential construction in Gaza indicates that many fewer public facilities and less physical infrastructure are constructed per unit of housing in Gaza than in the West Bank. Nonresidential construction amounts to only about 15 percent of all housing starts (as compared to 25 percent in the West Bank).

CONSTRAINTS, OPPORTUNITIES, AND REQUIREMENTS.

The major constraints on construction in Gaza are labor, land, and investment. Although it is unlikely that large numbers of immigrants will return to Gaza, an increased labor force will be necessary just to rehouse the current refugees from camp shelters. Limited land will require continuation of multifamily housing construction despite the fact that this type of construction is more expensive per unit than single-family dwellings of the West Bank type. Finally, investment from the private

TABLE 7
 Average Daily Wages of
 Gaza Strip-North Sinai Residents in Construction
 (IL in constant 1976 prices)

	<u>Working in Gaza-N.S.</u>	<u>Working in Israel</u>
1970	15.7	54.8
1971	21.6	51.7
1972	31.8	61.9
1973	41.0	64.1
1974	53.0	56.1
1975	50.6	57.4
1976	50.1	57.6

Sources: Compiled and estimated by CACI from Statistical Abstracts of Israel, various issues.

sector for construction has been minimal; prospects for major continued growth in construction depend on a change in investment patterns.

On the other hand, exposure to Israeli methods of construction has improved the skill levels, capabilities, and productivity of labor. If wage gaps between Gaza and Israel continue to decrease, the trend of labor outflow may reverse and contribute to sectoral growth in Gaza. The demand for more construction comes from growth in the current population and immigration from abroad. The forecasting model employed takes this population increase into account.

FIVE YEAR PROJECTIONS OF REQUIRED INVESTMENT AND EMPLOYMENT.

On the basis of annual projections of population growth due to natural increase and migration (see Appendix C) and cost estimates for multifamily housing per 1000 additional persons (see Table 8), a high and low forecast of housing construction costs is obtained (based on high and low estimates of population growth). Costs for nonresidential construction are added in at an additional 15 percent on the basis of proportionate housing and nonresidential building starts in Gaza. Deterioration and replacement including construction costs for housing are estimated at 2 percent (Shye, 1972). Finally, land and land development costs for multifamily construction are estimated at 20 percent of total construction costs (World Bank, 1975b). The final estimates for construction sector value added are between U.S. \$71.4-\$77.6 million in 1979 and U.S. \$85.8-\$92.9 million in 1983.

The average annual rate of growth of the construction sector amounts to 6.5 percent if the low population growth scenario is accepted. This growth target is used in Table 9 as the most reasonable/conservative growth rate for Gaza construction to enable this sector to expand in with the population. The historical average annual growth rate (17 percent) is included for comparative purposes. This rate of growth

Table 8
Total Projected Construction Costs
Continued

^a Construction costs include housing and nonresidential building required by additional increments to the population. In this table, deterioration and replacement rates for existing housing are assumed to be 2 percent. Shye (1972) estimates the deterioration rate in Gaza at 2 percent per annum and Gaathon (1971) estimates it at 2.5 percent per year in Israel.

^b See Table 36 in Chapter 5.

^c This total figure assumes the historical Gaza proportion of 85 percent residential building starts to 15 percent nonresidential building starts. This percentage is skewed a bit more to the residential end than urban planners' rules of thumb (Ben Shahr, *et al.*, 1971; Tuma and Drabkin, 1978) for nonresidential facilities required per unit of residential construction. It is assumed that nonresidential construction costs are identical to residential costs per square meter, due to the lack of independent cost estimates. Israeli accounting methods for allocating school and hospital construction are unclear, so there may be some double-counting of such nonresidential building starts in the construction and public expenditure estimates in this volume.

^d Average annual growth between 1979 and 1983.

^e See Appendix C; assumes no in-migration

^f Deterioration rate is set at 2 percent per year by Shye (1972) who estimated this figure for the occupied territories. Replacement is assumed for housing only; nonresidential building deterioration is assumed to be zero.

^g Difference between 1979-83 and 1978-83 growth rates is due to the drastic increase in in-migration registered in 1979.

^h Land development and raw land cost estimates at 20 percent of total housing costs based on multi-family low-income housing in Madras, India, and Mexico City (World Bank, 1975h). Total is a proxy for value added in construction.

TABLE 9

Investment Requirements For Alternate Target Growth Rates and Alternate ICOR Values^a: Construction, Gaza (millions, U.S. dollars)

Year	High Growth Rate (8.4 percent)			Low Growth Rate (6.5 percent)			Historical Average Growth Rate (17 percent)		
	Value Added	Investment (ICOR=6.8)	Investment (ICOR=18.16)	Value Added	Investment (ICOR=6.8)	Investment (ICOR=18.16)	Value Added	Investment (ICOR=6.8)	Investment (ICOR=18.16)
1977 ^{bc}	33	—	—	33	—	—	33	—	—
1978	36	20	54	35	14	36	38	38	102
1979	78	286	763	71	245	654	45	44	118
1980	81	20	54	75	27	73	53	52	139
1981	85	27	73	78	20	54	62	61	162
1982	89	27	73	82	34	91	72	71	189
1983	93	27	73	86	27	73	84	83	223

^a See Appendix B, Part II for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistical Quarterly, 1977-1978.

^c Base year.

is so high due to the almost complete stagnation of this sector in the late 1960's. As for future growth, 8.4 percent, based on high population growth in Table 8, is considered to be the upper bound.

As is obvious in Table 9, a large amount of investment is required in 1979 to produce growth in sector output to accommodate population increases.⁴ While the required investment levels off in later years, this pattern of high initial investment is perhaps indicative of what will be needed when the migration flow begins. If needed investment is not available, difficulties in providing sufficient and adequate shelter for new population may result.

Table 10 projects the total number of construction workers needed to match population growth assuming that current productivity levels continue into the future. If this is so, the number of construction workers will have to double over the next 5 years to keep pace with the demand for housing and public facilities.

⁴ Investment requirements for 1978 are extrapolated from current trends. See footnote 3 for explanation.

TABLE 10
Total Projected Construction Workers
Required, Gaza Strip

	Projected New Annual Population Plus Population Requiring Replacement Housing (in thousands) ^a		Number of Workers Required for Housing at 103 Workers/ 1000 Population ^b		Total Projected Construction Workers Required, Including Additional Workers Required for Nonresidential Construction at 15 Percent of Total Construction ^c	
	High	Low	High	Low	High	Low
1978	25.2	25.2	2,596	2,596	3,054	3,054
1979	31.1	28.7	3,203	2,956	3,768	3,478
1980	32.5	30.1	3,348	3,100	3,939	3,647
1981	34.0	31.4	3,502	3,234	4,120	3,805
1982	35.5	32.9	3,657	3,389	4,302	3,987
1983	37.1	34.4	3,821	3,543	4,495	4,168

^a See Table 7.

^b See Table 33 in Chapter 5.

^c See Table 7 footnote.

CHAPTER 9. TRADE, TRANSPORT, AND OTHER SERVICES

CONCLUSIONS

	<u>West Bank</u>	<u>Gaza Strip</u>
<u>Minimal Investment Requirements</u> <u>(1978-1983):</u>		
<u>Reasonable Growth Scenario</u>		
Sector Growth (percent)	6.0	2.0
Investment (millions U.S. \$)	257.4	21.0
<u>Overall 8 Percent Growth Scenario</u>		
Sector Growth (percent)	7.0	2.0
Investment (millions U.S. \$)	308.4	21.0
<u>Minimal Employment Requirements</u> <u>(by 1983):</u>	46,700- 49,400	8,100

WEST BANK

INTERNAL TRADE.

Trading methods in the West Bank are simple. The wholesale trade statistics that are available for industry appear in Chapter 7. In both the pre- and post-1967 periods, East Jerusalem served as the central market for wholesale trade. Due to the changed status of East Jerusalem since 1967, this has resulted in an awkward and cumbersome situation. Movement toward developing regional and secondary market centers has proceeded with some resistance, but a strong northern market center in Nablus is being developed (conversation with Vivian Bull, November, 1978).

FOREIGN TRADE.

In spite of the "open bridges" policy, there have been several important shifts in the West Bank's trading patterns.

- During the first six months after the 1967 war, shipments to the East Bank, mainly the disposal of agricultural surpluses, rose rapidly while purchases there were negligible.
- In 1968, the West Bank's sales in the East Bank were somewhat higher than in 1966.
- Purchases from the East Bank in 1978 totalled less than half sales there.

This chronic imbalance is partially explained by a large, but unknown, share of East Bank purchases from the West Bank for reexport to other countries, mainly neighboring Arab states (Kanovsky, 1970).

Compensating for the much lower purchases from Jordan and other suppliers, Israel became the West Bank's major supplier. Trade between the West Bank and Gaza Strip also expanded after 1970. This trade now includes exports of agricultural produce and olive oil, imports of fish, citrus and services from Gaza, and tourism in both directions. Outside of the area, the West Bank has been an insignificant exporter of souvenirs and jewelry. The Israeli authorities have permitted local merchants and industrialists to import new materials and equipment from abroad.

On the whole, the trade balance in commodities has been adverse, with imports exceeding exports significantly (see Chapter 3). The major offsetting items have been tourist expenditures in the area, the earnings of West Bankers working in Israel, remittances received from relatives working abroad, the disbursements of international relief organizations, and expenditures of the military government.

Table 1 shows the foreign trade balance of the West Bank. Several interesting points can be concluded from these figures:

- The West Bank has a negative balance of trade with Israel and the rest of the world.
- The West Bank has a positive balance of trade with Jordan in both agricultural and industrial commodities.
- The positive balance of trade with Jordan is not sufficient to offset the negative balance resulting from trade with Israel and the rest of the world.
- The main reason for this deficit is the poor performance of the industrial sector in the West Bank, which results in the importation of industrial products from Israel and the rest of the world. (In 1971, 80 percent of the total deficit was due to the deficit in trade of industrial products. In 1976, this same figure was 85 percent).

TRANSPORT.

Transportation in the West Bank is all by motor vehicles -- trucks, buses or taxies. No trains serve the area. In 1969, the 405 buses in the West Bank were mostly between 10 and 20 years old, and were run by 137 different companies. This fragmentation resulted in gross inefficiency (Shye, 1972). Israeli policies have discouraged increases in this industry. For instance, currently only one major transport company in the West Bank carries workers to jobs in Israel. All other transport services is provided by individual operators (conversation with Vivian Bull, November, 1978).

Extensive road construction work was carried out after the war under the direction of the military. Over a quarter of a million Israeli lira (IL) were invested during 1967-69 and another IL 500,000 were invested in fiscal year 1969/70 (Israel, 1969f). The road network in the region was in poor condition. A total of over 400 km. of roads were improved in

TABLE 1

West Bank: Imports, Exports, and Foreign Trade Balance by
Major Trading Partners and Commodity Type^a
(IL million in constant 1976 prices)

Trading Partner and Commodity Type	1971			1972			1973			1974			1975			1976		
	IM	EX	BAL	IM	EX	BAL	IM	EX	BAL	IM	EX	BAL	IM	EX	BAL	IM	EX	BAL
<u>Israel -- Total</u>	844	288	-556	1132	356	-776	1349	487	-862	1454	529	-925	1699	579	-1120	1767	617	-1150
Agricultural Produce	147	44	-103	187	48	-139	234	99	-135	232	101	-131	269	87	-182	291	108	-183
Industrial Products	696	244	-452	945	308	-637	1115	338	-777	1223	428	-795	1430	492	-938	1476	509	-967
<u>Jordan -- Total</u>	52	254	+202	63	356	+293	46	185	+139	37	220	+183	41	289	+248	30	343	+313
Agricultural Produce	18	65	+47	13	152	+139	11	71	+60	4	63	+59	1	93	+92	1	98	+97
Industrial Products	34	189	+155	50	204	+154	35	114	+79	33	156	+123	40	196	+156	29	244	+215
<u>Rest of World --</u>																		
Total	162	7	-155	178	6	-172	119	5	-114	132	5	-127	176	36	-140	174	27	-147
Agricultural Produce	29	--	-29	42	--	-42	23	--	-23	26	--	-26	64	24	-40	71	19	-52
Industrial Products	133	7	-126	136	6	-130	96	5	-91	106	5	-101	112	12	-100	103	8	-95
<u>Total</u>	1058	549	-509	1373	718	-655	1514	677	-837	1623	754	-869	1917	905	-1012	1971	986	-985

^a Totals may not add due to rounding or source inaccuracies.

