Chapter 2
GDP, Uses and the Principal Industries

- GDP increased in 2009 at a modest 0.7 percent pace due to the global economic crisis, which was at its most severe early in the year and Israel's GDP was less badly affected than that of the OECD countries.
- From mid-year on, the economy began to recover gradually in tandem with developments abroad, thanks to good fundamentals and an expansionary monetary policy.
- In Israel, much as in developed countries at large, the crisis took a heavy toll on exports and nonresidential investment. Current private consumption and construction investment continued to grow moderately, evidently due to lower leveraging of Israeli households and the stability of the financial system and the housing market.
- Total uses fell considerably, at a pace resembling that abroad. Since most of the decrease occurred in import-intensive uses, imports decreased steeply while GDP was less badly affected.
- Israel's terms of trade improved appreciably due to a steep decrease in the prices of imported inputs.
- The economic crisis had a swift and perceptible effect on domestic employment and wages while productivity remained strong—in contrast to the gradual response that the labor market typically exhibited in the past.
- The rate of foreign direct investment in total domestic investment has been around 20 percent on average since 2000 with an upward trend in recent years—a strong performance by the standards of emerging markets and developed countries alike.
- Manufacturing was the main casualty of the crisis due to the precipitous decrease in global demand for goods, especially given the high share of exports in domestic manufacturing activity.
- Construction product decreased by only one percent, in a display of stability relative to other industries. Thus, it contributed to the stability of total economic activity despite early fears of a credit crunch induced by the current crisis.
- Commerce and services were moderately affected in 2009, largely because the ravages of the crisis in these fields had already been manifested in 2008. The transport industry took a relatively severe beating whereas the communications industry continued to grow.
- An international comparison shows that it is best to earmark a larger share of the budget to public transport in metropolitan areas at the expense of road investment. An investment in developing a public-transit system in the Tel Aviv area should be made. In other countries, relatively small towns are rarely linked by rail. However, the development of an interurban road system and an interurban rail system has positive externalities.

1. MAIN DEVELOPMENTS AND BACKGROUND CONDITIONS

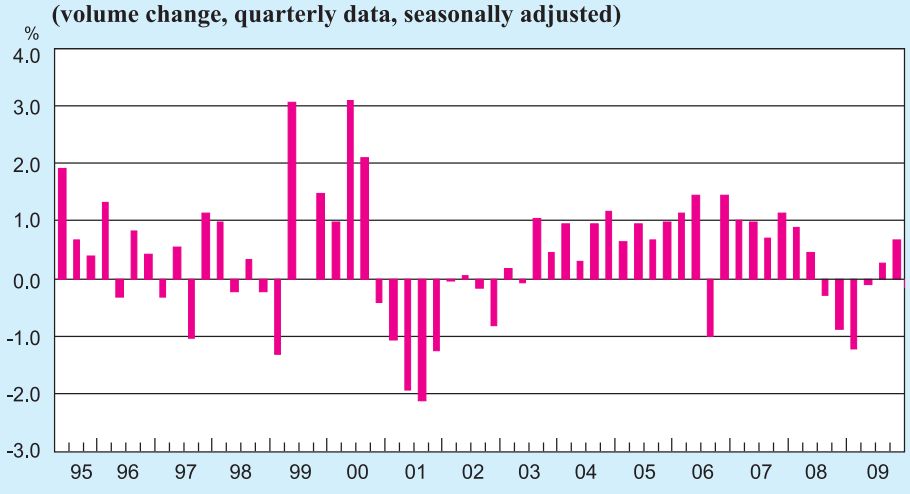
During 2009, the Israeli economy moved from recession to recovery and a gradual exit from the economic crisis.

In 2009, the Israeli economy transitioned from contraction to recovery and gradual exit from the global economic crisis that began in 2008 and peaked in early 2009. While Gross Domestic Product increased by only 0.7 percent, its development during the year was uneven: in the first quarter, product continued to contract as the recession reached its peak; later on, it began to grow at an increasingly vigorous pace against the background of steeply falling global demand at the beginning of the year and the expansion of demand later on. One of the most conspicuous characteristics of the current crisis is the mild damage that the Israeli economy sustained by developed markets' standards. This is especially evident in comparison with the previous global crisis, at the beginning of the decade, when domestic economic activity was much more severely affected than activity abroad (Table 2.1). Analysis of the composition of the damage induced by the crisis shows that exports and nonresidential investment contracted steeply, as occurred among developed countries at large, but current private consumption and construction investment continued to advance moderately, unlike the developed countries. Total uses fell steeply, mirroring developments abroad, but the sectoral makeup of the decline in Israel was such that the downturn was manifested more in imports than in GDP.

Despite the sharp drop in exports and investment, the effects of the crisis on the Israeli economy were moderate relative to the other developed countries.

The relatively modest effect of the crisis on Israel is also explained by the auspicious fundamentals that the economy displayed when the crisis broke out, including a balanced housing market, a conservative financial system, and strong private saving. This situation allowed the domestic market to cope successfully, by global standards, with the combination of the financial crisis and the downturn in global demand. (For elaboration on the sources of the Israeli economy's resilience during the crisis, see Chapter 1.)

Figure 2.1
Change in Per Capita GDP, 1995–2009
(volume change, quarterly data, seasonally adjusted)



SOURCE: Based on Central Bureau of Statistics data.

Table 2.1
Indicators of Economic Activity, 1999-2009

(annual rate of volume change, percent)

					2009		
	2000-1999	2001-02	2003-07	2008	Total	First half	Second half
GDP	6.2	-0.4	4.4	4.0	0.7	-1.5	3.3
Per capita GDP in Israel	3.5	-2.5	2.6	2.2	-1.1	-3.3	1.5
Per capita GDP in the advanced economies	3.2	0.8	2.1	0.3	-4.0	-6.6	1.3
Global per capital GDP	2.9	1.3	3.4	1.8	-2.2	-4.8	3.1
Business-sector product	7.3	-1.9	5.4	4.5	-0.2	-2.9	3.2
Index of manufacturing output	5.7	-3.4	4.9	7.4	-5.9	-13.6	9.2
Unemployment rate (%)	8.9	9.8	9.2	6.1	7.6	7.7	7.5

SOURCE: Based on Central Bureau of Statistics data and data of other countries.

a. Global developments and their influence on the Israeli economy

The global economic crisis reached its peak at the beginning of the year and was followed by a gradual recovery in economic activity, primarily as a result of the expansionary monetary and fiscal policies

The global economy rebounded gradually in 2009. At the beginning of the year, activity contracted in the manner that was typical of 2008: GDP fell in almost all OECD countries in the first half of the year by 3.1 percent on average, in a continuation of the decline in the second half of the previous year. Concurrently, global trade declined by a drastic 17 percent.[1] Consolidated commodity prices—oil prices in particular—fell steeply after cresting in the middle of 2008. Prices of financial assets tumbled as risk premiums escalated and the financial situation deteriorated. Housing prices fell in almost all OECD countries. Employment declined and unemployment rates climbed briskly. Government deficits swelled and financial stability in certain countries was shaken. As the year progressed, a slow recovery ensued—initially in the capital markets and in commodity prices, followed by real activity, especially foreign trade; finally, unemployment rates around the world leveled off. Although the pace of the recovery was slow, it surprised for the better relative to early assessments. The recovery traced mainly to the aggressive monetary and fiscal policies that many countries, especially the United States, adopted. Another possible explanation is that it corrected for an over-shooting that originated in the panic surrounding the collapse of the financial sector in 2008, which had led to a sharp cutback in investment and consumption and induced massive layoffs. These explanations raise uncertainty about the continuation of the rapid recovery and growth, especially after macroeconomic policies reduce their support for the economy.

[1] By comparison, in 2001, at the peak of the previous global crisis, global trade was unchanged and GDP in the OECD countries actually advanced by 1.2 percent.

Table 2.2
Global Developments, 1999–2009

(annual and quarterly data)

	1999– 2009 average	2007	2008	2009	2008 I	2008 II	2008 III	2008 IV	2009 I	2009 II	2009 III	2009 IV
						Percent change						
GDP in Israel[a]	3.5	5.2	4.0	0.7	5.8	3.7	0.7	-2.0	-2.7	1.3	3.6	4.9
Global GDP[a,b]	3.5	5.2	3.0	-1.1	3.9	1.8	-0.5	-5.3	-6.3	3.6	4.7	4.0
GDP in the OECD	1.8	2.7	0.6	-3.4	1.7	-0.2	-2.4	-7.2	-8.3	1.0	2.4	2.6
GDP of emerging markets[a,b]	5.9	8.3	6.0	1.7	8.2	5.0	2.9	-2.2	-3.1	7.9	8.5	6.3
World trade[a]	4.5	7.3	3.0	-11.9	-8.8	14.9	0.8	-10.9	-54.5	18.1	24.4	
US imports[a]	2.3	2.0	-3.2	-13.9	-2.5	-5.0	-2.2	-16.7	-36.4	-14.7	21.3	15.3
						Level						
CDS premium[c]	74	49	41	35	71	66	95	204	230	165	113	118
Dow Jones index	100	126	107	85	118	117	108	86	72	80	90	97
Crude oil prices (dollars per barrel)	46	71	97	62	95	121	115	56	44	59	68	76
Commodity prices excluding oil (index)	100	139	149	121	159	165	157	116	108	119	126	132
NIS/$ exchange rate	4.3	4.1	3.6	3.9	3.6	3.4	3.5	3.8	4.1	4.1	3.8	3.8
NIS/€ exchange rate	5.0	5.6	5.3	5.5	5.4	5.3	5.2	5.0	5.3	5.5	5.5	5.6

[a] Annual rates of change.

[b] The quarterly data are estimates based on incomplete data.

[c] Actual level, basis points.

SOURCE: Based on various sources.

b. Economic policy

Monetary policy in Israel was aggressively expansionary while fiscal policy was not expansionary.

Macroeconomic policy was supportive of business-sector growth. Monetary policy was highly expansionary and invoked many tools in support of real activity[2]: the monetary lending rate fell at the beginning of the year to 0.5 percent, the lowest ever, and the real interest rate, derived from the monetary rate, slipped into negative territory. The Bank of Israel continued to purchase large amounts of foreign currency and, at the beginning of the year, began buying government bonds in order to influence long-term market interest rates directly. Fiscal policy did not allow total expenditure to expand significantly; public expenditure increased by a modest 2.1 percent. Government support of demand was manifested in a temporary increase of the deficit target—in view of the steep decline in tax revenues—allowing expenditure to grow moderately with no need for steep tax increases during the crisis. The possibility of raising the deficit target was occasioned by the responsible fiscal policy that had been applied during the recent years of rapid growth, a policy that had lowered the debt/GDP ratio, and also due to the large deficits that developed countries amassed in the review year, which reflected a consensus about measures of this kind in the current environment.

c. International comparison

Exports and investment in the various industries of the economy were affected by the crisis, as in other OECD countries; however, private consumption was less affected and investment in construction was not affected at all.

GDP in current prices was NIS 766 billion ($ 195 billion). Per capita GDP was $ 26,200 and, in purchasing-power terms, $ 29,000—84 percent of the OECD average and 62 percent of the US per-capita level.

The global crisis lowered GDP in almost all developed countries—by 3.5 percent on OECD average—whereas Israel's GDP actually increased slightly. In terms of per-capita product, too, Israel seems to have taken a mild blow by the standards of the developed world (Figure 2.2). Analysis of the composition of GDP shows that exports and nonresidential investment were affected at an extent resembling the rest of the world, whereas private consumption was less impaired and building investment was totally unscathed.[3] A main explanation for this development is the different nature of the crisis in Israel: although it included a severe blow to global demand and a perceptible worsening of terms of finance, it did not, unlike other developed countries, include the collapse of housing prices and a steep increase in household risk due to strong private saving. Accordingly, the crisis in Israel was perceived as temporary, allowing consumption to be smoothed. Housing investment increased due to low interest rates and greater risk in business and financial investments; housing investment abroad, in contrast, plummeted. Another explanation is the improvement in terms of trade, which was stronger in Israel than in other developed countries due to the Israeli economy's dependency on imported inputs (especially fuel), the price of which fell vigorously in 2009. Also, Israel employed a different mix of policy responses, i.e., the combination of refraining from a significant increase in public expenditure and steep monetary

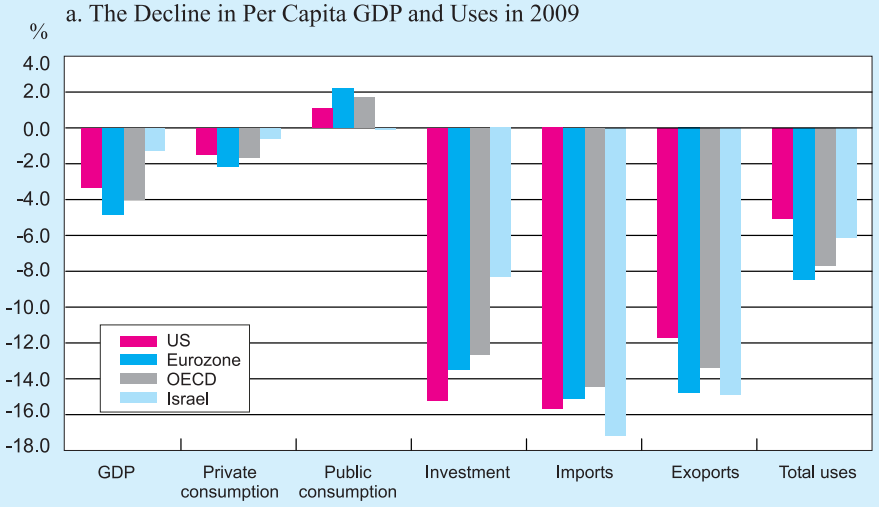
[2] For expanded discussion, see Chapter 3.
[3] See also Figure 2.5.

expansion that allowed inflation to accelerate somewhat, inducing real-wage erosion and thereby averting even larger numbers of layoffs.