-- Negligible amount.

Sources: Israel, (1977b: 711; 1975b: 693; 1974b: 690).

two years, and about 55 km. of new roads were built costing IL 17 million (Israel, 1969f). North-south connections were completed first, and then road connections to villages were built or improved. Currently, the road system is in good condition and can be considered adequate with continued maintenance (conversation with Vivian Bull, November 1978).

TOURISM.

East Jerusalem was the center of Jordan's tourist industry, producing U.S. \$32 million in 1966. Most of the tourist-grade hotels were in East Jerusalem, which was also the center for various other services offered to tourists (Kanovsky, 1970). The remainder of the West Bank derived considerable income from tourists day trips, although not to the same degree as East Jerusalem.

The nature of the tourist industry was radically altered after 1967. A large inflow of Israeli visitors, anxious to see the West Bank, took place during the first six months after the war. Their spending in the area was estimated at U.S. \$21 million, exceeding the income from tourism in all pre-war Jordan during a comparable period (Kanovsky, 1970). However, the traditional tourist services, such as hotels, taxis, and travel agents have declined as an important industry with the change in status of East Jerusalem.

The Israeli authorities have permitted the free flow of visitors in both directions between the East and West Banks, and have permitted entry to visitors from other Arab states. However, non-Jordanians have been reluctant to enter the West Bank as tourists for fear that an Israeli stamp on their passport will cause them difficulties when they return to their native countries.

BANKING, MONEY, AND FINANCE.

All local banks have been closed since 1967. Branches of Israeli banks serve the activities financed by the military government, but are generally not used by the local population. In the West Bank, there is a general reluctance to hold Israeli lira as a store of value. Lira are held only in amounts necessary to carry out transactions with Israeli residents, while financial books are kept in Jordanian dinar, as are savings and hoardings (conversation with Vivian Bull, November 1978). There is a high propensity to invest in financial assets, or in other words, to hoard dinar and other foreign currencies. This is a barrier to increased real investment in the economy.

OTHER SERVICES.

Entrepreneurial skills have been realized in the private services sector, but at a low level. With growing demand for garage services from Israelis, many auto repair enterprises have been established. Too, as the construction sector has grown, increased trade in building materials and requirements for maintenance have developed.

GROWTH IN VALUE ADDED.

Gross value added in trade and transport has increased at an average rate of 8.1 percent during 1968-77 (see Table 2). The pace of growth

TABLE 2
Growth of Trade, Transport and Other
Services in Value Added
(percent)

	<u>1968-1973</u>	<u>1974-1977</u>	<u>1968-1977</u>
Gross Value Added	6.8	8.5	8.1
Share in GDP	33.2	33.0	33.1

Source: Table 2 in Chapter 3.

in real value added accelerated only slightly in the period 1974-77. The share of value added in this sector in the total GDP has remained fairly stable at a rate of 33 percent.

Growth in Employment

Table 3 suggests several trends in employment in this sector:

- Employment in this sector has grown by an average rate of 3 percent per year. In 1969, almost 17,000 people were employed in trade and transport; this has increased to 23,000 in 1976. There has not been a drastic change in the basic level of employment.
- About 15.5 percent of all employed workers in the West Bank economy were active in the trade and transport sector through 1974. In 1975, the percentage of workers in this sector increased. In the future, as the national income in the West Bank increases, so may employment in this sector.

PROSPECTS FOR GROWTH.

Particular branches in this sector may have the ability to expand in the future:

- Tourism outside of East Jerusalem has the potential for growth if Arab tourists can be attracted. Ramallah and Nablus were attractive resort areas for wealthy Arabs from the Gulf States prior to 1967 (conversation with Vivian Bull, November, 1978).
- Growth in regional transport is possible if regional and secondary market centers are established outside of Jerusalem.
- Growth in repair and maintenance services is possible as the construction sector increases and consumption rises.
- Growth in retail shops is possible as population increases.

TABLE 3
 Employment in Trade, Transport, and Other
 Services, West Bank
 (in 1,000 persons)

	<u>Workers Employed in the Sector</u>	<u>Total Employment</u>	<u>Percent of Total</u>
1969	17.0	109.9	15.5
1970	17.5	114.6	15.3
1971	18.5	116.8	15.8
1972	19.6	125.2	15.7
1973	19.9	126.4	15.7
1974	21.0	137.0	15.3
1975	21.7	132.5	16.4
1976	23.0	129.7	17.7

Source: Israel, Statistical Abstract, 1969-77.

FIVE YEAR PROJECTIONS OF INVESTMENT AND EMPLOYMENT REQUIREMENTS.

Three alternate rates of growth are projected for the trade, transport, and other services sectors (see Table 4).¹ To sustain the historical average annual rate of growth (7 percent) into the future, investment requirements range from U.S. \$46.2 million in 1979 to U.S. \$60.4 million in 1983. However, a more conservative, and perhaps more reasonable, rate of growth over the next five years is a lower 6 percent annual target. In this scenario, a smaller amount of investment would be required -- U.S. \$39.3 million in 1979 to U.S. \$49.4 million in 1983.

As for labor requirements to sustain these sectoral rates of growth in output, the 1976 employment levels of about 23,000 workers would have to double by 1983 (see Table 5). It is assumed that most of these new workers would be employed in the other private services category -- primarily in maintenance, repair, and retail trade to support an increasing population.

GAZA STRIP

FOREIGN TRADE.

Following the 1967 war, trade with the East and West Banks was facilitated by transport through Israel. During the first year, about 40 percent of all citrus exports went to both banks of the Jordan. During the second year these products were reduced to about 25 percent. Other exports to these areas included almonds, dates, fish, and carpets. There were some imports from the West Bank in 1968, mainly fruits, vegetables, and olive oil, but they declined during 1969.

¹ Due to lack of investment in transportation because of inhibitory regulations, the lower ICOR value (3.65) is more appropriate.

TABLE 4
**Investment Requirements For Alternate Target Growth
 Rates and Alternate ICOR Values^a: Transport, Trade,
 and Other Services, West Bank
 (millions, U.S. dollars at 1976 prices)**

Year	High Growth Rate (8 percent)			Low Growth Rate (6 percent)			Historical Average Growth Rate (7 percent)		
	Value Added	Investment (ICOR=3.65)	Investment (ICOR=4.32)	Value Added	Investment (ICOR=3.65)	Investment (ICOR=4.32)	Value Added	Investment (ICOR=3.65)	Investment (ICOR=4.32)
1977 ^{bc}	168.7	—	—	168.7	—	—	168.7	—	—
1978	182.2	49.4	58.5	178.7	36.6	43.4	180.5	43.0	50.9
1979	196.7	53.0	62.8	189.5	39.3	46.6	193.1	46.2	54.6
1980	212.5	57.6	68.2	200.9	41.6	49.2	206.6	49.4	58.5
1981	229.4	61.8	73.1	212.9	44.0	52.0	221.1	52.6	62.3
1982	247.9	67.3	79.6	225.7	46.6	55.3	236.6	56.8	67.2
1983	267.7	72.3	85.6	239.2	49.4	58.5	253.1	60.4	71.4

^a See Appendix B, Part II for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistical Quarterly, 1977-1978.

^c Base year.

TABLE 5
 Projected Labor Requirements in Trade,
 Transport, and Other Services, West Bank^a
 (in thousands, persons)

<u>Year</u>	<u>Historical Average Rate of Growth (7 percent)</u>	<u>Reasonable/Conservative Rate of Growth (6 percent)</u>
1978	35.2	34.9
1979	37.7	37.0
1980	40.3	39.2
1981	43.1	41.5
1982	46.2	44.0
1983	49.4	46.7

^a Projections based on average output/labor ratios for 1973-1975.

However, the major trend has been toward increasing trade with Israel. Imports from Israel have greatly exceeded exports. Gaza Strip exports to Israel include mainly labor services. Other exports are goods primarily manufactured by subcontractors. Imports consist mostly of industrial products. Exports overseas are dominated by citrus sales to Singapore, Yugoslavia, Holland, Germany, and France.

The foreign trade balance of the Gaza Strip between 1971-1976 is presented in Table 6. There are several salient trends:

- The balance of trade for industrial products with both major partners is negative.
- The agricultural product balance of trade (except with Israel) is always positive.
- The total balance of trade between 1971-76 is always negative primarily due to the poor performance of the industrial sector.

TOURISM.

Tourism services in the Gaza Strip were fairly modest before the war, and have remained so since. Occupancy in guest houses is very low, even during peak seasons. Most tourists are from the West Bank or are summer visitors (Shye, 1972).

MONEY, BANKING, AND FINANCE.

Before the 1967 war, 6 banks operating 11 branch offices existed in the Gaza Strip. All of these banks have been closed since 1967. Since the war, 5 branches of Israeli banks have been in operation in Gaza, but very little use is made of them by Gaza residents. Deposits in banks and credit extended by banks are miniscule in comparison to prewar patterns (Bregman, 1975). The velocity of money circulation in Gaza is relatively low and reflects the area's typical savings patterns.

TABLE 6

Gaza Strip: Imports, Exports, and Foreign Trade Balance By
Major Trading Partners and Commodity Type^a
(IL million in constant 1976 prices)

Trading Partner and Commodity Type	1971			1972			1973			1974			1975			1976		
	IM	EX	BAL	IM	EX	BAL	IM	EX	BAL	IM	EX	BAL	IM	EX	BAL	IM	EX	BAL
<u>Israel</u> -- Total	581	134	-447	796	211	-585	891	294	-597	1004	307	-697	1383	440	-943	1356	529	-827
Agricultural Produce	96	34	-62	121	40	-81	166	83	-83	136	50	-86	194	63	-131	183	77	-106
Industrial Products	485	100	-385	675	171	-504	725	211	-514	868	257	-611	1189	377	-812	1173	452	-721
<u>Jordan</u> -- Total	1	45	+44	1	46	+45	1	53	+52	1	93	+92	1	138	+137	--	193	+193
Agricultural Produce	1	45	+44	1	46	+45	1	53	+52	--	93	+93	--	138	+138	--	193	+193
Industrial Products	--	--	--	--	--	--	--	--	--	1	--	-1	1	--	-1	--	--	--
<u>Rest of World</u> --																		
Total	103	202	+99	100	190	+90	86	158	+72	121	105	-16	80	111	+31	130	101	-29
Agricultural Produce	4	202	+198	4	190	+186	2	158	+156	12	105	+93	24	111	+87	52	101	+49
Industrial Products	99	--	-99	96	--	-96	84	--	-84	109	--	-109	56	--	-56	78	--	-78
<u>Total</u>	684	381	-303	897	447	-450	978	505	-473	1126	504	-622	1464	689	-775	1486	823	-663

^a Totals may not add due to rounding or source inaccuracies.

-- Negligible amount.

Source: Israel, Statistical Abstract, (1977: 711; 1975: 693; 1974: 690).

TRANSPORT.

The role of transport in the economy of Gaza is relatively small. In 1966, it represented about 3 percent of the national product and employed about 6 percent of all employees (Israel, 1969f). There is a primitive port in Gaza, but since 1967 its activity has decreased.

GROWTH IN VALUE ADDED.

Gross value added in this sector increased at an average rate of 7 percent during 1968-74, but has decreased by an average annual rate of 6 percent in real terms since 1974 (see Table 7). In 1968, value added amounted to IL 290 million, increasing to IL 363 million in 1977. In their contribution to the GDP, trade, transport, and other services ranked second only to agriculture. One major factor contributing to this relatively high share of GDP was the illicit smuggling trade conducted with Egypt. Since the average customs duties in Gaza were very low in comparison with those prevailing in Egypt, imported luxury goods were less expensive in Gaza. During the 1960's, therefore Egyptian tourists, shoppers, and merchants found lucrative opportunities to smuggle luxury goods into Egypt (Van Arkadie, 1977).

TABLE 7
Growth of Trade, Transport, and
Other Services in Value Added
(percent)

	<u>1968-1974</u>	<u>1974-1977</u>	<u>1968-1977</u>
Rate of growth in gross value added	7	-6	2
Share in GDP	37	21	32

Source: Table 2 in Chapter 3.

Other circumstances also led to the development of an extensive service sector in Gaza. The Egyptian army maintained an adjacent base prior to 1967. After 1964, the Palestine Liberation Army also operated in the Strip. Soldiers of the U.N. Emergency Forces have been based there, and UNRWA employs a large staff to run its camps, schools, and medical clinics. The presence of all these military and civilian personnel has encouraged the proliferation of personal service occupations (Van Arkadie, 1977).

EMPLOYMENT CONDITIONS.

The number of employed persons in this sector between 1969 and 1976 is presented in Table 8. The following major trends are noted:

- During this period, the number of employed workers has grown by an average rate of 1.5 percent per year. The number of workers employed in this sector increased from 13,400 to 15,300, between 1969 and 1976.
- The overall rate of growth of employed workers in the Gazan economy is about 3.6 percent per year, so employment in trade, transport, and other services is increasing at a slower rate than that in the overall economy.
- A result of this pattern is a declining share of employment in this sector compared to total employment.

FIVE YEAR PROJECTIONS OF INVESTMENT AND EMPLOYMENT REQUIREMENTS.

There is little prospect for future growth in this sector. Over the last decade, it has achieved an average annual rate of growth of 2 percent. However, since 1974, the rate has been negative. Without substantial growth in other sectors of the economy, it is not likely that this sector will improve. Thus, only one growth scenario (2 percent) is projected in Table 9. Due to the high labor intensity involved in this sector, the lower ICOR value (3.65) is appropriate. Given this 2

TABLE 8
 Employment in Trade, Transport and
 Other Services, Gaza Strip

<u>Years</u>	<u>Employed Persons (thousands)</u>	<u>Total Employed Worker in Gaza (thousands)</u>	<u>Percent of Total</u>
1969	13.4	52.9	25.3
1970	13.0	58.7	22.1
1971	13.9	59.8	23.2
1972	13.5	63.6	21.2
1973	14.3	68.2	21.0
1974	15.2	72.9	21.0
1975	15.5	72.6	21.3
1976	15.3	76.1	20.1

Source: Israel, Statistical Abstract, 1969-1977.

TABLE 9

Investment Requirements For Target Growth Rate
and Alternate ICOR Values^a: Transport, Trade,
and Other Services, Gaza
(millions, U.S. dollars at 1976 prices)

Year	High, Low, and Historical Growth Rate (2 percent)		
	Value Added	Investment (ICOR=3.65)	Investment (ICOR=4.32)
1977 ^b	45.5	--	--
1978	46.4	3.3	3.8
1979	47.4	3.6	4.4
1980	48.2	3.3	3.8
1981	49.2	3.6	4.4
1982	50.3	3.6	4.4
1983	51.3	3.6	4.4

^a See Appendix B, Part II for discussion of how ICOR values were chosen.

^b Value added for 1977 taken from Israel, Administered Territories Statistical Quarterly, 1977-1978.

^c Base year.

percent growth target, a fairly constant U.S. \$3.6 million in investment is required per year.

Labor requirements to sustain a 2 percent annual growth rate (Table 10) lie between 7,000 and 8,000 workers. This figure is much lower than the 1976 employment level because of the lower rate of growth that is projected for the next five years.

TABLE 10
 Projected Labor Requirements in Trade,
 Transport, and Other Services, Gaza^a
 (in thousands, persons)

<u>Year</u>	<u>Historical Average Rate of Growth (2 percent)</u>
1978	7.3
1979	7.5
1980	7.6
1981	7.8
1982	7.9
1983	8.1

CHAPTER 10. SUMMARY OF INVESTMENT REQUIREMENTS AND RESOURCES

INTRODUCTION

The major objectives of this chapter are:

- To identify the projected range of investment requirements to sustain an aggregate annual 8 percent growth rate in the West Bank and Gaza Strip economies over the next 5 years.
- To identify the projected range of investment requirements to sustain reasonable/conservative rates of growth in each economic sector of the two economies over the next 5 years.
- To forecast the domestic resources, both public and private, likely to be mobilized to meet projected investment requirements and to identify the remaining resources required from foreign sources.

Two major growth scenarios have been developed in this volume. The first scenario identifies an overall growth target -- 8 percent per annum -- which coincides with recent historic rates of growth. This scenario assumes unbalanced growth, that is, each sector may expand at different rates, although, in aggregate the economy achieves an 8 percent rate of annual increase. Moreover, growth within each sector is assumed to proceed evenly, that is, the rate of increase in each sector per year is stable.

The second growth scenario starts at the sectoral level. On the basis of an indepth analysis of historical trends within the sectors and attempts to establish criteria for the adequate provision of public services and housing, reasonable and/or conservative rates of growth for each sector were identified. The prospects for future growth in each sector were often different from the historic growth trends that were observed. Economy-wide rates of growth were then be calculated on the basis

of these "reasonable" trends in each sector. This scenario assumes unbalanced growth from sector to sector, but also assumes that uneven growth may occur within certain sectors, such as in public services and construction, where the development of extensive infrastructure is crucial in the initial years of in-migration to absorb new population adequately.

In each of the preceding sectoral chapters, the simple Harrod-Domar growth model was applied to these two growth scenarios to project ranges of required investment over the next 5 years, given increasing levels of output in each sector matched to each growth scenario. With the aggregate investment requirement identified on a yearly basis, the total financial resources available to meet these requirements domestically must now be estimated.

Two scenarios of the propensity to invest are postulated. The first scenario assumes that current trends of domestic investment will continue at the same rate into the next 5 years. This implies that domestic investment will be low and that extensive foreign resources will have to be tapped to meet investment requirements and sustain economic growth in the West Bank and Gaza Strip. The second scenario assumes that all domestic saving will be channelled to investment in the future growth economies in the two areas. Due to the relatively large amount of domestic saving in the West Bank and Gaza, which in the past has been hoarded and has not gone into investment, this assumption implies that enlarged domestic resources may be available to meet projected investment requirements.

The remainder of this chapter summarizes the projected investment requirements to meet the historical 8 percent and reasonable/conservative growth rates, and the range of domestic and foreign resources estimated to be available. The data presented are the results of the Harrod-Domar model and have been drawn from analyses in earlier sectoral chapters. The West Bank is considered first and then the Gaza Strip.

WEST BANK

HISTORICAL EIGHT PERCENT GROWTH SCENARIO.

Table 1 summarizes the unbalanced sectoral rates of growth employed in this scenario, the ICOR values associated with these growth rates, the projected value added for each sector extrapolated from the last available historical data point (1977), total GDP estimated for 1977 to 1983, and the economy-wide annual rates of growth implied by these sectoral rates. As can be seen clearly in the table, the aggregate growth rate implied by the sectoral rates of increase is 8 percent annually.

Table 2 summarizes the sectoral projections of required investment from 1978 to 1983 given this aggregate 8 percent growth scenario. In constant 1976 U.S. dollars, the total investment required over all sectors is \$1,139.7 million between 1978 and 1983.

REASONABLE/CONSERVATIVE GROWTH SCENARIO.

Table 3 presents the sectoral value added for the reasonable/conservative growth scenario projected from 1978 to 1983. Due to the fact that the construction and public services sectors are assumed to increase at an uneven rate -- peaking in 1979 when immigration is projected to commence -- the aggregate rates of growth per year vary. In 1978, the economy wide growth rate is forecasted to be 7 percent, in 1979, it is 27.3 percent,¹ and between 1980 and 1983, it retreats to a stable 5.6 percent annual rate.

Table 4 presents the sectoral projections of investment required to reach these output forecasts. In constant 1976 U.S. dollars, the total required investment for all sectors amounts to \$1,072.7 million. This is

¹ Due to assumptions about in-migration and improvements in the standards of housing and public services provided to the additional population (to meet criteria of adequacy described in earlier chapters).

TABLE 1
Summary of Annual Sectoral Growth Based on
Historical, Aggregate, 8 Percent Growth Target, West Bank
(in millions IL)

	<u>Agriculture</u>	<u>Industry</u>	<u>Construction</u>	<u>Trade, Transport, and Other Services</u>	<u>Public Services</u>	<u>Total GDP</u>	<u>Aggregate Rate of Growth (in percent)</u>
Historical Growth Target (percent)	8.0	7.0	12.0	7.0	6.0	—	—
Associated ICOR Value	4.5	1.2	6.8	3.7	0.9	—	—
1977 ^a	998	214	563	1346	395	3516	—
1978	1078	229	631	1440	419	3797	8.0
1979	1164	245	706	1541	444	4100	8.0
1980	1257	262	791	1649	470	4429	8.0
1981	1358	281	886	1764	499	4788	8.1
1982	1467	300	992	1888	529	5176	8.1
1983	1584	321	1111	2020	560	5596	8.1

^a Base year; figures from Table 2, in Chapter 3.

TABLE 2

Investment Requirements for the West Bank Based on
 Historical Aggregate 8 Percent Rate of Growth
 (Millions U.S. Dollars)

	<u>ICOR</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>Total</u>
Agriculture	4.48	44.9	48.2	52.3	56.6	60.7	66.3	329.0
Industry	1.23	2.3	2.5	2.6	2.8	3.1	3.3	16.6
Construction	6.8	57.9	63.9	72.4	80.9	90.4	101.4	466.9
Trade, Transport, and Other Services	3.65	43.0	46.2	49.4	52.6	56.8	60.4	308.4
Public Services	<u>0.9</u>	<u>2.8</u>	<u>2.9</u>	<u>2.9</u>	<u>3.3</u>	<u>3.4</u>	<u>3.5</u>	<u>18.8</u>
<u>Total Required Investment</u>		150.9	163.7	179.6	196.2	214.4	234.9	1,139.7

TABLE 3
Summary of Annual Sectoral Growth Based on
Reasonable/Conservative Growth Targets, West Bank
(in millions IL)

	<u>Agriculture</u>	<u>Industry</u>	<u>Construction</u>	<u>Trade, Transport, and Other Services</u>	<u>Public Services</u>	<u>Total GDP</u>	<u>Aggregate Rate of Growth (in percent)</u>
Reasonable/ Conservative Growth Target (percent)	6.0	6.0	11.8 ^b	6.0	6.9 ^b	--	--
Associated ICOR Value	3.2	1.2	6.8	3.7	0.9	--	--
1977 ^a	998	214	563	1346	395	3516	--
1978	1058	227	629	1427	422	3763	7.0
1979	1121	240	1037	1512	880	4790	27.3
1980	1189	255	1084	1603	935	5066	5.7
1981	1260	270	1120	1699	994	5343	5.5
1982	1336	286	1170	1801	1056	5649	5.7
1983	1416	304	1213	1909	1121	5963	5.6

^a Base year; figures from Table 2, in Chapter 3.

^b Uneven rates of growth based on population projections and cost projections of services based on adequacy standards.