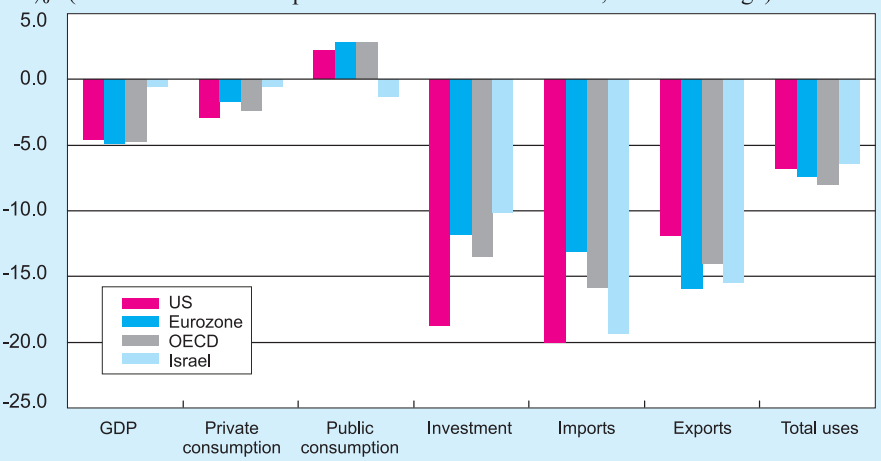
Total uses decreased in Israel at much the same rate as elsewhere, but due to the sectoral composition of the decrease, it was reflected more in imports than in GDP.[4] This phenomenon, while conspicuous in Israel, was typical of the crisis around the globe. The decrease in global imports traces partly to the credit crunch that was specific to this crisis.[5]

Figure 2.2
The Effect of the Crisis on Economic Activity, An International Comparison

a. The Decline in Per Capita GDP and Uses in 2009



b. The Decline in Per Capita GDP and Uses from Peak to Trough[a]
(first half of 2009 compared with second half of 2007, volume change)



[a] The peak and trough were determined according to developments in the US, where the crisis started, although in Israel the peak was reached only at the beginning of 2008.

[4] For elaboration, see next section.

[5] Calista, Cheung, and Stephanie Guichard (2009), *Understanding the World Trade Collapse*, Economic Department Working Paper No. 729, OECD.

2. AGGREGATE DEMAND, GDP, AND IMPORTS

a. Total uses and sources

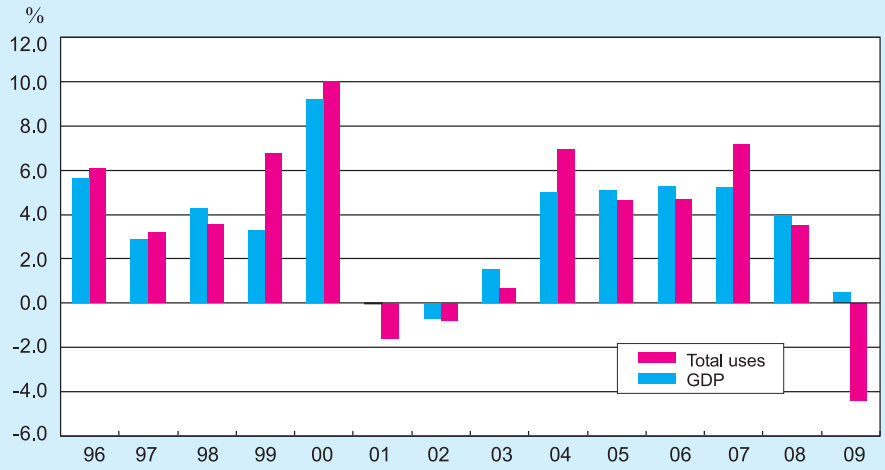
Total uses fell sharply from a historical perspective, as was the case in the OECD countries; however, the decrease was not evenly distributed. Import-intensive uses were primarily affected and therefore GDP was hardly affected.

Total uses decreased at a steep 3.6 percent pace in 2009 after having grown by 4 percent on annual average in the last business cycle. The downturn was much steeper than in the previous recession in 2001–02, when uses declined by 2 percent in cumulative terms. The contraction took place in the first quarter of the year pursuant to a downward trend in the second half of 2008. Later in the year, activity recovered gradually: consumption began to grow, followed by exports. Investment, in contrast, remained sluggish until year's end.

The contraction of uses in 2009 resembled the average decrease in the developed countries, in contrast to milder decline of GDP. Normally, changes in total uses and changes in product are strongly related (Figure 2.3). This relation was uncoupled in Israel in 2009 but held firm in other countries, where the decrease in total demand was reflected in falling levels of GDP.

The explanation of the difference is that the decrease in demand in Israel was uneven, focusing on import-oriented industries: imports plummeted by 14.0 percent or NIS 42 billion, as against an NIS 37 billion decrease in total uses. Table 2.3 describes the development of sources and uses during the crisis, distinguishing among uses on the basis of the import intensity in them—large,[6] medium,[7] or small.[8] This differentiation

Figure 2.3
Change in Total Uses and GDP, 1996-2009
(volume change)



SOURCE: Based on Central Bureau of Statistics and OECD data.

[6] Investment in machinery, equipment, and transport vehicles; exports of diamonds; consumption of durable goods; tourism abroad; and imported defense consumption.

[7] Exports net of diamonds and electronic components and inventory investment.

[8] Current private consumption, domestic public consumption, construction, and exports of electronic components.

shows that uses of large and medium import intensivity contracted steeply in 2009 (NIS 25 billion and NIS 39 billion, respectively), due mainly to their acute sensitivity to business cycles and, in particular, the financial crisis in the past two years. In contrast, low-import-intensivity uses expanded by NIS 26 billion because of their low sensitivity to business cycles thanks to consumption smoothing and because of the fast growth in exports of electronic components, due to the opening of Intel's new plant.

Table 2.3
Changes in Sources and Uses during the Crisis

(change in 2009, at constant prices)

	NIS billion	Percent change
Sources		
Total	-37.1	-3.6
Imports	-42.2	-14.0
GDP	5.2	0.7
Uses		
Uses with high added value		
Private current consumption	9.6	2.5
Domestic public consumption	6.1	3.6
Construction investment	0.3	0.5
Exports of electronic components	10.4	189.9
Total	26.4	4.3
Uses with medium added value		
Exports excluding diamonds and electronic components	-36.1	-14.4
Change in stock	-3.0	-83.5
Total	-39.0	-15.4
Uses with low added value		
Diamonds	-10.6	-31.1
Investment in equipment and vehicles	-8.2	-14.3
Israelis' consumption of durables and tourism abroad	-3.8	-7.5
Defense consumption from imports	-2.3	-21.7
Total	-24.9	-16.3

SOURCE: Based on Central Bureau of Statistics data.

Table 2.4
Sources and Uses, 1999-2009

(volume rates of change, percent)

	1999-2000	2001-02	2003-07	2008	2009 Total	2009 First half[a]	2009 Second half[a]
GDP	6.2	-0.4	4.4	4.0	0.7	-1.5	3.3
Bussiness sector product	7.3	-1.9	5.4	4.5	-0.2	-2.9	3.2
Imports	13.7	-3.1	5.8	2.4	-14.0	-24.3	11.6
of which: Imports excluding diamonds	12.2	-4.1	6.9	6.2	-12.4	-21.3	5.4
Total sources	8.4	-1.2	4.8	3.5	-3.8	-8.6	5.5
Exports	18.4	-6.6	9.0	5.2	-12.5	-24.2	17.1
of which Excluding diamonds	18.8	-8.0	10.9	10.5	-10.0	-21.6	11.4
Gross domestic investment	4.2	-7.0	5.4	1.4	-8.0	-13.3	-19.8
of which fixed capital formation	1.7	-5.1	5.3	4.4	-6.0	-8.2	2.5
Private consumption	6.5	2.1	3.9	3.6	1.5	0.5	6.9
of which Excluding durables	5.5	2.9	3.6	2.7	2.5	2.8	5.1
Public consumption	2.2	4.4	0.7	2.1	2.1	0.9	4.9
Domestic uses	4.9	0.7	3.3	3.1	0.2	-1.7	1.7

[a] In annual terms.

SOURCE: Based on Central Bureau of Statistics data.

Table 2.5
Developments during the Year, 2008 and 2009

(seasonally adjusted, change from previous quarter in annual terms)

	2008 I	2008 II	2008 III	2008 IV	2009 I	2009 II	2009 III	2009 IV
GDP	5.8	3.7	0.7	-2.0	-2.7	1.3	3.6	4.9
Business sector product	6.8	3.9	0.2	-3.2	-4.8	1.2	3.1	5.2
Imports	17.9	-9.3	-11.2	-25.8	-34.4	3.3	14.8	13.6
of which: Excluding diamonds	22.1	-8.3	-9.2	-7.4	-34.8	-2.6	7.1	10.6
Total sources	10.2	0.1	-2.2	-3.5	-12.5	0.3	4.5	6.3
Exports	21.9	-4.5	0.0	-38.7	-25.6	-1.4	15.4	42.1
of which: Excluding diamonds	38.9	-3.1	4.2	-25.8	-27.0	-4.0	9.3	33.8
Gross domestic investment	-24.9	25.2	-10.6	27.9	-20.6	-30.1	-5.4	-34.0
of which: Fixed capital formation	16.1	-4.7	-15.2	-5.0	-14.2	1.7	8.0	-7.2
Private consumption	9.2	-3.6	1.3	-2.1	-2.8	10.5	5.9	5.5
of which: Excluding durables	4.2	-0.9	1.9	0.5	1.1	8.5	3.4	5.0
Public consumption	14.8	-9.1	4.3	-1.0	-2.4	10.0	2.6	4.4
Doemstic uses	0.3	1.1	0.2	3.0	-5.5	1.5	4.8	-4.1

SOURCE: Based on Central Bureau of Statistics data.

b. Uses

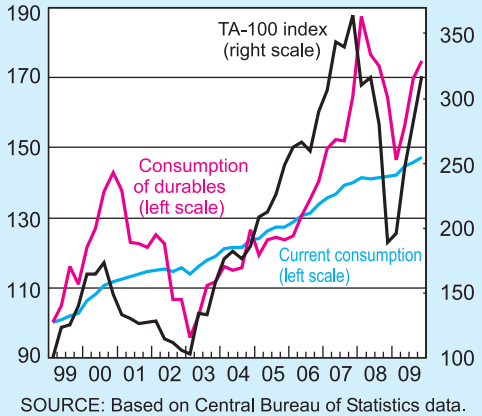
Current consumption continued to grow at a moderate rate during the crisis, while the purchase of durable goods dropped sharply. This is consistent with the theory of consumption-smoothing.

Private consumption increased by 1.5 percent, much less than in previous years, owing to an 8.7 percent downturn in purchases of durable goods and resulting in a decrease in per-capita consumption. By international standards, however, private consumption in Israel was mildly affected by the crisis (Figure 2.2). Analysis of the components of consumption during the year shows that the main blow to consumption occurred in 2008 and peaked at the beginning of 2009. Current consumption continued to grow moderately throughout the crisis, whereas purchases of durable goods slumped badly in the first half of the review year—pursuant to the steep decrease in the second half of 2008—and rebounded in the second half. The meaning of the differential development of current consumption and durables consumption is that private consumption was more oriented to GDP in 2009 than in previous years, since the component of imports is much larger in durable goods than in current consumption. The steep decrease in purchases of durable goods precipitated a sharp upturn in the private saving rate.[9]

This development is explained (Figure 2.4) by the theory of consumption smoothing: current consumption is less influenced by the business cycle than the purchases of durable goods (i.e., it is less pro-cyclical) due to the aspect of investment in the purchase of durable goods and the possibility of deferring such purchases due to liquidity constraints or precautionary saving.[10] The global crisis depressed wages and employment and steeply eroded the value of financial assets; concurrently, it exacerbated uncertainty about the future economic situation, as mirrored in the decline in domestic and foreign consumer-confidence indices.[11] After the assessment of the situation improved, financial assets gained value and the consumer-confidence index rose. Concurrently, low interest rates benefited consumers and facilitated the smoothing of consumption even before activity recovered. Unlike other countries (the US in particular), Israel recorded rising housing prices during the crisis. The private saving rate was high, and the household leverage was low; therefore, households' risk level did not rise and the amount of lending for them did not have to be adjusted in a major way. Consequently, unlike other

Private consumption in Israel was less affected than in other countries thanks to the high rate of saving among households.

Figure 2.4
Private Consumption (index) and the Tel Aviv 100 Share Price Index, 1999-2009 (1999:Q1 = 100)



SOURCE: Based on Central Bureau of Statistics data.

[9] For expanded discussion, see Section 4 of this chapter.

[10] Yaakov Lavi (2003), "Do Changes in Current Income Help to Explain Changes in Consumption in Israel? *Israel Economic Review 71*.

[11] Kobi Braude and Amit Friedman, (2005), "The Consumer-Confidence Index and Private Consumption," *Israel Economic Review 78*.

countries where the crisis was perceived as having permanent implications for households, it was perceived as temporary in Israel. Further evidence for this proposition was the relative mildness of the blow to consumer confidence and its rapid recovery in Israel.

Another explanation for the modest damage to private consumption is the perceptible improvement in terms of trade in the review year (relative to other developed countries as well). Thus, despite sluggish economic growth, national income (taking purchasing power into account) grew more quickly in 2009 than in 2008.

All components of exports fell sharply due to the major decline in the scope of world trade.

Exports contracted by 12.5 percent in 2009, the steepest rate of decrease ever recorded in Israel. All categories of exports were affected: manufacturing (–9.2 percent), services (–12.1 percent), and tourism (–25.6 percent). The decline in manufacturing exports encompassed almost all industries; the only rapid increase was in electronic components due to the opening of Intel's new plant; net of this industry, manufacturing exports fell back by 14.7 percent. The steep decline in exports originated in the contraction of global demand and its pace resembled the average decrease in exports of OECD countries and the decline in world trade. Israel's exports in current dollar terms were affected less than were the OECD countries, because services account for a relatively large share of Israel's exports and the decline in world trade was less acute in the services.[12]

Investment in the various industries fell sharply while investment in residential construction continued to grow at a moderate rate.