TABLE 4

Investment Requirements for the West Bank Based on
 Conservative/Reasonable Sectoral Rates of Growth
 (Millions U.S. Dollars)

	<u>ICOR</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>Total</u>
Agriculture	3.16	23.8	24.9	26.9	28.1	30.1	31.7	165.5
Industry	1.23	2.0	2.0	2.3	2.3	2.5	2.8	13.9
Construction	6.8	56.3	347.6	40.1	30.7	42.6	36.6	553.9
Trade, Transport, and Other Services	3.65	37.1	38.8	41.6	43.9	46.6	49.4	257.4
Public Services	<u>0.9</u>	<u>3.1</u>	<u>51.6</u>	<u>6.3</u>	<u>6.6</u>	<u>7.0</u>	<u>7.4</u>	<u>82.0</u>
<u>Total Required Investment</u>		112.3	464.9	117.2	111.6	128.8	127.9	1,072.7

\$67 million less in investment than projected for the aggregate 8 percent scenario.

ESTIMATES OF DOMESTIC AND FOREIGN RESOURCES.

What domestic resources can be mobilized to meet these investment requirements? As described earlier, two alternate methods of estimation are employed. In the first, current trends of public and private investment are assumed to continue into the future. Using regression techniques, projected public and private investment expenditures are presented in Table 5.² The alternate estimation of potential domestic resources assumes that all domestic saving will be channelled to investment in the future. This is considered an equilibrium condition from a macroeconomic perspective. To arrive at the projected savings figures in Table 5, a functional relationship between saving and disposable income was estimated.³

² Using data from 1968-77, private and public investment in the West Bank were regressed on time to identify the trend line. The results are:

$$I_p = 1.45 + 97.1t$$

where I_p = Private investment
 t = Time trend

$$I_g = 75.4 + 2.57t$$

where I_g = Government investment
 t = Time trend

³ A linear functional relationship was assumed between saving and disposable income. The resulting regression equation, using data from 1968-77, is

$$S = -351 + 0.26Y_d$$

where S = Saving
 Y_d = Disposable income.

Further, it was assumed that disposable income would increase at a rate of 8 percent per year in the future, and that all household savings would be channelled into investment.

TABLE 5

Total Required Investment For Growth, Domestic Resources,
and Requirements For Foreign Capital Inflow, West Bank, 1978 -- 1983
(millions, U.S. dollars at 1976 prices)

Year	Estimated Domestic Resources					Total Required Investment		Estimated Requirements For Foreign Capital Inflow ^a			
	Private Investment	Savings	Public Investment	Private and Public Investment (R1)	Savings Plus Public Investment (R2)	Eight Percent Growth Scenario (I1)	Reasonable/Conservative Growth Scenario (I2)	Eight Percent Growth		Reasonable/Conservative Growth	
								R1-I1	R2-I1	R1-I2	R2-I2
1978	121.9	124.2	12.7	134.6	136.9	150.9	122.3	-16.3	-14.0	+12.3	+14.6
1979	134.0	137.7	13.0	147.0	150.7	163.7	464.9	-16.7	-13.0	-317.9	-314.2
1980	146.2	152.2	13.3	159.5	165.5	179.6	117.2	-20.1	-14.1	+42.3	+48.3
1981	158.4	167.9	13.6	172.0	181.5	196.2	111.6	-24.2	-14.7	+60.4	+69.9
1982	170.5	184.8	14.0	184.5	198.8	214.4	128.8	-29.9	-15.6	+55.7	+70.0
1983	<u>182.7</u>	<u>203.2</u>	<u>14.3</u>	<u>197.0</u>	<u>217.5</u>	<u>234.9</u>	<u>127.9</u>	<u>-37.9</u>	<u>-17.4</u>	<u>+69.1</u>	<u>+89.6</u>
Total	913.7	970.0	80.9	994.6	1050.9	1139.7	1072.7	-145.1	-88.8	-78.1	-21.8

^a Negative items denote a shortage of domestic resources and positive items, a surplus.

In Table 5, the two domestic resource scenarios are labelled R1 (private and public investment combined) and R2 (savings and public investment combined). Due to the fact that all savings are not being channelled into investment currently, the R2 scenario is always greater than R1. The estimated domestic resources are then compared to the total projected required investment. The 8 percent growth scenario is labelled I1 and the reasonable/conservative growth scenario, I2.

The four final columns in Table 5 compare the two domestic resource scenarios with the two investment requirement scenarios to estimate the requirements for additional assistance, from foreign sources, to achieve growth targets in the economy. Negative items indicate a shortage of domestic resources and positive items, a surplus. A shortage implies that foreign capital inflow will be needed to sustain growth, and a surplus suggests that domestic resources for investment exist for yet further growth.

Table 5 indicates that to sustain an annual 8 percent aggregate rate of growth in the West Bank over the next 5 years, foreign capital inflow will have to range from U.S. \$88.8 million in the best of cases (all savings is channelled to investment) to U.S. \$145.1 million (in constant dollars) if current investment trends continue. To sustain the reasonable/conservative overall growth rate, more foreign assistance will be required in larger amounts (between U.S. \$314 and \$318 million) when the projected in-migration commences, to develop infrastructure. However, a surplus of domestic resources is estimated for subsequent years to sustain a stable growth rate of 5.6 percent annually.

GAZA STRIP

HISTORICAL EIGHT PERCENT GROWTH SCENARIO.

Table 6 presents the annual sectoral value added and growth rates assuming continuation of historical average growth rates per sector.

TABLE 6
Summary of Annual Sectoral Growth Based on
Historical, Aggregate, 8 Percent Growth Target, Gaza Strip
(in millions IL)

	<u>Agriculture</u>	<u>Industry</u>	<u>Construction</u>	<u>Trade, Transport, and Other Services</u>	<u>Public Services</u>	<u>Total GDP</u>	<u>Aggregate Rate of Growth (in percent)</u>
Historical Growth Target (percent)	8	12	17	2	8	—	—
Associated ICOR Value	4.5	1.2	18.2	3.7	0.9	—	—
1977 ^a	538	162	262	363	279	1604	—
1978	581	181	307	370	301	1740	8.0
1979	628	203	359	378	325	1893	8.1
1980	678	228	420	385	351	2062	8.2
1981	732	255	491	393	380	2251	8.1
1982	790	285	574	401	410	2460	8.3
1983	854	320	672	409	443	2698	8.2

^a Base year; figures from Table 2, in Chapter 3.

It is clear that given these sectoral rates of increase, an 8 percent aggregate growth rate will result. Table 7 summarizes the sectoral projections of investment requirements given this economy-wide 8 percent growth scenario. In constant U.S. dollars, the total investment required over all sectors is \$1,174.4 million between 1978 and 1983.

REASONABLE/CONSERVATIVE GROWTH SCENARIO.

Table 8 presents the projected sectoral value added for the reasonable/conservative growth scenario. The construction and public services sectors are assumed to grow at an uneven pace, expanding the most in 1979 when the first wave of migrants is projected. Despite a requirement for overall growth of 39.0 percent between 1978 and 1979, due to assumptions about in-migration and cost estimates to provide adequate infrastructure, the steady rate in subsequent years drops to about 4.6 percent per year.

Table 9 summarizes the projections of investment requirements to achieve the output forecasts in Table 8. The total required investment for all sectors, given this scenario, amounts to U.S. \$1,109.9 million (in constant 1976 prices).

ESTIMATES OF DOMESTIC AND FOREIGN RESOURCES.

The two alternate methods of estimating the availability of domestic resources for investment were employed (see footnotes 2 and 3 for a more technical discussion of assumptions).⁴ The projected figures for public

⁴ For private and public investment the following trend line was found for Gaza:

$$\begin{aligned}I_p &= 29.8 + 43.0t \\I_g &= 92.3 + 4.7t\end{aligned}$$

The following relationship between saving and disposable income was found:

$$S = 18.8 + 0.21Y_d$$

TABLE 7
Investment Requirements for the Gaza Strip Based
on Historical Aggregate Rate of Growth
(Millions, U.S. Dollars)

	<u>ICOR</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>Total</u>
Agriculture	4.48	24.2	26.4	28.1	30.3	32.6	36.0	177.6
Industry	1.23	2.9	3.4	3.9	4.1	4.6	5.4	24.3
Construction	18.16	102.4	118.3	138.8	161.5	188.8	223.0	932.8
Trade, Transport, and Other Services	3.65	3.3	3.6	3.3	3.6	3.6	3.6	21.0
Public Services	<u>0.9</u>	<u>2.5</u>	<u>2.8</u>	<u>2.9</u>	<u>3.3</u>	<u>3.4</u>	<u>3.8</u>	<u>18.7</u>
<u>Total Required Investment</u>		135.3	154.5	177.0	202.8	233.0	271.8	1,174.4

TABLE 8
Summary of Annual Sectoral Growth Based on
Reasonable/Conservative Growth Targets, Gaza Strip
(in millions IL)

	<u>Agriculture</u>	<u>Industry</u>	<u>Construction</u>	<u>Trade, Transport, and Other Services</u>	<u>Public Services</u>	<u>Total GDP</u>	<u>Aggregate Rate of Growth (in percent)</u>
Reasonable/ Conservative Growth Target	4.0	8.0	6.5 ^b	2.0	5.7 ^b	—	—
Associated ICOR Value	3.2	1.2	18.2	3.7	0.9	—	—
1977 ^a	538	162	262	363	279	1604	—
1978	560	175	279	370	295	1679	4.7
1979	582	189	570	378	615	2334	39.0
1980	605	204	599	385	644	2437	4.4
1981	629	220	623	393	681	2546	4.5
1982	655	238	654	401	721	2669	4.8
1983	681	257	685	409	764	2796	4.7

^a Base year; figures from Table 2, Chapter 3.

^b Uneven rates of growth based on population projections and cost projections of services based on adequacy standards.

TABLE 9
 Investment Requirements for the Gaza Strip Based
 on Conservative/Reasonable Sectoral Rates of Growth
 (Millions U.S. Dollars)

	<u>ICOR</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>Total</u>
Agriculture	3.16	8.8	8.8	9.1	9.5	10.3	10.3	56.8
Industry	1.23	2.0	2.1	2.3	2.5	2.8	2.9	14.6
Construction	18.16	38.7	662.3	66.0	54.6	70.6	70.6	962.8
Trade, Transport, and Other Services	3.65	3.3	3.6	3.3	3.6	3.6	3.6	21.0
Public Services	<u>0.9</u>	<u>1.8</u>	<u>36.1</u>	<u>3.3</u>	<u>4.1</u>	<u>4.5</u>	<u>4.9</u>	<u>54.7</u>
<u>Total Required Investment</u>		54.6	712.9	84.0	74.3	91.8	92.3	1,109.9

and private investment and savings are presented in Table 10. Scenario R1 combines private and public investment; scenario R2 combines savings and public investment. R2 is always greater than R1, since savings are not all channelled into investment currently.

Estimates of the amount of foreign assistance required can be made by comparing these domestic resource estimates to the total projected investment requirements to sustain the growth scenarios. The final results in Table 10 indicate that to sustain an even rate of 8 percent annual growth in Gaza between 1978 and 1983, a range of between U.S. \$562.5 million and U.S. \$634.0 million will be required from foreign sources. The lower end of this range is reasonable if all savings can be channelled into investment. The upper limit is reasonable if current domestic investment trends continue. To sustain the reasonable/conservative overall growth scenario, similar levels of foreign assistance would be required, but in more concentrated amounts early in the cycle, to develop adequate infrastructure for the projected migrants. Between U.S. \$621 million and U.S. \$632 million would be required in 1979 alone. However, a surplus of domestic resources for investment is estimated for subsequent years to sustain a stable growth rate of about 4.6 percent annually.

CONCLUSIONS

The projected demands on foreign capital inflow to sustain desired growth targets are not excessive. For the West Bank and Gaza Strip combined, the requirements for foreign capital inflow range between U.S. \$651.3 to \$779.1 million for the 1978-83 period to sustain an aggregate 8 percent growth rate. The total investment (domestic and foreign) required for both areas for the period is U.S. \$2.2-2.3 billion. However, it must be noted that rapid growth scenarios are not being forecasted.

The positive constant in this equation, most likely, is due to the transfers from abroad which enables Gaza to have a positive saving even when disposable income is zero.

TABLE 10

Total Required Investment For Growth, Domestic Resources,
and Requirements For Foreign Capital Inflow, Gaza Strip, 1978 -- 1983
(millions, U.S. dollars at 1976 prices)

Year	Estimated Domestic Resources					Total Required Investment		Estimated Requirements For Foreign Capital Inflow ^a			
	Private Investment	Savings	Public Investment	Private and Public Investment (R1)	Savings Plus Public Investment (R2)	Eight Percent Growth Scenario (I1)	Reasonable/Conservative Growth Scenario (I2)	Eight Percent Growth		Reasonable/Conservative Growth	
								R1-I1	R2-I1	R1-I2	R2-I2
1978	57.6	68.3	17.5	75.1	85.8	135.3	54.6	-60.2	-49.5	+20.5	+31.2
1979	63.0	73.6	18.1	81.1	91.7	154.5	712.9	-73.4	-62.8	-631.8	-621.2
1980	68.4	79.3	18.7	87.1	98.0	177.0	84.0	-89.9	-79.0	+3.1	+14.0
1981	73.8	85.4	19.3	93.1	104.7	202.8	74.3	-109.7	-98.1	+18.8	+30.4
1982	79.1	92.1	19.9	99.0	112.0	233.0	91.8	-134.0	-121.0	+7.2	+20.2
1983	<u>84.5</u>	<u>99.2</u>	<u>20.5</u>	<u>105.0</u>	<u>119.7</u>	<u>271.8</u>	<u>92.3</u>	<u>-166.8</u>	<u>-152.1</u>	<u>+12.7</u>	<u>+27.4</u>
Total	426.4	497.9	114.0	540.4	611.9	1174.4	1109.9	-634.0	-562.5	-569.5	-498.0

^a Negative items denote a shortage of domestic resources, and positive items, a surplus.

Essentially, both the historical 8 percent and reasonable/conservative growth scenarios project current growth trends or, in fact, slower than current rates of growth if imminent limits (such as land and water in the agricultural sector) are taken into account. Thus, the foreign capital inflow projected in this chapter is considered only as a means of keeping pace with current or near-current growth trends, but not surpassing them.

Moreover, the sectors that have the potential for skyrocketing expenditures given high population growth forecasts -- public services and construction -- are not critically stressed given the low migration projections employed (see Appendix C). Between 104-217,000 migrants are projected to return during the 1979-1983 period to both the West Bank and Gaza Strip. In comparison to estimates by other authors (Tuma and Drabkin, 1978), this is a relatively small group of migrants to absorb into the economy. This, too, offers support to the low levels of foreign assistance projected.

Finally, more rapid growth in the West Bank and Gaza Strip economies is likely if adequate infrastructure is developed, political security is established in a peace settlement, and the government provides incentives to invest savings. Given a scenario that includes these elements, domestic resources for investment are likely to increase. As disposable incomes grow, saving will increase and, in a stable environment, saving will be channelled into investment. The prospects for private foreign investment in the West Bank and Gaza Strip are also likely to improve as infrastructure and security are offered. Ultimately, the interaction of these factors will yield improved prospects for more rapid growth in the West Bank and Gaza economies.

APPENDIX A. DATA SOURCES, LIMITATIONS, AND POTENTIAL BIASES

INTRODUCTION

The publicly available data on the demographic, sociological, and economic status of the West Bank and Gaza Strip are highly unreliable. Internal crosschecks and analyses of consistency in available data that were conducted by the study team cast grave doubts on the extent of reliability that should be attributed to them. Other knowledgeable sources (Bregman, 1975, 1976) also suggest that much of the data are highly suspect. Moreover, the types of variables required for estimation of economic growth prospects, such as capital stock, investment by sector, profit rates, and rates of return, are not monitored by the Israeli or local authorities and, hence, are not reported (conversations with Vivian Bull, October, 1978). In light of these difficulties, the study team has had to make many assumptions, based on limited information, to deal with the questions under analysis.

However, this study is unique in that concerted efforts were made to crosscheck all of the available sources to identify potential patterns, directions, and extents of bias that may exist in the data. While there is little choice but to use the data provided by the Israelis, a significant number of Arab, West Bank, and impartial sources were used by the study team to test data consistency and reliability. Whenever possible, these consistency checks are referenced in the text. Where serious doubt about data reliability exists, it is noted. Overall, the study's conclusions should be viewed in light of these data problems. It is probably best to read the results in relative terms rather than as absolute levels or values.

DATA SOURCES

The major sources of data for the West Bank and Gaza Strip are publications of the Government of Israel. There are three primary agencies involved in reporting data: the Military Coordinator of Government Operations in the administered territories (the Military Governor), Israel's Central Bureau of Statistics; and the Bank of Israel's Research Department. In most cases, the Military Coordinator is cited as the primary gatherer of information from the local authorities and agencies in the territories. The Central Bureau of Statistics often cites the military authority as its source of data; and in turn, the Bank of Israel taps the resources of the Central Bureau of Statistics. However, after 1973 many of the richest annual data sources ceased publication. This was due, in part, to apparent concerted efforts by the Government of Israel to limit the public availability of information on the territories.

DATA LIMITATIONS

The statistical data gathered and reported by the Israelis are limited and of questionable accuracy. Bregman's surveys (1975, 1976; he is also the author of the Bank of Israel surveys -- 1969-74) are the only available sources that (a) attempt an analysis of the economic trends in the areas, and (b) provide commentary on probable data limitations. It is unfortunate, but Bregman's assessment is best epitomized by his refusal to compare annual observations on the economic variables and his reliance on two-year or three-year averages throughout his work. It is also unfortunate that Bregman offers suggestions for the direction of data biases only occasionally and rarely suggests ranges of potential error.

There are many unexplained inconsistencies within and among the available sources. It is often unclear whether revisions in the data reflect

refinement of a series, intentional biasing, or mere error. Internal crosschecks of the national accounts for the West Bank and Gaza by the study team, for instance, uncovered many unanswerable anomalies and inconsistencies. Too, the agricultural accounts have been revised several times without comment, which casts doubt on reliability and accuracy.

Moreover, the definitions of variables change, making reliable monitoring of trends difficult. When the type and direction of inconsistencies were known, the most meaningful series were compiled and reported in the study. However, the results of these data collection efforts should be viewed as rough estimates of initially bad approximations freely acknowledged by the primary sources.

Much of the data is either based on extrapolations from data collected in 1967 (such as the 1967 census of the territories) or infrequent sample surveys that are assumed to be relevant to the total population despite high incidence of error in sampling procedures (see Bregman, 1975: 101-105, and the introductions to Israel's annual Statistical Abstracts for a survey of data collection techniques used for the administered areas). In more recent years, the increasing integration of the West Bank, Gaza, and Israeli economies has limited the Israelis' capacity to measure vital economic indicators independently. They have had to rely on surveys, estimations, and extrapolations from Israeli accounts, thus increasing the range of errors and omissions (Bregman, 1975: 103).

Many crucial variables are not reported or collected by the Israelis. For instance, money supply and its changes are unavailable. Most critical to the current study is the total absence of data on capital stock and investment specified by economic sector. While military authority budgetary figures are available through 1973, there is little indication of the physical output of this public expenditure, to assist in forecasting the impact of future investment. Furthermore, critical data on trends in the industrial sector are sorely lacking. Accounts maintained

for the sector identified as "trade, transport, and other services" appear to be a grab-bag for production that should have been classified separately and probably contains the residual error margin.

ATTEMPTS TO ADJUST FOR POTENTIAL BIAS

Any current analyses of the West Bank and Gaza Strip economies are forced to use the data as reported by the Israelis for lack of any other sources. Municipal governments and local researchers have not maintained independent data reporting systems (although there have been some recent attempts in this direction -- see Awartani, 1977 and Hewitt, 1976). Sole use of these Israeli sources has often resulted in charges of bias, albeit unintentional, in the conclusions of other researchers and secondary sources.

While the study team had little choice but to use the Israeli data, attempts were made to compensate for potential bias. First, multiple Israeli sources were used to check for consistency, revisions, or notes on data collection procedures that might bias further analysis of these data. Second, internal consistency checks were conducted by the study team to identify potential anomalies in data reporting. Third, concerted efforts were made to identify alternative sources that criticize Israeli evaluations of economic conditions in the territories and suggest different interpretations. A partial list of these alternate materials include:

- ANERA (1978),
- Arab Office, London (1977),
- Awartani (1977),
- Collard and Wilson (1975),
- Harrari (1974),
- Hewitt (1976),
- International Labor Organization (1977),

- Jordan Medical Council (1976),
- Pfelemeier (1975),
- Ryan (1974),
- Stebbing (1977, 1974), and
- Tuma and Drabkin (1978).

APPENDIX B. FURTHER EXPLANATION OF MODELING TECHNIQUES EMPLOYED TO
PROJECT INVESTMENT AND EMPLOYMENT REQUIREMENTS

This appendix presents a more technical discussion than is provided in the main body of the report of the modeling techniques employed to project investment and employment requirements.

HARROD-DOMAR GROWTH MODEL

The simple Harrod-Domar growth model, used as the basis for the analyses and projections in this report, offers several technical advantages when addressing questions such as those in this study (Kindleberger, 1968):

- Because it is a simple model, it requires information on few variables. For this reason, it is the only model that can offer results given the extremely limited data available on the West Bank and Gaza Strip economies.
- As a model that has been discussed and analyzed thoroughly in the literature, its limitations are known. This facilitates identification of the extent and direction of potential errors in estimation, and, equally important, potential explanations for these errors.

The Harrod-Domar growth model identifies the scarcity of physical capital as the key constraint to growth in output. The proportion of investment to the increase in output which it makes possible is assumed to remain constant. The major characteristics of the model are:

- Emphasis is placed on determining the amount of total spending in successive periods that is required to maintain full employment. Absolute levels of spending must therefore be continually increased to utilize new capacity created by investment in each period.
- This critical level of spending is determined by the capital/output ratio.

- Investment at the equilibrium level of income is determined by the marginal propensity to save.
- Therefore, economic growth may be expressed as a function of the capital/output ratio and the marginal propensity to save.
- Growth may be expanded by either raising the savings ratio or lowering the capital/output ratio.

The algebraic presentation of the model is:

Let Y = national income
 K = capital
 I = investment
 S = savings
 r = growth rate

$$r = \frac{Y}{Y_{t-1}}$$

$$s = \frac{S_t}{Y_t} = \text{average propensity to save}$$

since $I_t = S_t$ (ex post),

$$s = \frac{I_t}{Y_t}$$

$$I_t = \Delta K$$

$$k = \frac{\Delta K}{\Delta Y} = \frac{I_t}{\Delta Y} = \text{ICOR}$$

$$\Delta Y = \frac{K}{k} = \frac{I}{I/Y}$$

r may then be expressed as $\frac{I}{I/\Delta Y/Y_t} = \frac{I/Y_t}{I/\Delta Y}$

$$\therefore r = \frac{s}{k}$$

Implicit in the Harrod-Domar model are several restrictive assumptions:

- Labor is not substitutable for capital. Thus, there is a fixed capital/labor ratio.
- Technology remains constant, that is, the productivity of capital and labor remain constant.
- Growth depends solely on capital accumulation. No other factors are taken into account.

In the current study, emphasis has been on supply; that is, how much yearly investment will allow given levels of output to be produced? Harrod and Domar focused on demand; that is, how much spending must take place each year to allow continued expansion. However, the current application of the model is usual in practice. Moreover, in the current study, the relationship between the ICOR and the savings rate, $r = \frac{s}{k}$, though implicit, is not employed in the analysis. The principal feature of the Harrod-Domar model as it is used in the current analysis, is that investment is required in fixed proportion to output to achieve a constant rate of growth. This growth rate is employed to determine how much capital must be added to stocks each year if predetermined increments of output are to be obtained.