The export slump bottomed out at the beginning of the year at 18 percent under the record level attained in the previous year. Only toward year's end, with the recovery of global demand, did exports begin to climb, but not back to the previous record level. Another factor that affected exports in the past two years was the appreciated currency relative to the recent years of rapid growth, which eroded export profitability and competitiveness. Although several studies examined the effect of the exchange rate on export volume and found it to be small, their estimates were flawed by simultaneity that made the causal relation hard to detect. Another problem with the estimates is that the effect of the exchange rate on exports is probably not linear. The main effect of slight appreciation should be on the level of export profitability, not on volume; however, it is hard to estimate quantitatively the effect of steep appreciation of the sort that occurred in 2008, especially when it coincided with abruptly falling demand. Consequently, the depreciation in early 2009 may have helped to improve competitiveness and the recovery of exports later in the year. Another contribution to the competitiveness of Israel's exports in 2009 was the visible improvement in terms of trade—relative to other developed countries as well—tracing to lower prices of imported inputs.

Gross domestic investment fell by 8.0 percent, composed of a 6.0 percent decrease in fixed investment and severe depletion of inventories due to the worsening of terms of finance in Israel and abroad and the slump in global demand. All segments of the business sector took part in the decrease: 17.7 percent in machinery and equipment,

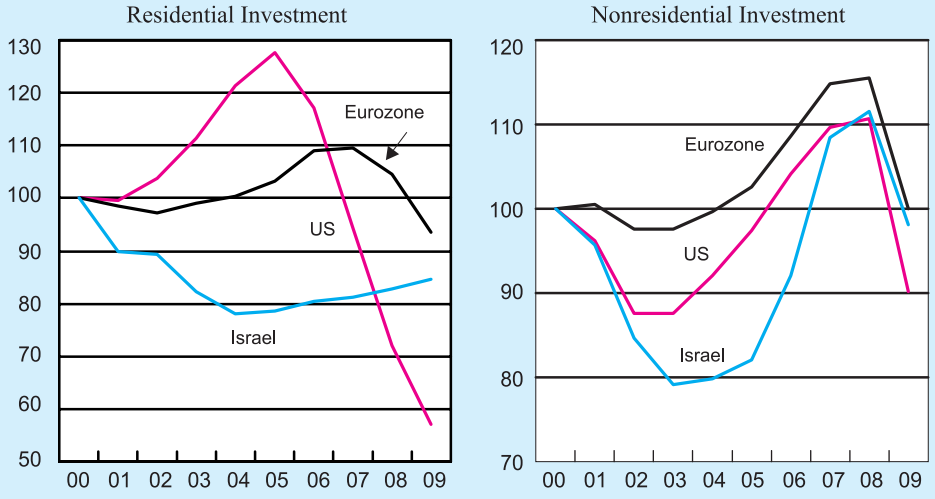
[12] This is largely due to a stronger decrease in the prices of exported goods. For expanded discussion, see Chapter 7.

3.3 percent in motor vehicles, and 3.9 percent in nonresidential construction. The downward trend of investment began in 2008 but the main decrease that year occurred in motor vehicles; in 2009, the brunt of the decrease in investment was in machinery and equipment. In contrast to the drop in business-sector investment, housing construction investment increased by 4.1 percent. Since Israel's construction industry did not experience a bubble (Figure 2.5), the combination of low interest rates and the risk in business and financial investments gave housing demand and prices an upward push. Thus, even though the construction industry should have been harmed by the financial crisis due to its high leveraging, it was a stabilizing factor in Israel.

Public consumption grew at a moderate rate, unlike in most of the OECD countries which significantly expanded their public consumption in reaction to the crisis.

Public consumption increased by 2.1 percent in the review year, approximating the average growth rate in the past decade and lower than the economy's potential growth rate, signaling that the government did not apply an active policy of supporting activity from the standpoint of public consumption.[13] Israel's behavior stands out in comparison with the OECD countries: Israel was the only country that the share of public consumption in GDP declined in 2009[14] and was one of only three countries that recorded no increase in per-capita public consumption. Although domestic public consumption[15] rose at a slightly faster pace, its share in GDP also declined in 2009. Notably, Israel has a high ratio of public consumption to GDP by international

Figure 2.5
Per Capita Fixed Investment in Israel, the Eurozone and the US, 2000-2009
(real index 2000 = 100)



SOURCE: Based on Central Bureau of Statistics and OECD data.

[13] Notably, the Government operated without an approved budget until mid-year. Consequently, its spending was limited by law to a level derived from the previous year's budget.

[14] The share of public consumption in GDP is measured in current prices. In 2009, public-consumption prices rose less vigorously than GDP prices.

[15] Public consumption net of defense imports.

standards due to its large defense expenditure: in 2007, before the global recession, its rate was 25 percent of GDP compared with the OECD average of 19 percent.[16] This gap narrowed slightly in the past two years, as the crisis prompted many countries to adopt expansionary fiscal policies. The fact that the current crisis inflicted only mild damage on Israel's activity by world standards, even though its government did not adopt a policy that would expand its demand, attests to the country's relative resilience in the crisis.

c. Sources

(1) Imports

The sharp drop in imports encompassed all its components.

All components of imports contracted steeply in 2009: total imports by 14.0 percent; civilian imports excluding ships, aircraft, and diamonds by 12.3 percent; imports of goods by 14.4 percent; and imports of services by 11.6 percent. This was the most precipitous downturn in imports ever recorded. By comparison, in 2001 imports fell by 5.1 percent in response to the previous recession and the total decline during that recession came to 7.3 percent. The share of imports in GDP slipped to 32 percent in 2009 as against 42 percent on average in the past five years of growth. The falloff in imports of goods was driven by a steep decrease in imports of capital goods and production inputs, whereas imports of consumer goods, especially for current consumption, retreated at a gentler pace. The decline in imports of services was driven by imports of transport services (import cargoes, leasing fees, port services, etc.), which account for around one-third of Israel's imports of services, and their decrease mirrored the contraction of trade in goods.[17] Imports of tourism services and other business services also fell back, but less precipitously.

(2) Supply of business-sector product

There was a rapid adjustment of the labor market to the economic situation this year; labor input and wages declined while labor productivity rose.

Business product dipped by 0.2 percent after rapid 5 percent growth in the previous five years. Business capital stock, determined on the basis of the previous year's investment, increased at a brisk 5 percent pace whereas labor input declined by 0.9 percent due to a steep downturn in hours worked and cessation of the growth of employment. The rapid decrease in labor input offset the vigorous increase in capital stock. Thus, total productivity decreased in only a minor way and labor productivity actually increased.

The unemployment rate climbed from a low 5.9 percent in the middle of 2008 to 8.0 percent in the middle of 2009. Concurrently, labor input decreased perceptibly, showing that the labor market made a very rapid adjustment to the macroeconomic situation. Real wages declined for the second consecutive year, by 3.1 percent, despite

[16] Israel's defense consumption is 7 percent of GDP.

[17] Exports of transport services declined at twice the rate of imports of transport services. However, they account for only a small share of total exports.

Table 2.6
Supply of Business Sector Product, 1999-2009

(volume change, percent)

					2009		
	1999-2000	2001-02	2003-07	2008	Total	First half[a]	Second half[a]
Business sector product	7.3	-1.9	5.4	4.5	-0.2	-2.9	3.2
Gross capital stock	7.2	4.0	3.1	5.1	5.2	4.2	3.4
Labor input[a]	4.1	-0.3	2.4	4.4	-0.9	-2.4	4.4
Total factor productivity	2.3	-3.4	2.7	-0.1	-1.2	-2.8	0.0
Civilian labor force plus foreign workers	4.0	0.7	2.3	3.3	0.9	1.8	-1.2
Gross product per man-hour[b]	6.9	-0.1	3.8	1.6	5.9	7.4	-1.4
Compensation per man-hour[b]	6.5	1.2	2.5	2.7	0.5	-4.6	2.3
Rate of labor compensation in business sector (%)[b]	69.2	70.4	64.7	66.4	63.1	63.8	63.2
Rate of return to gross capital (%)[b]	17.5	15.6	18.0	18.9	20.8	20.1	21.1
Capital/labor ratio	3.2	5.7	0.2	0.4	5.6	5.1	4.5
Gross capital stock/GDP ratio	1.5	1.7	1.8	1.7	1.7	1.8	1.7
Bank of Israel''s published nominal rate of interest	10.7	6.8	4.9	3.7	0.8	0.8	0.7
Interest on overdraft facilities	17.4	13.5	10.9	9.8	8.0	22.2	23.6
12-month forward inflation expectations (%)	3.3	1.9	1.7	1.9	1.8	1.3	2.4
Real yield on 10-year bonds (%)	5.3	5.0	4.0	3.4	2.6	4.4	4.8
Tax on non-wage income (%)[b]	23.3	25.4	24.7	23.1	19.1		

[a] In annual terms.

[b] At current factor input prices.

SOURCE: Based on Central Bureau of Statistics data.

The capital share of GDP has risen to a significant extent in recent years at the expense of both the labor share and tax revenues.

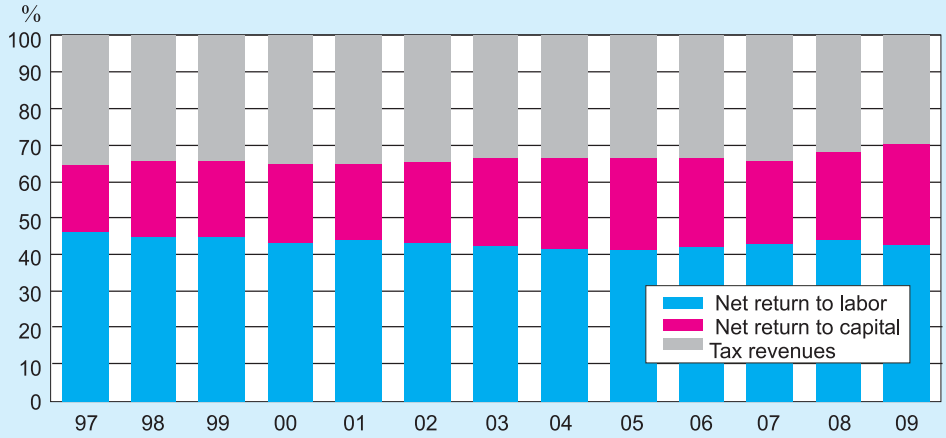
the increase in labor productivity, meaning that the share of labor in GDP decreased in 2009, pursuant to the downward trend in the past decade. This is contrary to the development of the business cycle; the labor share usually responds at a certain lag due to the difficulty in immediately adjusting wages and employment to the level of activity.[18] The labor market evidently responded more rapidly and drastically in 2009 than it did in the past, causing the labor share to plummet when the crisis erupted. The mild upturn in total wage payments in the past decade, relative to economic growth, reflects a 10 percentage-point erosion in the labor share. Even though taxes on both capital and labor have been reduced in recent years, the net labor share in GDP also declined. Concurrently, the rate of return to capital increased appreciably, at the proportional expense of both the return to labor and tax payments (Figure 2.6). Notably, much of the decrease in return to labor reflects the decline of the public sector share in GDP.[19] At the same time, the exposure of the economy to unrestricted capital flows amplified the bargaining power of capital, while the labor market policy measures and the weakening of organized labor reduced labor's bargaining power.

[18] This is due to labor-market rigidities and uncertainty in assessing the economic situation.

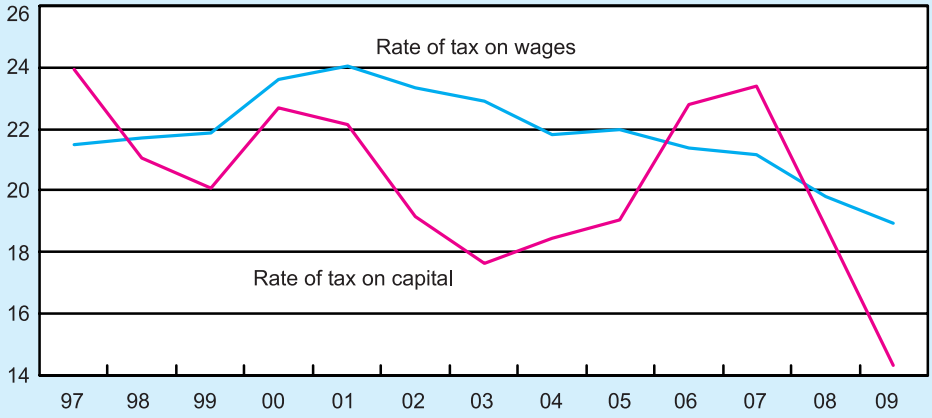
[19] In the public sector, there are no payments for capital but rather imputation to depreciation; therefore, the rate of return to labor is very high. Furthermore, the decrease in public demand for labor probably had an indirect effect, especially given the lower level of incorporation in the business sector.

Figure 2.6
Increase in Capital Share at the Expense of the Labor Share and Tax Revenues, 1997-2009

a. The Division of GDP into Capital, Labor and Taxes

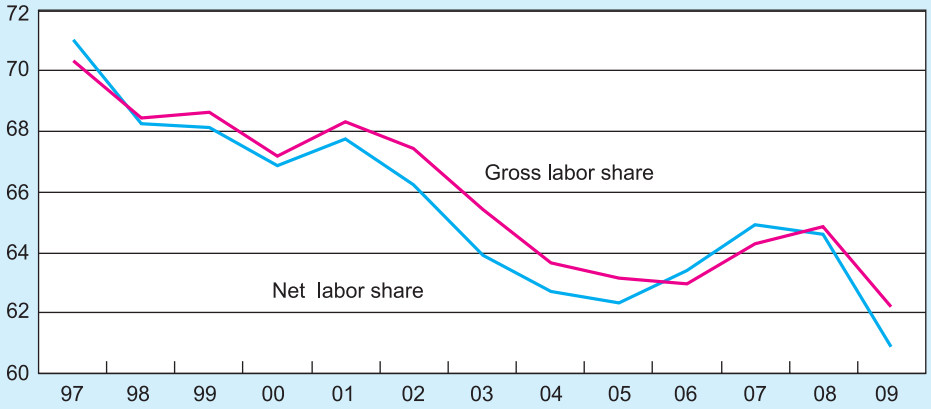


b. Average Direct Tax Rate on Labor and Capital[a]



[a] Total revenue from tax on capital/labor divided by the return to capital/labor.

c. The Labor Share (Gross and Net)[a]



[a] Gross–including direct taxes on capital and labor; net–excluding direct taxes..

SOURCE: Based on Central Bureau of Statistics data.

The cost of capital fell this year thanks to the reduction in interest rates both in Israel and abroad and to the decline in the assessment of risk starting in mid-year.