INCREMENTAL CAPITAL-OUTPUT RATIO (ICOR)

DEFINITION.

The incremental capital-output ratio (ICOR) is the net change in the capital stock (that is, net investment) that takes place in a given period divided by the resulting change in output within the same period. Due to problems of defining and measuring depreciation of physical capital, gross investment is used in the ratio for empirical purposes.

The economy-wide aggregate ICOR may be expressed algebraically as follows:

k = ICOR
 I = investment
 K = capital
 Y = income
 (subscripts refer to the time period)

$$I_t = \Delta K (= dK) = K_t - K_{t-1}$$

$$k = \frac{I_t}{\Delta Y}$$

$$Y = Y_t - Y_{t-1}$$

In each sector, the sectoral ICOR may be defined as

$$k_i = \frac{I_{i,t}}{\Delta Y_{i,t}}$$

Where $I_{i,t}$ = investment in sector i in time period t

$Y_{i,t}$ = value added in sector i in time period t

THEORETICAL CONSIDERATIONS.

Stability over Time

The many factors affecting sectoral ICOR values lead to the expectation that the ICOR's will be unstable in the short run. Empirical evidence has confirmed this expectation (Gianaris, 1970, Leibenstein, 1966). Changes in relative factor prices, capital accumulation, and technology may occur simultaneously, so that the net effect on the ICOR values is undetermined. In some sectors, such as agriculture and mining, exogenous factors such as weather have important and unpredictable effects. In small economies such as the ones examined in this report, investment in each sector is small enough that one additional large project may cause a drastic change in the ICOR value for the year in which the investment takes place. This is especially true in sectors characterized by large

indivisibilities in investment, such as public utilities. For all of these reasons, only limited confidence may be placed on investment requirement projections for a given year.

Variations in ICOR Values Among Countries

There are additional theoretical considerations to keep in mind when comparing both overall and sectoral ICOR values of different countries. These differences stem from two major sources: differences in collection and treatment of data and variations in the structure of the economies. First, differences in data periods lead to difficulties in interpretation of comparative data. Differences in treating the conceptual and definitional problems of measuring depreciation exist, and assumptions and definitions may not be explicit in countries' national accounts.

Second, variations in the composition of sectors among countries will lead to different sectoral ICOR's, and differences in the relative size of sectors will lead to different aggregate ICOR's, even when sectoral ICOR's are similar. Differences in relative factor endowments and in the state of technology among countries lead to differences in input mix and, in turn, to differences in sectoral ICOR's. Additional exogenous factors affecting both sectoral and aggregate ICOR's among countries are climate, topography, and cultural or religious constraints.

Aggregation Problems

A third theoretical consideration regards the appropriate method to combine sectoral capital/output ratios to arrive at the correct overall ratio for the economy. Myrdal (1968) states that the capital/output ratio of a sector should be weighted by the contribution of that sector to increased output to arrive at the average or economy-wide ICOR. In other words, the economy-wide ICOR is the harmonic mean of the sectoral ICOR's:

$$K = \frac{n}{\sum_{i=1}^n w_i k_i}$$

where k = economy-wide ICOR
 k_i = ICOR in sector i
 w_i = share of sector i in total output.
(value added in sector i)

INTERPRETATION.

Bearing in mind these theoretical issues in using fixed ICOR values, interpretations of why a particular ICOR value might be high or low are discussed below:

- Sectors in which typical investments involve large indivisibilities have high ICORs (for example, public utilities, infrastructure, and so forth).
- As capital is accumulated in these sectors, economies of scale allow larger increases in output with smaller additions to capital. Therefore, countries with already large capital stocks in these sectors may have lower ICOR's than those with very little capital stock. On the other hand, advanced countries may find more capital-intensive technologies to be more efficient. This raises the ICOR.
- In general, the more labor-intensive the input mix in a sector, the lower the ICOR.
- The less marketable the output in a sector, the higher the ICOR (CAUTION: This only means that public goods investments -- for example, in roads -- have returns that are difficult to measure directly, because nobody buys them. Their contributions to the output of all other sectors are valuable, but hard to measure.)

BORROWING ICOR VALUES FROM OTHER ECONOMIES.

Data on capital stock and investment by sector were unavailable. Therefore, it was impossible to observe or measure historical trends in ICOR values. As often happens in analyzing economic conditions in LDC's it was necessary to find economies similar to or bearing some relationship to those being analyzed, and to borrow their ICOR values to use as proxies in the analysis.

By examining detailed descriptions of the structure of these economies and their interrelationships with other economies, it was found that the economy bearing the closest resemblance to those of the West Bank and Gaza Strip was Israel at various points in its existence. This is chiefly because of proximity, the fact of Israeli administration, and evidence indicating that efforts are being made to introduce Israeli technology into various sectors in the two areas.

This last point can be observed particularly in agriculture, where production techniques in some regions are beginning to closely approximate those used in Israel. An exception is the industrial sector. The prevalent type of industry in both the West Bank and Gaza is cottage industry, which is labor-intensive. In contrast, Israeli industry is predominantly capital-intensive.

However, several factors offset these differences (Gianaris, 1970):

- Advanced technology, better labor skills, and better organization lead to economies of scale in advanced economies.
- This results in a lower ICOR than would be expected in an LDC attempting to make its industrial sector more capital-intensive, while encountering shortages in skilled labor and skilled management personnel, both of which are necessary to make the capital produce at maximum efficiency.
- Because of the unique characteristics of the Israeli economy, it can be assumed that its industrial sector may be characterized as "advanced," although the Israeli economy is not classified as fully developed.

Therefore, it was assumed that from the total effect of these factors, the ICOR values of the industrial sectors in the West Bank and Gaza could be made comparable to that of Israel. The trade, transport, and other services sector in the economies of the two areas is intimately related to Israel's economy, which supports the use of Israel's ICOR

value for the sector. In the construction sector, the two territories differ widely in the type of construction used:

- In Gaza, Israeli prefabricated, multistory buildings are being constructed, making the current ICOR for the Israeli construction sector a good proxy.
- In the West Bank, however, the population rejects such construction. Instead, one-story dwellings of cheap materials, using chiefly non-salaried family labor, is preferred. For this reason, we have borrowed the ICOR of the construction sector of Turkey where a similar technique is employed (Leibenstein, 1966).

Public services rendered in the West Bank and Gaza Strip involve much less capital investment than those in Israel. Therefore, the Israeli ICOR is used as a high limiting value, and an ICOR value from the Turkish economy is borrowed (Leibenstein, 1966) for public services, which provides a low value to approximate the actual situation in the West Bank and Gaza.

The values borrowed from the Israeli economy were obtained by examining a study by Gaathon (1971). Table 1 presents Gaathon's ICOR values for three sectors and selected years. The highest and lowest values were chosen to provide a range of ICOR values. For the construction and public services sectors, ICOR values were computed from figures provided by Gaathon (1971) for value added and capital formation in these sectors for the period 1950-1965. As discussed above, low ICOR values for construction and public services were obtained from the Turkish economy. Table 2 presents the final set of ICOR values employed in the study.

Because of the lack of data, choosing only one ICOR value as a proxy for the ICOR values of the West Bank and Gaza would make the estimation of investment requirements obtained through this analysis seem more precise than is realistic. Therefore, by choosing a range of values, and indicating the conditions and assumptions under which a high or low value may be expected to pertain, the corresponding estimates of investment

TABLE 1
Capital-Output Ratios for Israel

	<u>Agriculture and Irrigation</u>	<u>Industry</u>	<u>Transport</u>
1955	4.48	1.65	3.65
1960	3.53	1.68	3.39
1965	3.46	1.53	3.84
1966	3.47	1.60	4.00
1967	3.16	1.67	4.30
1968	3.25	1.36	4.15
1969	3.17	1.23	4.32

Source: Gaathon (1971).

TABLE 2
Sectoral ICOR Values
Employed in the Study

	<u>Agriculture</u>	<u>Industry</u>	<u>Construction</u>	<u>Trade, Transport, Other Services</u>	<u>Public Services</u>
Low	3.16	1.23	6.8	3.65	.9
High	4.48	1.68	18.16	4.32	1.5

requirements may be selected to fit the assumptions that are considered most probable or realistic.

ESTIMATING INVESTMENT

For each ICOR value, investment was projected according to the following equation:

$$I = k \cdot \Delta V_i$$

k = sectoral ICOR
where V_i = change in value added in sector i

PROJECTING EMPLOYMENT REQUIREMENTS

Output-labor ratios were computed to project future employment requirements in each sector, given forecasted output levels. The output/labor ratio is defined as the value of output produced by one worker in a given year. It is obtained by dividing total value added in each sector by the total number of workers employed:

$$n_i = \frac{V_i}{N_i}$$

where V_i = value added in sector
 N_i = total employment in sector

This ratio (n_i) may then be used to estimate the number of workers that will be required as output expands in the future:

$$N_{i_t} = \frac{V_{i_t}}{n_i}$$

where t = year for which V_i is estimated.

In practice, n_1 was calculated as an average of several yearly ratios to obtain stability. Because the output/labor ratio is a historical function, it does not take into account potential changes in the composition of the labor force as a result of immigration or changes in the productivity of labor. The following average output/labor ratios, based on 1974-1975 data, were used in this study:

	<u>West Bank</u>	<u>Gaza</u>
Agriculture	36.2	31.1
Industry	18.5	18.6
Construction	53.2	37.0
Trade, Transport, and Other Services	40.9	25.3 (1973-1974 average)

APPENDIX C. POPULATION PROJECTIONS

CACI (1978) projects the immigrant population likely to return to the West Bank and Gaza Strip through 1985. Estimates of natural increase in the resident population to 1985 are computed as well, and these two major sources of growth are summed to project total population prospects in the two areas. The results of these analyses are reviewed in Tables 1-4. They are provided here to assist the reader's understanding of the forecasts made for government expenditure (Chapter 5). The reader is referred to CACI (1978) for a complete account of the assumptions and data employed in making the population forecasts.

TABLE 1
The West Bank -- Distribution
of Immigrants Over Time^a, 1979-1985
(thousands)

<u>Year</u>	<u>Annual Number</u> ^b		<u>Cumulative Number</u> ^c	
	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
1979	12.6	26.4	12.6	26.4
1980	12.6	26.4	25.6	53.6
1981	12.6	26.4	39.0	81.6
1982	12.6	26.4	52.7	110.5
1983	12.6	26.4	66.9	140.2
1984	12.6	26.4	81.5	170.8
1985	<u>12.6</u>	<u>26.4</u>	<u>96.6</u>	<u>202.3</u>
Total (1979-85)	88.4	184.5	96.6	202.3

^a Assuming 85 percent of Palestinian immigrants will go to the West Bank.

^b Assuming equal distribution over time.

^c Assuming 3 percent natural increase per annum among the immigrant population.

Source: CACI projections.

TABLE 2
The West Bank -- Total Population, 1979-1985
(thousands)

<u>Year</u>	<u>Increase of West Bank Population^a</u>	<u>Cumulative Increase Due to Immigration^b</u>		<u>Total Population^c</u>	
		<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
1979	736.3	12.6	26.4	748.9	762.7
1980	760.3	25.6	53.6	785.9	813.9
1981	785.3	39.0	81.6	824.3	866.9
1982	811.7	52.7	110.5	864.4	922.2
1983	839.2	66.9	140.2	906.1	979.4
1984	868.2	81.5	170.8	949.7	1,039.0
1985	898.6	96.6	202.3	995.2	1,100.9

^a Due to natural increase only.

^b Cumulative increase of number of immigrants assuming 3 percent natural increase.

^c Assuming no emigration.

Source: CACI projections.