Due to the steep decline in the labor share in 2009, the return to capital increased despite the recession, in contrast to severe erosion of this parameter in the previous recession. Furthermore, the cost of raising capital for the business sector stopped rising in 2009 after having surged in 2008—abetted by domestic and foreign rate-cutting and, later in the year, by a decrease in risk premiums as investors' confidence in the financial system improved. Risk premiums derived from the CDS spread fell, corporate-bond yields declined, and debt and capital issues gradually resumed after the total freeze-up of the nonbanking credit market in 2008.[20] The nominal short-term bank lending rate tumbled from around 10 percent in the third quarter of 2008 to less than 8 percent in March 2009, the lowest in the past decade. These improvements in terms of finance forestalled further deterioration in real activity as a result of the financial-accelerator mechanism[21] but did not yet allow business-sector investment to recover.

Total productivity, measured as a Solow residual, decreased by 1.2 percent in the review year—a cyclical downturn originating in less utilization of factor inputs. According to the Bank of Israel Companies Survey, utilization of machinery and equipment in manufacturing began to contract steeply in the middle of 2008 and bottomed out in mid-2009. The decrease in utilization was much faster than in the previous recession but the total cumulative downturn was milder because the stabilization also occurred quickly. The rapid adjustment of employment allowed labor productivity[22] to remain stable; in the previous crisis, in contrast, the damage to employment was more gradual and labor productivity fell by 4.0 percent in cumulative terms.

3. THE OUTPUT GAP AND THE REAL EXCHANGE RATE

The output gap grew significantly this year due to the sharp fall in demand.

The estimated output gap, which reflects the gap between the economy's potential productive capacity, i.e., supply (which is not directly observed), and actual demand, widened perceptibly in the review year due to the steep decline in demand, especially from abroad. In 2008, the gap had been eliminated by five years of rapid growth and a low unemployment rate by historical standards. Figure 2.7 shows the different estimates of the output gap: the production-function method, which examines deviations in the participation rate, the unemployment rate, and hours worked per person employed from long-term trends[23]; the SVAR method, which estimates the link between GDP and unemployment while taking lagged effects into account and differentiating between demand shocks and supply shocks by imposing the assumption

[20] For expanded discussion, see Chapter 4.

[21] A worsening of terms of finance brings down the level of credit. Therefore, it may cause activity to contract, investment to contract, and even bankruptcies among firms that could have kept going to ordinary market conditions.

[22] Product per person employed and product per hour worked.

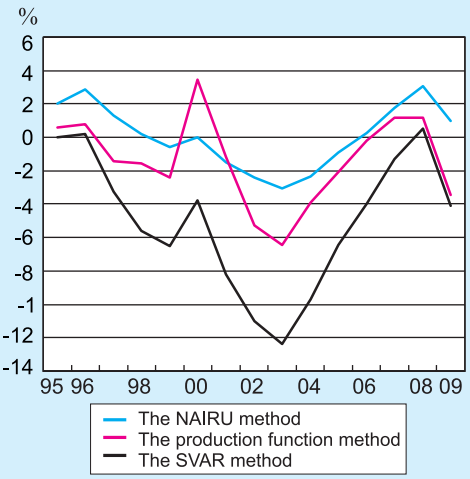
[23] Yigal Menashe and Yossi Yakhin (2006), "Mind the Gap: Structural and Nonstructural Approaches to Estimating Israel's Output Gap," *Israel Economic Review 2*, No. 2.

that demand shocks only have a short-term effect[24]; and the NAIRU method, which estimates the relation between the output gap and inflation pressures.[25] The level of activity is consistent with price stability, possibly because domestic demand—which was only mildly affected—affects inflation pressure more than overseas demand does, especially given the small extent of labor substitution between industries that produce for the domestic market and those that produce for export.

The real exchange rate depreciated this year as a result of the purchase of foreign currency by the Bank of Israel and the global strengthening of the dollar.

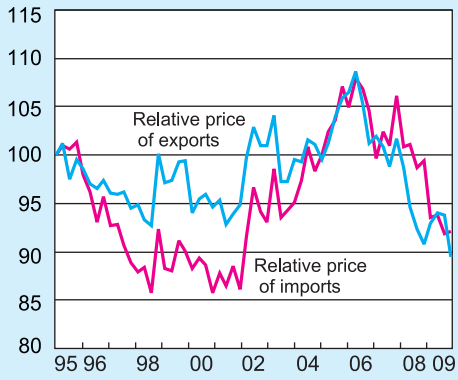
As the output gap widened, the real effective exchange rate depreciated in the first half of the year, when the crisis was at its peak, by 7.4 percent relative to the end of 2008 due to nominal depreciation of similar magnitude. Later in the year, as indications of domestic recovery began to appear, the currency rebounded partly. Several developments had contrasting affects on the exchange rate. The mild extent of the decrease in domestic demand relative to the decrease abroad, coupled with the steep upturn in the surplus on current account, applied pressure for continued appreciation. From the other direction, the appreciation of the dollar abroad as the US economic crisis spread to the rest of the world, the expansionary monetary policy, and unprecedentedly large purchases of foreign currency by the Bank of Israel had a pro-depreciation effect. Notably, since the middle of 2008, when the Bank began to buy foreign currency, the trend of the spread between the real exchange rate and the nominal rate has changed, reflecting a transition from a lower inflation rate than that abroad to a higher rate. A different measure of the real exchange rate uses the prices of tradable goods relative to those of non-tradable goods. This indicator points to a long term trend of appreciation originating in an improvement in the productivity of

Figure 2.7
The Output Gap Using Different Methods of Calculation, 1995-2009



SOURCE: Based on Central Bureau of Statistics data.

Figure 2.8
The Real Exchange Rate, Measured by the Difference between Prices of Tradables and Nontradables, 1995-2009 (index, 1995 = 100)



SOURCE: Based on Central Bureau of Statistics data.

[24] Ibid.
[25] Amit Friedman and Tanya Suchoy (2005), "The NAIRU in Israel: an Unobserved Components Approach," *Israel Economic Review 2*, No. 2.

tradable goods abroad. The relative price of exports increased slightly at the beginning of 2009 because prices of services abroad were less affected than prices of goods.[26] However, the upward trend that typifies this indicator continued.

4. SAVINGS, INVESTMENT, AND THE CURRENT ACCOUNT

The national rate of saving was low this year relative to its level during the recent growth years.

Gross national saving was 19.8 percent of total national income in 2009, similar to the 2008 rate but low relative to the recent growth years, due to consumption smoothing that makes the saving rate pro-cyclical. Although the decline in the saving rate in 2008, a year of growth, was inconsistent with this, it should be borne in mind that the recession was already under way by the end of that year.[27]

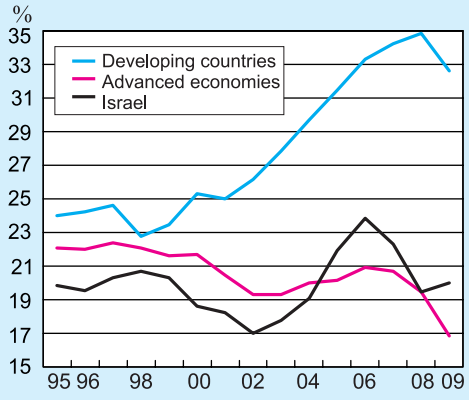
Figure 2.9, comparing Israel's rate of savings in GDP with that abroad, shows that the average saving rate in Israel increased in recent years relative to the second half of the 1990s and surpasses slightly the rate among developed countries. Saving rates in developing countries, in contrast, are not only higher but also steadily rising.

Public saving was negative in 2009—at –1.6 percent of total national income—after four years in positive territory. The decrease in public saving in the review year, pursuant to a decline in 2008, originated in the steep decrease in tax revenues occasioned by the slowdown of economic activity and tax cuts.

A decline in the consumption of durable goods due to precautionary motives and a drop in public saving led to a rise in the rate of private saving.

Private saving in 2009 far surpassed the 2008 level and also exceeded the average in the recent years of growth. Ostensibly, this clashes with the theory of consumption smoothing, which suggests that savings should be depleted at times of recession. Several factors explain the increase: (a) the steep decline in purchases of durable goods, which are recorded as consumption but actually reflect investment considerations as well; the saving rate net of purchase of durables[28] was indeed lower than the average rate in recent years; (b) the decline in public saving and the negative relation that exists between private saving and public saving, mirroring

Figure 2.9
Savings as Share of GDP, 1995-2009



SOURCE: Based on Central Bureau of Statistics and IMF data.

[26] The relative price of export of services increased by 7.8 percent, were as that of goods actually fell by 3.4 percent.

[27] Another factor that affected the saving rate in the past two years was the steep increase in oil prices, which dampened national income in purchasing-power terms, especially given the low elasticity of demand for oil.

[28] The saving rate net of purchase of durables, with the services delivered by these goods imputed over time. See Appendix Table 8.

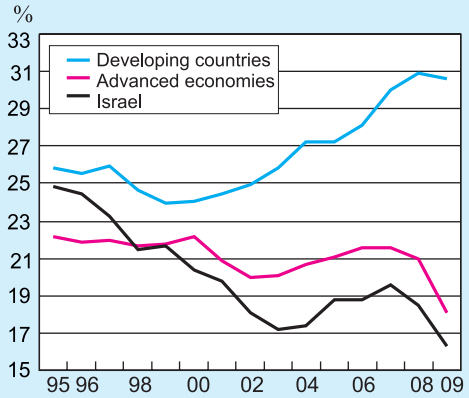
Ricardian expectations;[29] and (c) the precautionary motives resulting from the uncertainty that clouded the implications of the global economic crisis and the erosion of the public's portfolio of financial assets in 2008 and early 2009. In most developed countries, the household saving rate increased in the past two years, and there is evidence that the saving rate of Israeli households rose in 2008 due to the downturn in job security (Box 2.2).

The share of investment in GDP fell this year, as it did worldwide, due to the global crisis.

The share of investment in gross national income decreased in the review year against the background of the perceptible slump in activity and expectations of sluggish demand in the future. Israel's performance in this respect resembled the decrease in investment worldwide. Figure 2.10, which compares Israel's share of investment in GDP with that abroad, shows that in contrast to its saving rate, Israel's rate of investment is low by developed countries' standards and from historical perspective. The decrease in investment from the middle of the previous decade may be attributed to the process of capital stock adjustment after the absorption of the mass immigration in the 1990s induced an appreciable buildup. The gap between Israel's rate of investment and that of the developed countries, however, is not explained—especially given Israel's strong rate of return to capital, reductions in rates of capital taxation in the past decade, and foreign direct investment, which is high by the standards of developed countries (Box 2.1). Nevertheless, Israel's investment rate is not exceptionally deviant: it resembles those of the United States, the UK, and Germany and falls short of those of Japan, Canada, France, and Italy. These differences may trace to differences in the respective economies' sectoral structure and not to underinvestment in Israel.

The surplus on current account—the difference between saving and investment—widened to 3.6 percent of GDP in 2009 for reasons including the continuation of an upward trend that was already in evidence. In contrast to the recent years of strong growth, when the increase in the surplus was powered by an increase in saving, the large current-account surplus in 2009 originated in the abrupt downturn in investment.

Figure 2.10
Investment as Share of GDP



SOURCE: Based on Central Bureau of Statistics and IMF data.

[29] I.e., expectations of a future increase in tax rates to cover the government deficit. For estimates of the strength of the negative relation between private saving and public saving, see the 2008 Bank of Israel Annual Report.

Box 2.1
Foreign direct investment and domestic investment: how they relate in Israel

Foreign direct investment in Israel, USD 9.7 billion in 2008 (in current prices), is a major component of total nonresident investment: 40 percent on annual average in 1995–2008 as against 31 percent and 21 percent, respectively, in the other two components of foreign investment: portfolio and other. Foreign direct investment is defined as an investment by a principal[1] in the equity of an Israeli company, plus loans of all types from a principal or a controlling company[2] to an Israeli company, with the exception of commercial credit. The components of foreign direct (inbound) investment in Israel are share equity, undistributed earnings, principals' loans, and real property investment.

The rate of direct investment in Israel, which increased during the 1990s, came to 5 percent in the second half of the decade starting in 2000 (on annual average).[3] The share of direct investment in total gross domestic investment developed similarly in the past decade. This rate stood at 20 percent on annual average, with some variance from year to year—especially in early 2000 and in 2006—an increase in the second half of the decade relative to the first half (Figure 1), and what was perceived as an outlier in 2006, as the rate of direct investment in GDP came to 10 percent, largely due to the Iscar sale transaction.

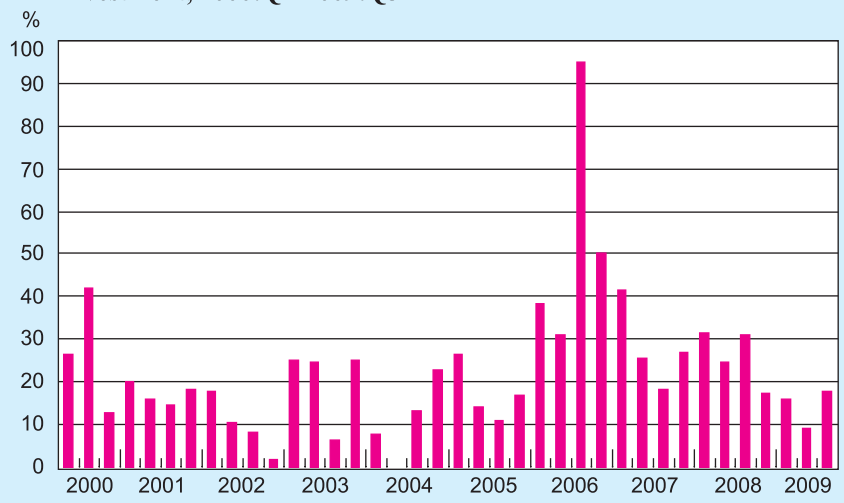
Israel's rate of direct investment in GDP is high by international standards, surpassed only by countries such as Chile, Croatia, and Sweden, slightly above the OECD average, and far above the average of developed and emerging markets (Figure 2).

Furthermore, analysis of UNCTAD indicators for 2004–06[4] shows that the potential of the Israeli economy to attract foreign direct investment resembles that of West European countries and exceeds that of the countries of Eastern Europe. This is due to Israel's high rate of R&D in GDP, its growth rates, and its share of exports in GDP, which have been relatively strong mainly since the 1990s. In contrast, factors that prejudice Israel's potential attractiveness for investment are the relatively small size of its economy, its high country risk, and the severe concentration of its direct investment, focusing on technology industries.

An interesting question is the nature of the relationship between foreign direct investment and total domestic investment. The economic literature examines this question and draws a connection among direct investment and growth, productivity,

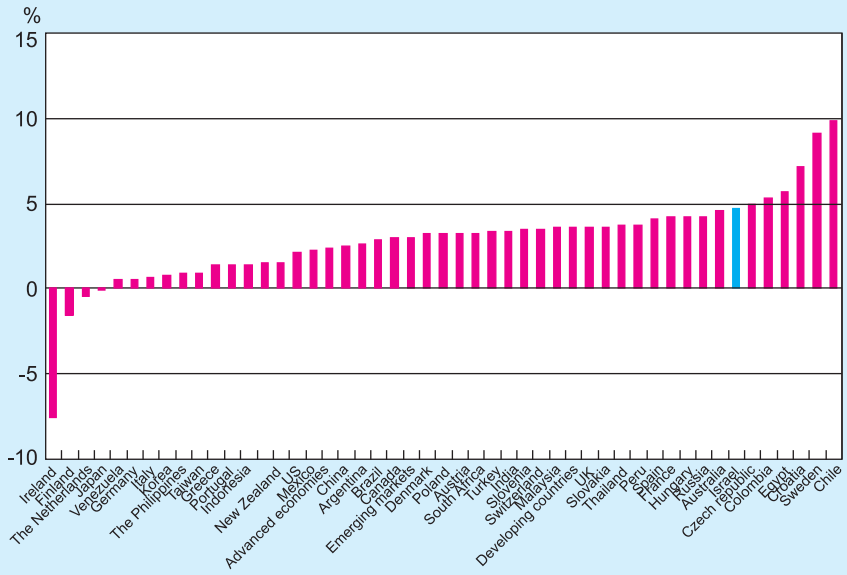
[1] One who has a stake of 10 percent or more in the corporation's equity.
[2] A controlling company is a nonresident company that holds, by means of a nonresident principal, 10 percent or more of the equity of the Israeli company.
[3] See Figure 7.3.
[4] For elaboration on these indicators, see also Box 1.3.1 in the 2004 Bank of Israel Annual Report, Foreign Currency Activity Department, pp. 56–58.

Figure 1
Direct Investment in Israel as a Percentage of Gross Domestic Investment, 2000:Q2-2009:Q3



SOURCE: Based on Central Bureau of Statistics data.

Figure 2
Direct Investment as Percentage of GDP (international comparison)



SOURCE: Based on FDISTAT of UNCTAD.

and total domestic investment at both the firm level and the macro level.[5] Romer (1993) claims that direct investment helps to narrow innovation gaps between rich and poor countries by abetting the transfer of technological knowledge, which also conducts to development of the economy at large. Direct investment enhances the productivity of firms at large, not only those that benefit directly from the investments, thereby conducing to macro economic growth. It was this outlook that prompted developing countries to eliminate constraints on foreign direct investment and to attract it by offering incentives and tax benefits. Contrarily, other scholars, such as Boyd and Smith (1992), proposed theories suggesting that direct investment may actually impair the allocation of economic sources, crowd out domestic investment, and slow the growth rate. Most empirical studies at the micro level—e.g., Harrison (1996)—find that foreign direct investment does not accelerate domestic growth and investment and give no evidence of positive externalities of investments of foreign-owned firms for domestic-owned firms. In contrast, empirical studies at the macro level, based on direct-investment data from a sample of countries, find a positive relation between direct investment and growth but not in countries where additional factors such as an adequately high level of schooling, a well developed financial system, and ample openness to trade, are lacking. Cardovic and Levine (2002) show that, once problems of simultaneity among the variables and of less-than-full reference to each country's specific indicators are neutralized, the exogenous component of direct investment does not encourage domestic economic growth.

In this Box, the long-term effect of foreign direct investment on business investment and total domestic investment in Israel is estimated by means of two different models:

(1) a long-term equation (cointegration) that describes, for the years 1980–2008, the long-term relation between the level of business-sector investment, on the one hand, and GDP and cost of capital, on the other hand, in accordance with the neoclassical theory,[6] plus the variables of foreign investment generally and foreign direct investment particularly;

(2) an updated model based on the simultaneous equations examined by Hecht, Razin, and Shinar (2003),[7] relating to the particulars of the Israeli economy only, from the first quarter of 1990 to the third quarter of 2009.

[5] Bear in mind that direct investment, by nature, also relates in the short term to business cycles and the economic situation in the countries of origin, and not only to the development of domestic investment in the target countries.

[6] In Levine and Menashe (2010), the main variable in cost of capital is the relative price of the investment in business-sector products, which serves as an indicator of the real exchange rate.

[7] They argue that the source of the simultaneity between domestic investment and foreign investment (in all their components: direct, portfolio, and other) is linked to an improvement brought about in the quality of shareholders' supervision of the management of the company in which the foreign capital is invested. This improvement contributes to an increase in the Company's future productivity and, together with it, of the domestic economy—thereby motivating foreign direct investment and domestic investment alike.

Table 1 describes the long-term effect of an increase in direct investment on the relevant investment, according to both models. According to the long-term equation model, an NIS 1 billion increase in foreign direct investment induces an NIS 250 million increase in business investment in Israel, equivalent to an increase of NIS 370 million in domestic investment.[8] The simultaneous-equations model shows a larger effect: an NIS 1 billion increase in direct investment (in current prices) induces an NIS 320 increase in domestic investment.[9] Analysis of the durability of the results in this model, however, indicates that the effect is not stable enough; therefore, this finding should be treated cautiously. Furthermore, the effect obtained by use of the model is substantially lower than that found by Hecht, Razin, and Shinar in regard to the group of developing countries (including Israel).[10] It should be borne in mind that the outcome of their study reflects the average effect across all countries throughout the sample years. Consequently, it expresses the relatively strong effect that is typical of developing countries, in which the share of new-project investment in total foreign direct investment is relatively high. In Israel, however, some direct investment reflects the acquisition of Israeli firms; this is not manifested in a direct increase in capital accumulation.[11] Neither model found that a change in foreign portfolio investment has any long-term effect on domestic investment.

Comparison of the Contributions of the Increase in Foreign Direct Investment (FDI) in Israel to Total Investment, According to Different Models (NIS billion)

Model	Sample	Sample	Relevant indepenent variable	Increase in investment (NIS milion)
Model 1: Long-term equation (Cointegration)	Israeli data only 1980: Q1 to 2008:Q4	Business investment	Direct investment	250
Model 2: Simultaneous equations	Israeli data only 1990: Q1 to 2009:Q3	Share of domestic investment in GDP	Share of FDI in GDP	320
System of simultaneous equations (Hecht, Razin and Shinar)	64 developing countries including Israel 1976–97	Share of domestic investment in GDP	Share of FDI in GDP	680

SOURCE: Bank of Israel.

[8] The calculation rests on the assumption that direct investment has the same effects on business investment and total domestic investments, and also on the share of business investment in domestic investment since the year 2000, which came to 67 percent.

[9] This effect was obtained by estimating a least-squares equation in two phases. When the equation is estimated using the General Moments Method, an even stronger effect is obtained: an increase of NIS 1 billion in direct investment boosts domestic investment by NIS 380 million.

[10] They found that a USD 1 increase in direct investment boosts domestic investment, on average, by 68 cents.

[11] The share of foreign direct investment in Israel that contributes to capital accumulation in total foreign direct investment in 2007–2008 is estimated at 56 percent in Chapter 7 of this Report.

Sources:
Boyd, J.H., and B.D. Smith (1992), "Intermediation and the Equilibrium Allocation of Investment Capital, Implications for Economic Development," *Journal of Monetary Economics 30,* pp. 409–432.
Carkovic, M., and R. Levine (2002), "Does Foreign Direct Investment Accelerate Economic Growth?" Minnesota University Working Paper (June).
Harrison, A. (1996), "Determinants and Effects of Direct Foreign Investment in Code d'Ivoire, Morocco and Venezuela," in M. Roberts and J. Tybout (eds.), *Industrial Evolution in Developing Countries,* Oxford University Press.
Hecht, Y., A. Razin, and N. Shinar, (2003), "Interrelations of Inbound Capital Flows and Domestic Investment and Growth," Bank of Israel, Foreign Currency Activity Department, *Issues in Foreign Currency,* Discussion Paper 2003.01 (Hebrew).
Levine, Y., and Y. Menashe (2010), "Long-Term and Short-Term Relations in Business-Sector Investment in Israel, 2008–68," Bank of Israel Research Department, Discussion Paper (forthcoming) (Hebrew).
Romer, P. (1993), "Idea Gaps and Object Gaps in Economic Development," *Journal of Monetary Economics 32,* No. 3 (December).

Box 2.2
The effect of the recession on the household saving rate

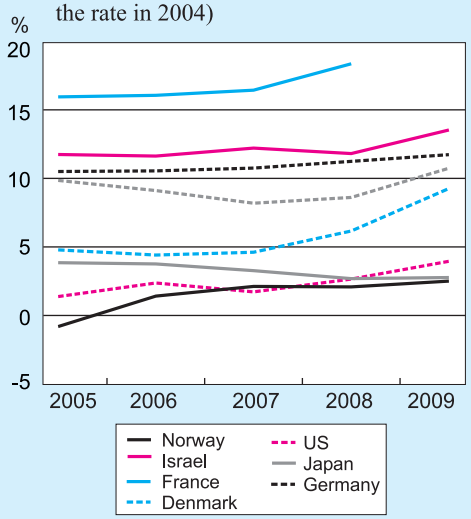
- The household saving rate has been increasing since 2008.
- Other countries also posted increases in household's saving rates in 2008 and 2009.
- The increase in 2008 originated in an increase in the saving rates of the highest quintiles only but is not related to the head of household's employment status.
- There is some evidence of precautionary saving, which induced households to save a larger share of their income in 2008 due to uncertainty about future employment.

The recession that began to have its impact in early 2008 affected households at several levels. The public's portfolio of financial assets lost value during the year, mainly due to steep decreases in the equity and corporate-bond markets coupled with a downturn in employment that was manifested, from the second half of 2008, in decreases in number of persons employed, weekly hours worked, and real wage per employee post. In contrast, the lowering of the interest rate, which made borrowing less expensive, and the decrease in oil prices encouraged real economic activity.

These effects reduced aggregate real disposable wage income and private consumption in the second half of 2008. However, given the growth trend that typified the first half of 008, examination of the annual data shows increases in these variables. The share of saving in wage income increased during the crisis both in annual terms and in each of the half-years, as happened in other countries during that time (Figure 1).[1]

Examining the annual data at the household level[22] also reveals an increase in real disposable monetary income, real monetary private consumption, and monetary saving rate between 2007 and 2008, both on average among all households and by income quintiles and employment status (employed/unemployed). A more in-depth observation of the changes in saving rates shows that most of the increase was generated by persons of high income. When the saving rates are compared on the basis of employment status, however, the change is found to trace to identical increases, of around 10 percent, in the saving rates of the employed and the unemployed populations. Furthermore, the household characteristics of these groups did not change substantially. Thus, the increase in saving rates cannot be attributed to changes in the composition of employee/unemployed persons due to the crisis.

Figure 1
Rate of Saving out of Wage Income in Selected Countries 2004-09
(difference in percentage points from the rate in 2004)



SOURCE: Based on Economic Outlook No. 86, December 2009, Annual Projections for OECD Countries and Central Bureau of Statistics data.

According to the permanent-income hypothesis, saving rates are

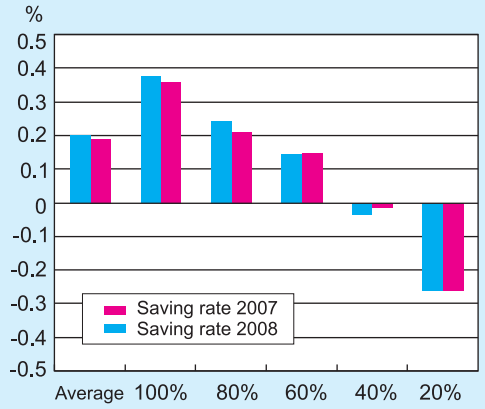
[1] The figure merges data that define the saving rate in different ways. (1) a definition of Israel's saving rate based on *National Accounts* data, relating to disposable income from wage less private consumption excluding durable goods and imputation of housing services; (2) a definition of Israel's saving rate based on the *Household Expenditure Survey*, relating to total disposable monetary income less private monetary consumption; (3) the saving rate in other countries, relating to total disposable income less private consumption of households and non-profit organizations that provide services to households.

[2] The transition from *National Accounts* data to *Household Expenditure Survey* data also affects the definition of the variables. The main difference is that the first-mentioned source relates to wage income only whereas the second source relates to total income from wage and from capital alike.

said to be correlated positively with income and, due to consumption smoothing, the correlation should get stronger insofar as the changes in income are perceived as more temporary. Since the saving rate increased during the crisis, the existence of a precautionary saving motive, causing employed individuals to save a larger share of their income due to uncertainty about their future employment, should be investigated. To perform this investigation, we examined the differential effects of the crisis on the composition of consumption and the saving rates of people who work in different sub-industries.[3] The hypothesis examined is whether a downturn in a given sub-industry reduces consumption and increases the saving rates of households whose heads remain employed in the sub-industry. We developed several indicators of changes in employment between 2007 and 2008: (1) the rate of change in quarterly employment; (2) the rate of change in employees' weekly hours worked; and (3) the rate of change in real monthly net wage per employee post. Since the wage decreases originate were to a great extent due to the hiring of low-wage workers and not only from wage erosion and reduction of bonuses, the focus is not on the income effect of wage reduction, which is expected to be relatively weak, but on the sub-industry's vulnerability to the crisis.

The empirical analysis[4] examines the effects of each employment indicator on the change in consumption, the amount of savings, and the saving rates of the average household in each sub-industry (62 sub-industries) between 2007 and 2008. The results show a low-significance positive relation of the three employment indicators to consumption and a low-significance negative relation to the amount of savings and the saving rates. In particular, the examination of the explanatory variables that proved to be the

Figure 2
Money Saving Rate in the Quintiles of Households of Working Age by Net Income per Standard Person
(NIS, in constant terms, base year 2007)



SOURCE: Based on Central Bureau of Statistics data.