TABLE 3
 Gaza Strip -- Distribution of
 Immigrants Over Time^a, 1979-1985
 (thousands)

<u>Year</u>	<u>Annual Number</u> ^b		<u>Cumulative Number</u> ^c	
	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
1979	2.2	4.6	2.2	4.6
1980	2.2	4.6	4.5	9.3
1981	2.2	4.6	6.8	14.2
1982	2.2	4.6	9.2	19.2
1983	2.2	4.6	11.7	24.4
1984	2.2	4.6	14.2	29.8
1985	<u>2.2</u>	<u>4.6</u>	<u>16.9</u>	<u>35.3</u>
Total (1979-85)	15.6	32.5	16.9	35.3

^a Assuming equal distribution of immigrants over time.

^b Assuming 15 percent of immigrants select Gaza Strip.

^c Assuming 3 percent natural increase per year among the immigrants.

Source: CACI projections.

TABLE 4
Gaza Strip and North Sinai -- Total Population, 1979-1985
(thousands)

<u>Year</u>	<u>Increase of Gaza Population^a</u>	<u>Cumulative Increase Due to Immigration^b</u>		<u>Total Population^c</u>	
		<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
1979	477.7	2.2	4.6	479.9	482.3
1980	495.6	4.5	9.3	500.1	504.9
1981	514.5	6.8	14.2	521.3	528.7
1982	534.3	9.2	19.2	543.5	555.3
1983	555.1	11.7	24.4	566.8	579.5
1984	577.0	14.2	29.8	591.2	606.8
1985	600.1	16.9	35.3	617.0	635.4

^a Due to natural increase only.

^b Cumulative increase of number of immigrants assuming 3 percent natural increases.

^c Assuming no emigration.

Source: CACI projection.

APPENDIX D. PRICE INDICES

In order to factor out the effects of inflation, data series in this report have been converted to real terms. Presentation of the data in this fashion also aids comparability over time. The base year chosen for conversion to constant prices is 1976. Tables 1 and 2 present the deflators used to convert GNP, GDP, consumption expenditure, government expenditure, gross capital formation, and exports and imports to constant 1976 prices.

Primary data sources are often provided in current prices. Thus, price indices had to be established to discount each data series. Moreover, Israel sometimes reports constant prices using different bases -- usually the previous year. The impact of this practice is that real growth over time cannot be ascertained reliably and values cannot be used for historical comparison. However, the conversion process to real terms employed in this study offers uniformity for real growth assessments.

To convert the value added by sector to constant prices, Israel's deflators for each economic branch were used (see Table 3). No information could be found to establish a deflator index based on West Bank and Gaza data, so the Israeli index was used as a proxy. In addition, Israel's general wholesale price index was employed to convert public services to constant prices.

TABLE 1
Implicit Price Deflators for Gross National Expenditure
by Main Components, West Bank
(1976=100: at market prices)

	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
Consumption Expenditure:										
Private	20.9	21.9	22.0	26.5	30.5	38.0	53.5	78.5	100	136.8
Government	20.0	20.0	20.6	23.7	29.8	37.4	57.2	77.9	100	130.2
Gross Domestic Capital Formation	20.3	22.2	24.3	28.9	33.7	41.9	56.4	77.0	100	136.5
Trade Balance:										
Export	24.4	25.1	25.7	29.2	34.9	42.5	60.2	80.9	100	115.1
Import	24.3	24.5	25.5	27.6	31.8	37.7	55.6	77.5	100	138
Gross Domestic Product	19.8	21.0	20.8	26.2	31.2	40.4	54.8	77.6	100	134.2
Gross National Product	20.5	21.6	22.1	27.2	32.8	41.6	54.4	79.7	100	134.3

Source: Calculated from data in Israel, Administered Territories Statistics Quarterly, (1968-1977).

TABLE 2

Implicit Price Deflators for Gross National Expenditure
by Main Components, Gaza Strip
(1976=100: at market prices)

	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
Consumption Expenditure:										
Private	19.3	20.1	20.5	25.9	28.4	35.6	53.4	78.4	100	138.1
Government	14.1	15.3	17.7	21.6	25.8	34.8	54.7	77.5	100	126.8
Gross Domestic Capital Formation	12.0	13.1	14.3	16.6	19.7	29.1	49.1	77.3	100	131.5
Trade Balance:										
Export	20.9	21.9	23.1	32.1	34.1	40.6	53.9	74.4	100	145.9
Import	21.8	22.2	23.9	29.4	30.3	36.2	54.5	77.9	100	137.3
Gross Domestic Product	14.5	15.8	16.1	21.5	25.1	33.9	50.2	75.9	100	140.3
Gross National Product	17.0	18.6	19.4	25.1	30.3	40.5	54.9	81.0	100	137.4

Source: Calculated from data in Israel, Administered Territories Statistics Quarterly, (1968-1977)

TABLE 3

Price Indices for Value Added by Sector,
West Bank and Gaza Strip
(1976=100: at factor cost)

	<u>Agriculture</u>	<u>Industry</u>	<u>Construction</u>	<u>Public Services</u>	<u>Trade and Transport</u>	<u>General Wholesale Price Index For Israel</u>
1968	24.1	24.5	19.6	25.3	20.0	22.7
1969	24.7	24.9	20.2	25.8	20.4	23.1
1970	25.1	26.0	22.8	27.5	21.7	24.7
1971	28.4	29.0	25.9	30.7	24.6	27.0
1972	31.1	32.1	31.5	34.4	27.9	30.1
1973	39.0	37.7	41.8	40.0	31.6	35.8
1974	51.8	53.8	60.2	53.0	42.0	54.3
1975	75.1	76.4	79.1	71.9	79.4	76.3
1976	100.0	100.0	100.0	100.0	100.0	100.0
1977	131.6	138.6	130.9	134.6	136.3	138.9

Source: Israel, Statistical Abstract, (1968-1977).

BIBLIOGRAPHY

- ADLER, H.A. (1971) Economic Appraisal of Transport Projects: A Manual With Case Studies. Bloomington: Indiana Press.
- ANERA (1978) Development Assistance For Palestinians in the West Bank and Gaza Strip. Washington, D.C.: American Near East Refugee Aid.
- Arab Office, London (1977) The Future of Palestine. Geneva: Imprimerie Centrale.
- ARESVIK, O. (1976) The Agricultural Development of Jordan. New York: Praeger.
- ASKARI, H. and J. CUMMING, (1976) Middle East Economies in the 1970's. New York: Praeger.
- AWARTANI, H. (1977) "Agriculture in the West Bank: A New Outlook." Birzeit University. (mimeo)
- Bank of Israel. (1976-1977) Annual Report. Jerusalem.
- _____ (1969-1974) Economy of the Administered Areas. Jerusalem.
- BEN-ARI, S. and M. PERLMAN (1974) Education and Culture in the Administered Areas (1967-1972). University of Haifa.
- BEN-PORATH, Y. and E. MARX (1971) Some Sociological and Economic Aspects of Refugee Camps on the West Bank. Santa Monica: Rand Corporation.
- BEN-SHAHAR, H., E. BERGLAS, Y. MUNDLAK, and E. SADAN (1971) Economic Structure and Development Prospects of the West Bank and the Gaza Strip. Santa Monica: Rand Corporation.
- BHATT, V.V. (1954) "Capital-Output Ratios of Certain Industries: A Comparative Study of Certain Countries," The Review of Economics and Statistics (August): 309-319.
- BREGMAN, A. (1976) The Economy of the Administered Areas, 1974-1975. Jerusalem: Bank of Israel.
- _____ (1975) Economic Growth in the Administered Areas, 1974-1975. Jerusalem: Bank of Israel.
- BRUNO, M. (1970) Economic Development Problems of Israel, 1970-1980. Santa Monica, CA: Rand Corporation.

- BULL, V.A. (1975) The West Bank - Is It Viable? Lexington: D.C. Heath and Company.
- CACI (1978) The Economic Implications of a Middle East Peace Settlement: Migration and Population Absorption Projections for the West Bank and Gaza Strip. Arlington, VA.: CACI, Inc.-Federal (December).
- Central Bank of Jordan. Department of Research and Studies (1973) Tenth Annual Report. Amman.
- Centre De Information Et De Documentation Sur Le Moyen (1976) Health in The Middle East: Politics or Medicine. Geneva.
- COLLARD, E. and R. WILSON (1975) "The Economic Potential of an Independent Palestine." Presented at European Coordinating Committee for Friendship Societies With the Arab World, March.
- DARIN-DRABKIN, H. (1978) "The Economic Viability of a Palestinian State in the West Bank and the Gaza Strip." New Outlook (April): 43-53.
- _____ (1977) Land Policy and Urban Growth. Oxford: Pergamon Press.
- DIETERICH, B.H. and J.M. HENDERSON (1963) Urban Water Supply Conditions and Needs in Seventy-five Developing Countries. Geneva: World Health Organization.
- DEUTCHES ORIENT-INSTITUT (1976) Probleme Des Transport Sektors in Den Landern Des Arabischen Ostens und Iran. Hamburg: Deutsches Orient-Institut.
- EFRAT, E. (1977) "Settlement Pattern and Economic Changes of the Gaza Strip, 1947-1977." The Middle East Journal. (Summer): 349-356.
- _____ (1971) A Long-Term National Plan for Israel's Road Network. Ministry of Interior, Planning Department. Jerusalem: Government Press.
- Embassy of Israel (1978) Human Rights in the Administered Territories. Washington, D.C.: Embassy of Israel.
- FRIED, J. F. (1976) A North-Sinai-Gaza Development Project. Washington, D.C.: Middle East Institute.
- FRIEDLANDER, S. L. (1965) Labor Migration and Economic Growth: A Case Study of Puerto Rico. Cambridge: MIT Press.
- GAATHON, A.L. (1971) Economic Productivity in Israel. New York: Praeger.
- GIANARIS, N.V. (1970) "International Differences in Capital Output Ratios," The American Economic Review (June): 465-477.

- HALPERIN, C. (1953) Agricultural Production and Mass Immigration in Israel. General Federation of Jewish Labor in Israel. Tel Aviv.
- HARARI, Y. (ed.) (1976) The Arabs in Israel, 1975: Statistics and Facts. Center for Arab and Afro-Asian Studies. Givat Haviva.
- _____ (ed.) (1974) The Arabs in Israel, 1973: Statistics and Facts. Center for Arab and Afro-Asian Studies. Givat Haviva.
- HEWITT, D. (1976) "The West Bank: A Re-evaluation of Economic Progress Under Israeli Occupation." Birzeit University. (mimeo)
- HIMADEH, S.B. (ed.) (1938) Economic Organization of Palestine. Beirut: The American Press.
- IBRD (1957) The Economic Development of Jordan. Report of a Mission Organized by the International Bank for Reconstruction and Development at the request of the Government of Jordan. Baltimore: The Johns Hopkins Press.
- International Labor Organization (1977) "Progress Report on the Study on the Situation of Workers of the Territories Occupied by Israel." New York: United Nations General Assembly. Thirty-second session, Agenda Item 62, A/32/228. October 4.
- Israel (1978a) Administered Territories Statistics Quarterly. Jerusalem: Central Bureau of Statistics.
- _____ (1978b) A Ten Year Survey, 1967-1977. Jerusalem: Ministry of Defense, Coordinator of Government Operations in Judea and Samaria, Gaza District, Sinai, Golan Heights.
- _____ (1977a) Administered Territories Statistics Quarterly. Jerusalem: Central Bureau of Statistics.
- _____ (1977b) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- _____ (1977c) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- _____ (1976a) "Economic Growth in the Administered Area, 1967-1974," Israel Government Yearbook (1975-1976): 411-423.
- _____ (1976b) Family Expenditure Survey in the Administered Territories: 1973, 1974. Jerusalem: Central Bureau of Statistics.
- _____ (1976c) Administered Territories Statistics Quarterly. Jerusalem: Central Bureau of Statistics.