[3] Each sub-industry was weighted by its number of employees, and the effects of both structural changes in the sub-industry due to the decrease in employment during the crisis, as well as the characteristics of the sub-industry before the crisis were neutralized (i.e., employment volatility and the average income of each sub-industry).

[4] The data were taken from the *Labor Force* and *Household Expenditure* Surveys for 2007–08.

most significant[5] shows that a combined decrease of 1 percent in the number of persons employed and 1 percent in wage in a sub-industry induces an increase of about one half percent in the saving rate; that a 1 percent decrease in sub-industry wage induces an NIS 30 decline in monthly private consumption; and that a 1 percent decrease in sub-industry employment induces an NIS 45 increase in the monthly savings of persons employed in the sub-industry, the other explanatory variables held constant. The reason for the low significance of the employment indicators may relate to the fact that the examination was performed on annual data. Since the first half of 2008 was characterized by a high level of growth, and the global slowdown began to be felt only in the second half of the year, the 2008 data actually capture contrasting trends.

[5] The significance of these variables is >15%; the only explanatory variable of 5% significance is change in monthly wage in the private-consumption change regression. Furthermore, some multicollinearity was found between the change in employment and the change in wage in the change-in-saving-rate regression. Contrary to expectations, however, no strong multicollinearity was found between the variable of change in hours worked and change in monthly wage despite the expected relation between them (the correlation of these variables stands at 0.29), evidently because the reduction of hours worked was imposed chiefly at the expense of vacation days.

5. THE PRINCIPAL INDUSTRIES

I. Main developments

The impact of the global recession reflected in all principal industries in late 2008 and early 2009. In most industries, activity began to contract by the last quarter of 2008 due to falling global demand, uncertainty, and declining income. When the global recovery began in the second half of 2009, most industries started growing again due to increases in export and domestic sales.

Manufacturing was the main industry affected by the crisis. Most of the effect on commerce and services was already felt in 2008.

Due to the very steep downturn in global demand for goods, manufacturing was the main casualty of the crisis, especially given the high share of exports in its activity—around 40 percent. The effect of the crisis on the services was milder because global trade in services contracted somewhat less aggressively than trade in goods and because the share of exports in service activity in Israel—20 percent—is much smaller than the share of exports in manufacturing. Furthermore, most of the damage to the service industries was already manifested in 2008, probably due to the financial crisis and fears that it would worsen and due to the blow to consumer confidence that preceded the real manifestations of the crisis.

The perceptible blow of the crisis in manufacturing, coupled with the rapid response of producers in this sector to the developments, was mirrored in a sharp decrease in manufacturing employment; therefore, this sector contributed more than

any other to the increase in the unemployment rate.[30] The increase in employment in the nontradable services attenuated the upturn in unemployment, giving evidence of the external origins of the crisis.

The construction industry, whose activity is primarily local, is contributing to the stabilization of economic activity, which has contracted due to global shocks.

The mild damage to construction product reflects the industry's relative resilience in the current crisis and constitutes a domestic contribution to the stabilization of total economic activity, which contracted due to the exogenous shocks. The industry's performance belied early concerns about a significant downturn in activity—from the demand side due to the economic slump and from the supply side due to an expected credit crunch. The combination of an appreciable increase in housing prices, the downturn in prices of inputs, and efficiency processes in the review year boosted profitability and, by so doing, alleviated credit distress in the homebuilding sector. Analysis of the components of product elicits the same picture, showing that private-sector residential construction picked up as against a decrease in nonresidential construction and infrastructure work, most of which represents public-sector activity. Nevertheless, the number of housing starts did not increase, for reasons including the effect of financing difficulties on the supply side.

Transport industry product, constituting for 6 percent of business-sector product, fell steeply due to the global economic crisis and sustained greater damage than most other industries. The decline stopped during the second quarter of the year and activity improved in the second half. The decrease in activity lowered real wages in the industry and embraced all sub-industries.

Land-transport product contracted due to the downturn in economic activity and, in particular, the decrease in employment in industries populated by poorly schooled workers—those who ride buses—and inbound tourism, which is intensive in consumption of public-transit and taxi services. Air and sea transport product contracted due to the strong downturn in activity—shipping of freight and transport of passengers to and from Israel and by Israeli firms on international lines—in late 2008 and early 2009.

Communication-industry product, constituting 4 percent of business-sector product, increased by 1.9 percent in the review year due to upturns in use and the introduction of new products in the Internet and mobile-telephony sectors. Industry labor input expanded by 4.2 percent and real wages climbed by 6.2 percent after falling by nearly 4 percent in 2008.

II. Developments in selected industries

a. Manufacturing

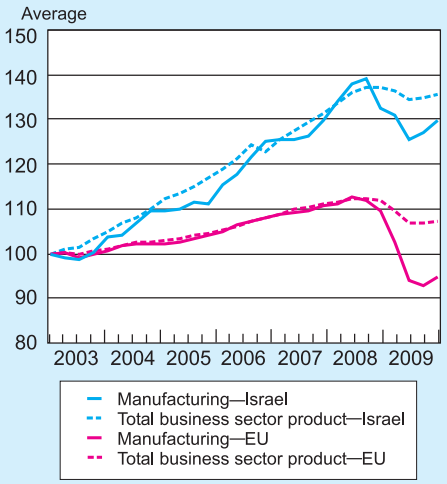
Manufacturing product, constituting around one-fifth of business-sector product, declined by 5.9 percent in 2009 due to the global economic crisis and was the hardest-hit sector of the economy (Figure 2.11). The first indications of contraction in manufacturing activity surfaced in the second half of 2008, following comprehensive

[30] For expanded discussion, see Chapter 5, "The Labor Market," and Tables 5.4–5.6 in particular.

and protracted growth since 2004. During the past year, the decrease in manufacturing production—which began in the last quarter of 2008—came to a halt and was replaced by growth in the second half of the year.

Nearly all the decline in manufacturing production reflects the impact of the global crisis. Indeed, both the first indications of the effect of the crisis on manufacturing and the timing of the recovery largely paralleled developments in the European Union countries. Furthermore, in the EU, as in Israel, the global crisis inflicted more damage on manufacturing than on total business-sector product.

Figure 2.11
Manufacturing and Total Business Sector Product Israel and the EU, 2003-09



SOURCE: Based on Central Bureau of Statistics data.

The fall in manufacturing exports at the end of 2008 and beginning of 2009 was almost completely the result of the global crisis. During 2009, production began to recover, as it did worldwide.

The grave effect of the crisis on the manufacturing sector, coupled with manufacturers' rapid response to these developments, was reflected in manufacturing's strong contribution to the increase in the national unemployment rate and the decline in real wages from employees' standpoint. From the manufacturers' standpoint, real wages hardly changed during the year.[31] Real currency depreciation and the improvement in terms of trade during the year softened the blow of the crisis to this sector slightly and conduced to an increase in output once global demand began to recover.

The financial crisis that gripped the world affected manufacturing in two main ways, one direct and the other indirect. First, the world crisis dampened real global activity and, in particular, global trade. The downturn in global trade and demand impacted directly on most of Israel's export industries and on the industries that provide them raw materials. Second, the global financial crisis and fears that it would spread to Israel, coupled with the adverse effects on the export industries, caused investments and employment to contract more quickly than in the past (as described at length in Chapter 5, "The Labor Market"), including layoffs, cutbacks in hours worked, and reduction of wages. These effects, together with the devaluation of the public's portfolio of financial assets, induced a rapid decline in domestic demand—private consumption and investment—which, in turn, caused manufacturing industries' domestic sales to decrease.

The global financial crisis affected the manufacturing industry directly as a result of the drop in global demand, which affected most of the export industries, and indirectly as a result of the decrease in the public's wealth and income, which led to a contraction of local demand.

In addition to the deceleration of domestic and external demand, the sense of growing risk weighed on manufacturing activity, as reflected in the widening of spreads and the contraction of nonbank credit sources—especially in late 2008 and

[31] The change in real wage from employees' standpoint is manifested in the change in nominal wage deflated by the Consumer Price Index; the change in real wage from manufacturers' perspective is reflected in the change in wage deflated by the manufacturing outputs price index.

Table 2.7
The Principal Industries, 2004–09

(rates of change, at constant prices)

	Change from 2008 to 2009								2004–2008, annual averages					
			Change in product per half year, in annual terms											
	Industry weights[a]	Product	I	II	Labor input	Capital	Monthly wage per employee post[a]	Industry weights in 1998[b]	Product	Labor input	Capital	Total factor productivity	Labor productivity	Real wage per employee post
Manufacturing	23.8	-5.9	-10.2	0.0	-6.2	6.3	-2.0	24.5	8.0	2.8	3.9	4.3	5.1	1.6
Agriculture	2.3	0.0	4.2	5.3	-2.6	1.3	0.0	2.8	2.0	1.3	1.1	-0.9	0.7	0.9
Transport and communications	9.3	-4.0	-10.7	-0.8	1.3	4.1	0.1	11.2	3.9	3.2	3.3	1.0	0.7	-0.5
Construction	6.5	-1.0	1.5	-0.2	-2.8	7.4	-1.2	6.9	3.6	2.2	4.5	1.2	1.4	0.8
Electricity and water	2.4	-5.5	-6.9	-14.3	-5.7	0.9	-3.2	3.3	4.5	-0.2	2.0	7.3	4.7	1.1
Commerce and business services[c]	55.6	2.2	-2.1	3.4	0.6	5.2	-4.3	51.7	6.8	4.5	3.5	2.2	2.1	1.2
Business sector product	100.0	-0.2	-2.7	1.5	-1.1	5.2	-0.8	100.0	5.8	3.7	3.2	2.1	2.0	3.1

[a] Excluding imputed banking services, errors and omissions.

[b] Excluding Palestinians and foreign workers.

[c] Including commerce, catering and hotel services, and financial, business and personal services.

SOURCE: Based on Central Bureau of Statistics data.

early 2009. Consequently, manufacturing firms found it difficult to raise sources of finance for their activity; evidence of this is the worsening of the financing constraint to activity, as reported by small firms in particular in the Bank of Israel Companies Survey. The crunch eased slightly as the year progressed and, at the present writing, it seems to be the low level of demand for credit, occasioned by the sluggish level of activity, that is limiting the increase in credit.

The effect of the global crisis on domestic and external demand

The magnitude of the effect on the manufacturing industry during the last crisis is explained by the sharp and rapid fall in manufacturing exports, whose share in the activity of the manufacturing industry is larger than its share in economic activity as a whole.

Manufacturing usually responds to macroeconomic business cycles more intensively than other industries do, and this stood out during the recent global crisis. The blow to manufacturing production relative to business-sector product was greater in this crisis than in the one that began in 2001 (Table 2.8). A comparison of the intensity of the damage to manufacturing in the current crisis with only the beginning of the previous crisis—which lasted roughly as long as the recent crisis—shows roughly the same extent of damage to manufacturing as to the business sector. Consequently, the main reason for the more severe blow to manufacturing this time is that the latest crisis was sharp and fast—only two quarters of declining business-sector product—whereas the recession that began at the end of 2000 lasted for more than two years. The length of the previous crisis, especially against the background of the eruption of the second intifada, cascaded the damage to additional industries due to the protracted attack on the public's income and the downturn in personal security.

Another explanation for the intensity of the damage to manufacturing in the recent crisis is the steep and rapid decline in manufacturing exports, surpassing the cumulative rate during the three years of the previous crisis. The steeper decrease in global trade in the recent crisis took a toll on exports, which account for a larger share in manufacturing activity than in overall economic activity for two reasons: the hefty share of export sales in total manufacturing production and the sale of many non-exporting manufacturing firms' output to exporting firms as raw materials.

Yet another reason for the severe effect of the crisis on manufacturing was the downturn in nonresidential investment. Some manufacturing production is based on demand for capital goods, the sales of which are very sensitive to changes in the economic situation and the level of uncertainty. The worsening of the economic environment and the increase in uncertainty caused nonresidential investment, especially in manufacturing, to fall off badly.

Finally, some manufacturing output is comprised of durable goods or of raw materials for the manufacture of such goods in Israel and abroad. During a recession, consumption of durable goods falls more steeply than that of current-consumption products. For example, furniture industry output contracted by 10 percent in 2009, whereas the output of the food, beverage, and tobacco industry hardly changed. This helps to explain the greater decline in the consumption of manufacturing goods than in total private consumption during the review year—a decline that made the blow to manufacturing output even worse.

Table 2.8

Manufacturing Activity in 2009 Compared with Total Business Sector Activity and Compared with the Recession in 2001–03

			2001-03 crisisd	
	2009	2008–09 crisis[a,b]	Beginning of the crisis[c]	
Source of shock	-	External	External	External and internal
Period (months)	-	6	6	36
Manufacturing production	-7.0	-6.6	-5.9	-8.9
Manufacturing exportsc	-13.4	-13.0	-3.9	-10.8
Domestic sales	-9.5	-6.2	-3.1	-9.0
Consumption of manufactured goods	-6.8	-9.6	0.3	-14.0
Investment in manufacturing	-24.2	-19.1	-3.6	-20.6
Business sector product	-1.3	-2.0	-0.8	-5.3
Goods and services exportse	-13.6	-13.8	-16.0	-24.5
Total private consumption	0.6	-1.3	1.7	1.6
Nonresidential investment	-11.3	-8.4	8.3	-13.4

[a] Changes in a crisis express the impact during the period, and is not an annual rate.

[b] Changes in the 2008–09 crisis are calculated as the difference between 2008:Q3 and 2009: Q1.

[c] Changes at the beginning of the 2001–03 crisis are calculated as the difference between 2000:Q3 and 2001:Q1.

[d] Changes in the whole 2001–03 crisis are calculated as the difference between 2000:Q3 and 2003:Q3.

[e] Changes in exports are at constant shekel prices.

SOURCE: Based on Central Bureau of Statistics data.

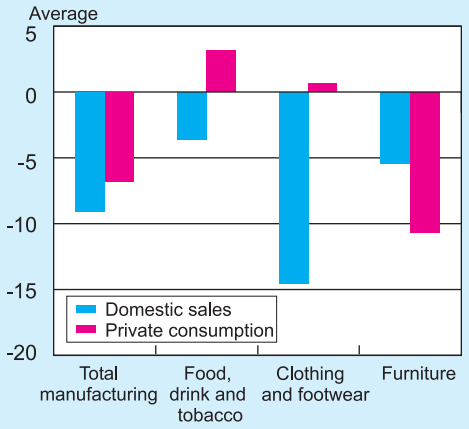
The fall in global demand affected the volume of Israel's manufacturing exports and that of the developed countries to a similar extent. The effect on Israeli exports would have been more serious if the total exports of the electronic components industry had not grown significantly.

Industrial exports, as stated, receded in 2009 due to the decrease in global demand, reflected in downturns in global and, especially, U.S. trade (Table 2.9). The contraction of global demand took much the same toll on Israel's manufacturing exports as it did on the exports of advanced economies.[32] The decrease in Israel's total manufacturing exports would have been even greater had exports of electronic components not accelerated, given the steeper decrease in the exports of mixed-technology industries such as rubber and plastics and despite a milder downturn in the exports of traditional industries such as textiles. For elaboration on this topic, see Table 7.3 in the balance-of-payments chapter and discussion *ad loc*.

Domestic sales fell in 2009 at an abrupt 9.5 percent pace and was manifested in most sub-industries at all levels of technology intensity. The decrease was most precipitous

[32] A 16 percent decrease. Source: IMF, *World Economic Outlook*.

Figure 2.12
Domestic Sales and Private Consumption of Manufactured Goods, 2009



SOURCE: Based on Central Bureau of Statistics data.

Private consumption of durable goods fell sharply while private current consumption grew, despite the recession; this differed from the trend in the local sales of the manufacturing industry, which were also affected by changes in the relative prices of imports and local production.

in private consumption of furniture—a durable good—whereas this industry's domestic sales fell at a much milder pace. In contrast, private consumption of food, beverages, and tobacco—current-consumption products—increased despite the recession while these industries' domestic sales edged downward. Some of the difference in the behavior of consumption relative to domestic sales traces to change in the various products' relative prices in terms of imports versus domestic manufacture. Thus, prices of imported furniture increased relative to those of domestic furniture by more than 10 percent while the relative prices of beverages were basically unchanged. In clothing and footwear, however, the development of relative prices does not explain the increase in the share of imports in consumption. Instead, it marks the continuation of an upward trend in the use of imported substitutes for domestically manufactured clothing and footwear, it being difficult to compete over time with labor-intensive countries in the production of these goods.

Table 2.9
Israel's Total Exports and Total US Trade

(dollars, rate of change, percent)

	Share of manufactured exports	2008			2009		
		US trade	Israel's total export		US trade	Israel's total export $	
		($)	($)	Real	($)	($)	Real
	100	8.6	18.6	8.6	-25.8	-14.5	-12.3
Total manufactured exports	89	9.0	19.5	9.0	-25.9	-21.5	-20.4
Total excl. chemicals oil and pharmaceurical	77	3.3	0.3	0.6	-15.1	9.2	11.0
Electronics	24	5.3	0.6	0.6	-12.3	-20.5	-18.5
	11	-3.2	-1.3	0.1	-24.0	165.6	164.3
Industrial chemicals and fertilizers	11	16.5	46.6	24.4	-11.7	-35.9	-23.4
Pharmaceuticals	12	12.8	36.7	31.3	7.2	-6.7	-13.8
Rubber and plastics	5	4.0	4.0	-2.1	-16.5	-28.2	-26.2
Textiles	2	-2.2	2.1	-1.5	-16.1	-12.7	-3.1

SOURCE: Based on Central Bureau of Statistics and US foreign trade data.

Factor inputs, productivity, and profitability

The steep contraction of manufacturing production, surpassing the downturn in GDP, was mirrored by a steep decrease in manufacturing factor inputs (Table 2.10). Labor input responded with a rapid decrease in hours worked, as in previous crises, but the number of employees in manufacturing also decreased immediately and rapidly, as it had not in the past crisis. Manufacturing investment also fell back rapidly and precipitously, exceeding in its intensity the steep decrease in manufacturing investment in 2001.

The immediate and rapid contraction in factors of production in reaction to the crisis, which differed from the situation in the previous recession, was primarily the result of the gradual development of the last recession as compared to the sudden onset of the previous one.

The rapid downturn in employment, coupled with the swift and sharp contraction of investment—unlike the behavior of these parameters in the previous recession—originated mainly in the gradual development of the recent recession as against the suddenness of the previous one, with the bursting of the high-tech bubble and the eruption of the intifada. The recent recession could be planned and prepared for in advance, since expectations concerning it had amassed gradually.[33]

As for the development of factor inputs parsed by technology intensity, even though high-tech industries' production increased, they suffered decreases in employment and investment. The reason, evidently, is that firms engaging in electronics—an export-oriented industry—foresaw a deep and lengthy crisis in international markets and

Table 2.10
Selected Indices of Manufacturing Activity, 2009

(change, percent)

		Industries		
	Total manufacturing	Low-tech	Medium-high and medium-low tech	High-tech
Production	-7.5	-11.3	-9.8	-0.1
Employees	-4.8	-4.4	-3	-6
Labor input (hours)	-7.6	-6.8	-5	-9.6
Nominal hourly wage cost	4.1	2.6	6	3.9
Unit labor cost	4	7.4	11.7	-5.2
Total productivity	-6.0	-7.6	-9.7	1.1
Labor productivity	0.1	-4	-5.4	11.3
Total gross capital stock beginning of year	6.7	3	5.8	13
Investments	-33	-1.6	-16.7	-68.7
Export prices relative to manufacturing output prices (real exchange rate)	10.5	-	-	-
Export prices relative to price of imported inputs (terms of trade)	24.5	-	-	-

SOURCE: Export data—National Accounts; other data—based on Central Bureau of Statistics industry surveys.

[33] For expanded discussion of the labor market's rapid response, see *Recent Economic Developments 125, October 2009*.

therefore took meaningful action on wages, employment, and capital stock. Amid the twin developments of the steep decrease in factor inputs and a negligible effect on total output, these industries' labor productivity and total productivity increased while these parameters in the other manufacturing industries tumbled.

Production of electronic components surged in 2009 due to the large investment that was made in this industry in 2008.[34] This explains why the output of high-tech industries did not decrease: had it not been for the steep upturn in the output of this industry, production and total productivity in high-tech electronics would have decreased at roughly the same rate as the rest of manufacturing. Investment in the electronics industry, however, tailed off in 2009, largely because investment performance this year was measured against the extraordinary level in 2008.

Manufacturing terms of trade—the relation between export prices and imported-inputs prices (excluding fuel)—improved greatly during the year. The improvement may have slightly attenuated the decrease in manufacturing exports during the year and increased exports once global demand began to recover.

Recovery of manufacturing during the year

Manufacturing production stopped falling in the second half of 2009. The ensuing recovery embraced industries at all levels of technological intensity and was led by mixed-technology industries, especially chemicals and petroleum and rubber and plastics. Much of these industries' output is raw material for export, and their recovery traces to the increase in exports that followed the rebounding of demand for these products abroad.

Although no substantial increase is observable to date in the output of high-tech industries, the foreign-trade data—which showed a considerable upturn in exports—and the data from the Companies Survey indicated an increase in demand abroad, especially in the fourth quarter of 2009. The Companies Survey data concerning an increase in export orders in early 2010 show that a continued increase in activity is expected.

It is possible that the real depreciation during 2009 contributed to the recovery of exports during the second half of the year.

The protracted appreciation of the currency in the past two years had an adverse effect on export profitability and the competitiveness of manufacturing exports. The increase in export prices relative to the industrial production prices (excluding fuel) by more than 10 percent (real depreciation) in 2009, however, may have contributed to the recovery of exports during the year. The activity of traditional industries, which are more sensitive to the exchange rate, increased only mildly toward year's end, despite the upturn in global demand for these industries' products.[35] The mild extent of the upturn of activity in these industries is part of a long-term process of decline in their weight in total manufacturing activity.

[34] The opening of Intel's new plant.

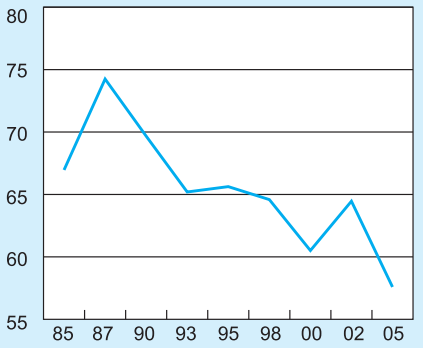
[35] For further discussion of the exchange rate and its effects, see the first part of this chapter and Chapter 7—"The Balance of Payments."

Box 2.3

Factors that determine the rate of return to labor[1] in manufacturing: analysis by sub-industries

The rate of return to labor in manufacturing decreased from two-thirds in 1985 to 57 percent in 2005 (Figure 1), and partial data[2] show that it continued to fall until 2009. This box proposes possible explanations for the decrease by performing a sub-industry analysis of the rate of return to labor.

Figure 1
Return to Labor in Manufacturing
Selected Years from 1985 to 2005



SOURCE: Based on Central Bureau of Statistics data.

The decrease in the rate of return to labor in manufacturing is part of its decline in the economy at large since the late 1980s.[3] It may owe its origins to structural changes in the economy or to cyclical factors. That is, the rate of return to labor is usually counter-cyclical—rising during recessions and falling at the initial stage of a strong recovery. For example, the rate increased during the recession that began in 2001—bucking the general downward trend—and receded with greater intensity when the economy returned to a trajectory of growth.

Effect of the industrial composition of manufacturing on the rate of return to labor

During the review period chosen (1985–2005), the share of high-tech industries—which boast a high rate of return to labor—increased steadily at the expense of the rest of the manufacturing sector. The effect of this change on the rate of return to labor, however, was negligible: if only the share of each of the industry groups—high-tech, mixed, and traditional—had changed, then the rate of return to labor in 2005 would have increased by only 1 percentage point. The main reason for the negligible effect of the change in composition is that the proportional growth of high-tech industries took place mainly at the expense

[1] The rate of return to labor is defined as total wage payments to employees plus an imputation of the return to labor of the self-employed, divided by GDP. Here, the rate was calculated on the basis of labor wage and salary data and GDP data from tables of the manufacturing economic accounts, as shown in the Manufacturing Surveys over the years.

[2] The Manufacturing Surveys are published at a four-year lag; the most recent one at the present writing pertains to 2005. Partial data from a sample of manufacturing surveys allowed us to calculate the rate of return in manufacturing in subsequent years as well.

[3] See Box 2.2 in Bank of Israel *Annual Report* for 2007.

of the traditional industries, in which, too, the rate of return at the starting point (1985) was relatively high.

A more detailed examination of the change in the composition of manufacturing reveals a proportional increase in sub-industries (two-digit classification level) that offer a lower return to labor: if only the industrial composition of manufacturing had changed during the period, the rate of return to labor in manufacturing would have declined by 2 percentage points. In sum—change in the composition of manufacturing sector made a minor contribution and cannot explain the 10 percentage-point decrease in the rate of return to labor.

Sub-industry analysis of the change in return to labor

The protracted decrease in the rate of return to labor focused on mixed and traditional industries. Most of the decline in these industries occurred in the first half of the 1990s; the pace of the decline has eased considerably since 1995. The decrease of the rate of return to labor in mixed-technology industries since 2000 reflects, in the main, the steep decrease of this parameter in chemicals and petroleum; excluding this industry, the decline was much milder.

A more detailed examination of the development of the return to labor shows that the industries that posted the most conspicuous decreases were mining and quarrying, metal products, and chemicals and petroleum—pharmaceuticals in particular. These industries account for 60 percent of the decline in return to labor in manufacturing at large.

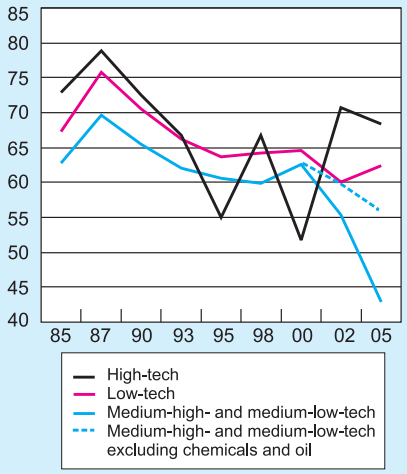
The decrease in the return to labor in mining and quarrying may stem from privatizations in this industry in 1992–99; such processes sometimes attenuate labor's bargaining power. As for the precipitous decrease in return to labor in metal products and pharmaceuticals, the most likely explanation is related to the specific knowledge that the industry's enterprises have accumulated; since expenditure on knowledge is hard to estimate, it is sometimes recorded as part of product and, for this reason, introduces a downward bias in the rate of return to labor.

The trade-liberalization process and the intensification of competition from developing countries in international markets may have had a downward effect on the return to labor in manufacturing (Guscina, 2006, and Kristal, 2007). In industries that coped with the trade liberalization successfully—textiles and clothing; leather and footwear; lumber, furniture and paper—the return to labor did not change during the review period (Figure 3)[4] while it fell in the rest of manufacturing. One possible explanation for this is that producers in industries exposed to competing imports lowered prices and wages in tandem, whereas

[4] "The Exposure of the Israeli Economy and Its Influence on Import Composition, 1988–2000," Central Bureau of Statistics, Publication 3/2003.

those in other industries benefited from a decrease in wages without having to lower their prices concurrently. The export sector may also have benefited from the opening of new markets thanks to the trade agreements that were concluded during the liberalization.[5] Figure 3 supports this possibility by showing that the return to labor in the export sector—industries that export more than 40 percent of their output—fell more steeply than it did the rest of manufacturing, especially in the 1990s, a time of processes that made the economy more open to foreign markets.

Figure 2
Return to Labor in the Manufacturing Industry, Selected Years from 1985 to 2005, by Technological Intensity



SOURCE: Based on Central Bureau of Statistics data.