- _____ (1976d) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- _____ (1976e) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- _____ (1975a) Administered Territories Statistics Quarterly. Jerusalem: Central Bureau of Statistics.
- _____ (1975b) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- _____ (1975c) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- _____ (1974a) Administered Territories Statistics Quarterly. Jerusalem: Central Bureau of Statistics.
- _____ (1974b) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- _____ (1974c) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- _____ (1974d) The Administered Territories, 1973/1974. Jerusalem: Ministry of Defense, Coordinator of Government Operations in the Administered Territories.
- _____ (1973a) Monthly Statistics of the Administered Territories. Jerusalem: Central Bureau of Statistics.
- _____ (1973b) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- _____ (1973c) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- _____ (1973d) Plan for the Development of Industry in Israel: 1971-1976-1981. Ministry of Commerce and Industry, Center for Industrial Planning. Jerusalem: Hamaker Press.
- _____ (1972a) Israel Government Yearbook 5732 (1971-1972). Jerusalem: Ministry of Education and Culture.
- _____ (1972b) Census of Population and Housing. Jerusalem: Central Bureau of Statistics.
- _____ (1972c) Monthly Statistics of the Administered Territories. Jerusalem: Central Bureau of Statistics.

- ____ (1972d) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- ____ (1972e) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- ____ (1972f) The Administered Territories, 1971/1972. Jerusalem: Ministry of Defense.
- ____ (1971a) Monthly Statistics of the Administered Territories. Jerusalem: Central Bureau of Statistics.
- ____ (1971b) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- ____ (1971c) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- ____ (1971d) Israel Government Yearbook. Jerusalem: Ministry of Education and Culture, Central Office of Information.
- ____ (1970a) Kindergartens and Schools in the Administered Territories. Jerusalem: Ministry of Education and Culture.
- ____ (1970b) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- ____ (1970c) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- ____ (1970d) Three Years of Military Government, 1967-1970. Jerusalem: Ministry of Defense.
- ____ (1969a) The Israel Administration in Judea, Samaria, and Gaza: A Record of Progress. Tel Aviv: Ministry of Defense.
- ____ (1969b) Kindergartens and Schools in the Administered Territories. Jerusalem: Ministry of Education and Culture.
- ____ (1969c) Monthly Bulletin of Statistics Supplement. Jerusalem. 20, 6 (June).
- ____ (1969d) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- ____ (1969e) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- ____ (1969f) Two Years of Military Government, 1967-1968. Jerusalem: Ministry of Defence.

- (1968a) The Israel Administration in Judea, Samaria, and the Gaza Strip. Jerusalem: Ministry of Defense.
- (1968b) Census of Population, Vol 3: Demographic Characteristics of the Population in the Administered Territories. Jerusalem: Central Bureau of Statistics.
- (1968c) Census of Population, Vol. 4: Labour Force (Part 1). Jerusalem: Central Bureau of Statistics.
- (1968d) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- (1968e) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- (1967a) Economic Survey of the West Bank. Jerusalem: Economic Planning Authority. (U.S. Department of Commerce Translation, 1967).
- (1967b) Statistical Abstract of Israel. Jerusalem: Central Bureau of Statistics.
- (1967c) Census of Population, Vol 1: West Bank of the Jordan, Gaza Strip and Northern Sinai, Golan Heights. Jerusalem: Central Bureau of Statistics.
- (1967d) Census of Population, Vol. 2: Housing Conditions, Household Equipment, Welfare Assistance, and Farming in the Administered Territories. Jerusalem: Central Bureau of Statistics.
- (1967e) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- (1967f) Economic Survey of the West Bank (Summary). Prime Minister's Office, Economic Planning Authority.
- (1966a) Monthly Bulletin of Statistics. Jerusalem: Central Bureau of Statistics.
- (1966b) Statistical Bulletin of Israel. Jerusalem: Central Bureau of Statistics.
- (1965) Statistical Bulletin of Israel. Jerusalem: Central Bureau of Statistics.
- (1964) Statistical Bulletin of Israel. Jerusalem: Central Bureau of Statistics.
- Israel Economist. (1967-1968).

- ISRAELY, E. (1970) "The Agricultural Development of the West Bank," Public Administration in Israel and Abroad, 1970. Jerusalem. Israel Institute of Public Administration.
- JONES, R. (1969) "Transport, Urban Design, and Housing," in E. Haefele (ed.) Transport and National Goals. Washington, d.C.: The Brookings Institute.
- Jordan (1976) Five Year Plan for Economic and Social Development: 1976-1980. Amman: National Planning Council.
- _____ (1975) Statistical Yearbook. Amman: Department of Statistics.
- _____ (1964) First Census of Population and Housing, 1961. Amman: Department of Statistics.
- Jordan Medical Council (1976) Health in the West Bank. Jerusalem: Jordan Medical Council (Arabic).
- KANOVSKY, E. (1974) Economic Development of Jordan: The Economic Implications of Peace in the Middle East. Tel Aviv. David Horowitz Institute for the Research of Developing Countries.
- _____ (1970) The Economic Impact of the Six-Day War. New York: Praeger Publishers.
- KHALIDI, W. and J. KHADDURI, (1974) Palestine and the Arab-Israeli Conflict: An Annotated Bibliography. Beirut. Institute for Palestine Studies.
- KINDLEBERGER, C.P. (1958) Economic Development. New York: McGraw Hill.
- KUSHNER, G. (1973) Immigrants from India in Israel: Planned Change in an Administered Community. University of Arizona Press.
- KUZNETS, S. (1959) Six Lectures on Economic Growth. New York: The Free Press.
- LEIBENSTEIN, H. (1966) "Incremental Capital-Output Ratios and Growth Rates in the Short Run," The Review of Economics and Statistics (February): 20-27.
- LERNER, A. and H. BEN-SHAHAR. (1975) The Economics of Efficiency and Growth: Lessons from Israel and the West Bank. Cambridge: Ballinger Publishing Co.
- LESCH, A.M. (1970) Israel's Occupation of the West Bank: The First Two Years. Santa Monica: Rand Corporation.

- LEVIN, C. and D. FREEMAN (1972) A Method for Analyzing the Integration of Settlement Regions in the Israeli Economy. Rehovot.
- MARTIN, K. (1957) "Capital-Output Ratios in Economic Development," Economic Development and Cultural Change (October): 24-31.
- MARX, E. (1978) "Changes in Arab Refugee Camps," Jerusalem Quarterly 8 (Summer).
- MEERMAN, J. (1977) "Meeting Basic Needs in Malaysia: A Summary of Findings," World Bank Staff Working Paper, No. 260. RPO 67096.
- MEIER, G.M. (1970) Leading Issues in Economic Development: Studies in International Poverty. Oxford University Press.
- MYRDAL, G. (1968) Asian Drama: An Inquiry Into the Poverty of Nations. New York: Pantheon. pp. 1968-2004.
- PERES, S. (1970) "Industrial Development in the Administered Territories," in Seminar: Industrial Development in the Administered Territories. Israel: Academic Committee on the Middle East.
- PERETZ, D. (1969) The Palestine Arab Refugee Problem. Santa Monica: Rand Corporation.
- _____ (1958) Israel and the Palestine Arabs. Washington, D.C.: The Middle East Institute.
- PIELEMIEIER, N. (1975) "The Health Situation in the West Bank and Gaza Strip - North Sinai: A Background Paper." Washington, D.C.: Department of Health, Education and Welfare, Office of International Health (October).
- PREST, A.R. (1969) Transport Economics in Developing Countries. New York: Praeger Publishers.
- REICHMAN, S., A. ELIASH and D. BARASHI (1974) Travel Patterns in Israel, 1958-1971. Tel Aviv: The Israel Institute of Transportation Planning and Research.
- RYAN, S. (1974) "Israeli Economic Policy in the Occupied Areas: Foundations of a New Imperialism," Merip Reports No. 24, (January): 1-28.
- SAUNDERS, R.J. and J.J. WARFORD (1976) Village Water Supply: Economics and Policy in the Developing World. Baltimore: John Hopkins Press.
- SCHEGTMAN, J.B. (1952) The Arab Refugee Problem. New York: Philosophical Library.

- SCHMELZ, U. (1977) "Population Changes in Judea and Samaria." Jerusalem Quarterly 4 (Summer).
- SHERMAN, M. (1975) "The Educational Situation in the West and Gaza Strip -- North Sinai." (mimeo)
- SHYE, S. (1972) A Development Plan for the Administered Territories (The West Bank and Gaza Strip). Jerusalem: Israel Institute for Applied Social Research.
- STEBBING, J. (1977) The Creation of a Palestinian Arab State as Part of a Middle East Settlement. (mimeo)
- _____ (1974) A New Deal for the Palestinian Arabs.
- STENDEL, O. (1967) Arab Villages in Israel and Judea-Samaria: A Comparison in Social Development. Jerusalem: The Israel Economist.
- STONE, P.A. (1973) The Structure, Size and Costs of Urban Settlements. Cambridge: University Press.
- Tahal Consulting Engineers (1971) The Economic Development and Refugee Trust: Project Portfolio. Tel Aviv: TCE, LTD.
- THOMAS, B. (1973) Migration and Economic Growth: A Study of Great Britain and the Atlantic Community. Cambridge University Press.
- TUMA, E. (1977) "Economic and Political Viability: Implications for Coexistence," Can an Israeli State and a Palestinian State Co-Exist? New York: American Friends Service Committee.
- TUMA, E. and H. DARIN-DRABKIN (1978) The Economic Case for Palestine. New York: St. Martin's Press.
- TURVEY, R. and D. ANDERSON (1977) Electricity Economics: Essays and Case Studies. Baltimore: Johns Hopkins University Press.
- United Nations (1977) Report of the Commissioner-General of the United Nations Relief and Works Agency for Palestine Refugees in the Near East. New York.
- _____ (1976a) Report of the Commissioner-General of the United Nations Relief and Works Agency for Palestine Refugees in the Near East. New York.
- _____ (1976b) Monthly Bulletin of Statistics XXX, 1 (January).
- _____ (1966-1975) Report of the Commissioner-General of the United Nations Relief and Works Agency for Palestine Refugees in the Near East. New York.

- _____ (1964) Administrative Problems of Rapid Urban Growth in the Arab States. New York: Technical Assistance Programs.
- United States Congress (1978) Hearings Before the Select Committee On Population: World Population: A Global Perspective. 95th Congress, Second Session. Washington, D.C.: Government Printing Office.
- _____ House of Representatives. Committee on the Judiciary. Report of a Special Study Mission to the Middle East. Washington, D.C.: U.S. Government Printing Office.
- VAN ARKADIE, B. (1977) Benefits and Burdens: A Report on the West Bank and Gaza Economies Since 1967. New York: Carnegie Endowment for International Peace.
- VANEK, J. and A.H. STUDENMUND (1978) "Towards a Better Understanding of the Incremental Capital-Output Ratio." Quarterly Journal of Economics (August): 452-464.
- WALTERS, A.A. (1966) "Incremental Capital-Output Ratios." The Economic Journal (December): 818-822.
- WARD, R., D. PERETZ, and E. WILSON (1977) The Palestine State: A Rational Approach. London: Kennikat Press.
- WIEGERT, G. (1977) "The Green Revolution in the Gaza Strip." Kidma 3, 4, p. 20-25.
- WEITZ, R. (1977) Where are we Heading? Jerusalem.
- "West Bank State: A Special Survey." Middle East (28 February, 1977).
- World Bank (1976a) Development Finance Companies. Washington, D.C.
- _____ (1976b) Village Water Supply. Washington, D.C.
- _____ (1975a) Health: Sector Policy Paper. Washington, D.C.: World Bank (March).
- _____ (1975b) Housing. Washington, D.C.: World Bank
- _____ (1975c) Urban Transport. Washington, D.C.
- _____ (1975d) Rural Electrification. Washington, D.C.
- _____ (1974a) Education. Washington, D.C.
- _____ (1974b) Agricultural Credit. Rural Development Series. Washington, D.C.

World Health Organization (1977) World Health Statistics Annual. Geneva:
World Health Organization, Vol III.