The capital/product ratio in manufacturing increased from 2 at the beginning of the 1990s to more than 2.5 in 2005, coinciding with the decrease in the rate of return to labor during this time. It is hard to draw confident inferences from economic theory about a connection between these developments. On the basis of results obtained under classical assumptions of the production function of a closed economy—a Cobb-Douglas function with constant return to scale—no connection between them should be expected. However, if one assumes a different production function[6] or bases the analysis on certain international-trade series that are better suited to an open economy such as Israel's, one obtains a different result: an increase in the quantity of capital in a small economy that trades with the world will induce an increase in the share of capital-intensive industries and the share of capital in income, because the relative price of factor inputs is dictated by the global price of products.[7] According to this approach, the change in composition of the sector leads to the expectation that the return to labor will decline.

The findings presented here do not point to a connection between the capital/product ratio and the rate of return to labor, since the change in industrial composition had only a minor downward effect on the rate. Furthermore, the

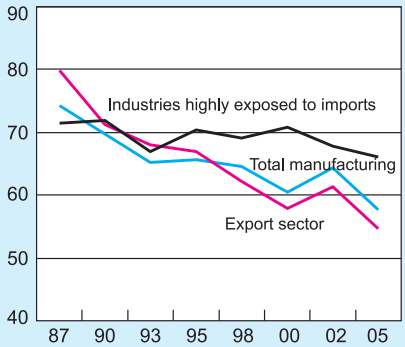
[5] For expanded discussion of the effect of the trade agreements, see *Recent Economic Developments 1*26, Part 2, "The Market Share of Israeli Export Goods."

[6] Saint-Paul Bentoliola et al. (2003) made these assumptions and obtained this outcome; they also found empirical evidence of the existence of an inverse relation between the variables in an investigation of a panel of OECD countries.

[7] Rybczynsky (1955).

proposition of a production function that would elicit a connection between the capital/product ratio and the rate of return to labor is inconsistent with the fact that this rate in the high-tech industries was basically unchanged during the review period; in fact, contrarily, it was in this type of manufacturing that the capital/product ratio decreased the most.

Figure 3
Return to Labor in Manufacturing, the Export Sector, and the Industries Exposed to Imports, 1987-2005[a]



[a] The first year in the figure is 1987 as that is the first year for which data on the return to labor in the export sector are available.

SOURCE: Based on Central Bureau of Statistics data.

Summing up, much of the decrease in the rate of return to labor in manufacturing reflects a steep decline that is specific to a small number of industries. The precipitous downturn in the return to labor in mining and quarrying, possibly against the background of privatization, and in metal products and pharmaceuticals—industries that make use of specific knowledge—account for 60 percent of the total decrease in the rate of return in manufacturing at large. The rest of the falloff may be explained by the trade liberalization, which lowered the return to labor in industries that were not exposed to competing imports, since in these industries the liberalization process applied downward pressure on wages without doing the same to prices. This was especially true in the export industries, which benefited during the 1990s from the opening of new markets. The findings also show that the change in the composition of manufacturing explains only a little of the decrease and that there is no evidence of a connection between an increase in the capital/product ratio and a decline in the rate of return to labor in manufacturing.

b. Construction

In most developed economies, the construction (real estate) industry was focal in the global crisis and was one of its main causes. Even though this industry developed differently in Israel over the past two decades, one might have expected the global slump to take a major toll on its activity in Israel in 2009. On the demand side, the expectation of less income and job security fueled the propensity to precautionary saving and less investment, in particular in a noteworthy capital good such as real estate, which also entails long-term debts. On the supply side, a downturn should have been expected in view of the credit crunch, especially in industry typified by high rates of leveraging.

The recession was hardly felt in the construction industry, which was revealed to be relatively resilient, in spite of the earlier concerns surrounding an expected credit crisis.

Nevertheless, construction activity did not slump perceptibly in 2009 and proved relatively resilient to the current crisis. Domestic construction product decreased by only 1 percent, a smaller downturn than in other real industries in the business sector and less than in the corresponding industry abroad. The mild downturn of product did not mark a dramatic change from 2008, since the industry grew by only 1.5 percent that year. Furthermore, the dip in product was occasioned mainly by a decrease in activity at public initiative, whereas activity at private initiative, especially in housing construction investment, continued to grow. Housing prices rose vigorously—an outlier in historical terms—and the number of housing transactions increased impressively from the second quarter after two quarters of decline (following the Lehman Brothers collapse). The combination of higher housing prices and lower prices of construction inputs enhanced contractors' earnings, thereby easing the financing difficulties in the industry.

Table 2.11
Construction, Selected Data, 1997-2009

	Level in 2009 (NIS million, 2005 prices)	Annual average change (percent)				
		1997–2002	2003–06	2007	2008	2009
Total output	57.1	-4.9	1.0	4.1	0.2	-0.5
of which Residential (including renovations)	32.3	-3.7	3.7	2.8	3.6	4.1
Nonresidential	12.2	-5.3	-11.9	9.1	4.0	-2.6
Other construction (earthworks and defence-related)	12.6	1.8	1.3	6.7	-11.4	-5.3
Apartments under construction ('000)	60.6	-5.8	-3.3	1.5	1.9	0.3
Residential starts ('000 units)	32.1	-7.6	-2.5	-1.4	4.5	0.4
Residential completions ('000 units)	31.7	-8.9	-7.2	-5.0	3.8	4.2
Apartments offered for sale ('000)	12.3		-3.9	-14.3	-1.1	-27.5
Construction product	28.7	-2.7	-0.8	4.5	1.6	-1.0
Total employees ('000)[a]	203.7	-3.2	-3.8	9.7	3.9	-4.7
Real wage per employee post[b] (NIS, at 2004 prices)	6402	1.1	0.2	2.7	1.9	-1.0
Apartment prices relative to CPI exl. housing	-	-2.2	-3.0	-2.7	2.5	12.5
Rent prices relative to CPI excl. housing	-	2.5	-3.4	-3.4	-1.5	11.5
Input prices relative to CPI	-	0.0	4.1	3.3	-0.6	-3.3
Average mortgage interest rate (annual average)	-	6.2	4.8	4.1	4.1	2.5

[a] Includes an estimate of unreported foreign workers.
[b] Until 2002, derived from the wages of Israelis and foreign workers; from 2002, Israelis only
SOURCE: Based on Central Bureau of Statistics and Ministry of Housing and Construction data.

(1) Activity

Analysis of the components of product shows that the mild decrease in activity originated chiefly in a downturn in activity at public-sector initiative, whereas activity at private-sector initiative continued to grow. Thus, building starts at public initiative continued to trend downward after cresting in the 1990s. Other types of construction work (earthwork including road building and defense construction), which account

The negative business cycle was reflected in non-residential construction while residential investment grew.

for about one-fourth of industry output and are typically initiated mostly by the public sector, decreased by 8 percent in real terms. Contrastingly, housing construction investment at private-sector initiative expanded by 4.5 percent, approximating its average growth rate in the previous two years—an impressive performance against the background of an ongoing economic slump and fears of serious credit constraint. The negative business cycle, however, was amply reflected in a real decrease in nonresidential construction investment—which accounts for around one-fourth of industry output and is mainly (90 percent) initiated by the private sector—and in nonresidential starts.[36] One may hypothesize from this that contractors/developers who do not specialize in dwellings and lack flexibility are more vulnerable to the current negative business cycle than their counterparts who specialize in homebuilding.

Despite the reinvigoration of the housing market, the number of starts and permits did not increase and actually declined slightly relative to the previous year[37] (although the decrease did not undershoot the range of ordinary fluctuations). There seemed to be two major reasons for this. The first is the inelasticity of short-term supply, which entails lengthy planning, approval, and marketing proceedings, among other things. (See discussion of the land reform below.) The second relates to financing difficulties: those who refrain from starting construction save on financing expenses and need not put up equity, whereas those who delay the completion of dwellings already under construction incur financing expenses. This situation is consistent with the increase in housing investment, especially when the chances of selling the dwellings increase, as happened in 2009.

(2) Prices

The increase in owned-housing prices that began in late 2007, after ten years of steady declines, continued in 2009. Real housing prices (deflated by the Consumer Price Index net of housing) rose by 12 percent on average after advancing by 2.5 percent in 2008 and by 20 percent during the year. The acceleration began in the second quarter, after the key rate was cut to near zero levels in the first quarter (see Chapters 3 and 4). Concurrently, the volume of transactions in first- and second-hand dwellings increased significantly (after falling steeply during the two preceding quarters of crisis) and the pace of new-dwelling sales picked up.[38] Rent levels also increased, but on total reckoning purchase prices rose almost two-thirds faster than rents in 2008–09.[39]

[36] In terms of area, the decrease in private-sector building starts was around one-third relative to 2008 and one-fourth relative to the previous two years' average. See also Statistical Appendix, Chapter 2, Table B34 (Table 2.A.34), available on the Bank's website, http://www.bankisrael.org.il

[37] In 2009, too, the share of owner-initiated housing starts (including buyers' groups) was about half of all starts at private-sector initiative (roughly 28,000 dwellings).

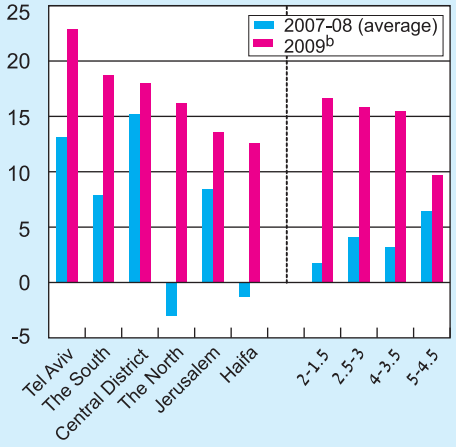
[38] The supply of new housing for sale fell from 11,000 dwellings in late 2008 to 8,000 in October 2009, reflecting the decrease in months of supply (based on the average rate of monthly sales) from 9.7 to 7.9. The number of months from the onset of construction until sale also fell, from 10 on average in 2008 to 9.2 in the review year.

[39] The share of renewed leases indexed to the USD continued to fall—to 15 percent in 2009 as against 85 percent in 2006 and 18 percent in 2008.

The rapid increase in housing prices this year included all areas of the country, with the prices of small apartments increasing more than those of large ones.

Presumably, many of the purchases and transactions were made for the portfolio (housing for investment) due to the search for an alternative yield, as opposed to the motive of buying a dwelling in which to live. Several phenomena support this rationale: (a) the rate of increase in prices began to accelerate after monetary interest was slashed to near zero in the first quarter of the year and paralleled the increase in equity prices. (b) The increase in prices in 2009 was not selective; it was evident in all parts of the country. The relative increase in the Northern and Southern districts—sparsely populated areas where demand is weak—was even greater than in Jerusalem and the Central District. Furthermore, the upturn in the prices of small dwellings (up to four rooms), which is typical of demand for investment motives (because small dwellings deliver a higher return than large dwellings) was stronger than the increase in the prices of large dwellings (Figure 2.13).[40] (c) In 2008–09 taken together, housing prices rose almost two-thirds more than housing rents. This disparity suggests that the relation between the two prices has been severed, although two years is a rather short period of time in which to determine this.[41] (d) Reports from the banks indicate that even though housing loans increased at a pace similar to the 2008 rate (but much faster than in 2004–07), the share of loans at interest based on the prime rate—which are usually directly affected by monetary policy—was dominant, influenced by the near-zero monetary interest rate. Consequently, the pass-through of monetary policy to mortgage-backed loans was full, in total contrast to ordinary non-housing bank loans. Thus, mortgage-backed consumer lending also increased perceptibly while outstanding loans to private individuals without mortgage backing decreased. It was this state of affairs that powered the increase in housing prices.

Figure 2.13
Owner-Occupied House Prices[a] by Size (number of rooms) and Locality,
(annual rate of change)



[a] Not adjusted for quality.
[b] 2009:Q3 compared with 2008:Q3

SOURCE: Based on Central Bureau of Statistics data.

[40] These are nominal prices, not deflated by quality. Accordingly, the change in these prices is different from that in prices in the index used for the Central Bureau of Statistics survey, which is quality-deflated.

[41] In countries that experienced real-estate bubbles, housing prices detached themselves from rent, the former rising and the latter falling. (See expanded discussion in Chapter 3, Box 3.1.)

(3) Factor inputs and profitability

Supply-side production costs continued to fall in 2009: average prices of factor inputs[42] declined by 3.3 percent in real terms, pursuant to a slight decrease in 2008 and an increase in 2003–07 at similar annual rates—influenced by the decline in commodity prices. Input prices also came down at a similar rate in the review year, for reasons including the effect of the decline in real wage.

The mild downturn in construction-industry production was accompanied by a percent decrease in industry employment. Therefore, production per worker rose by 3 percent (and by 2 percent per hour) after cresting in 2006. The composition of employment also changed, with fewer Israeli and foreign workers and more workers from the territories. (See also Appendix Table 2.35.) The decrease in hours worked was smaller because the number of hours put in by territories workers increased more than the numbers of such workers did. The downturn in employment was consistent with the decrease in production in 2009 and apparently occurred largely in nonresidential activity. However, it is inconsistent with findings from the Companies Survey that describe the shortage of skilled workers as the dominant supply constraint, since most of the decrease was in Israeli workers—4.5 percent.

Although there were fewer foreign workers in 2009 than in 2008, the government resolution concerning the elimination of such workers by 2012 (except experts) was not effectively implemented, since the total number of foreign workers remained far above the quota and the number that the downward trajectory dictates (Table 2.12). The enforcement problem relating to foreign workers recurs in regard to territories workers.

The data on land auctions by the Israel Lands Administration for residential construction indicate a slight decrease in 2009. In response to the upswing in prices, the Minister of Construction and Housing came out with large land auctions in September, November, and late December.[43] Excluding the last of these auctions, however, the amount of land offered was still slightly under the 2008 level and the multiannual

Table 2.12
Employment of Foreign Workers and Palestinians in the Construction Industry 2008-09

('000s)

	Foreign workers with permits[a]			Palestinians with permits	
	Quota	Actual	Total[b]	Quota	Total[b]
2008	9	10.5	37	14.3	26.6
2009	9	9.3	32	15.5	27.2

[a] Ministry of the Interior data.
[b] Central Bureau of Statistics data.

[42] Including raw materials and labor, not including land.
[43] In terms of number of dwellings, the auctions were 5,302, 5,859, and 6,459 in September, November, and late December, respectively.

Table 2.13
Indicators of Leverage in the Construction, Manufacturing, and Trade and Services Industries[a]

	Construction		Manufacturing		Trade and services	
	Business[a]	Non-financial business	Business[a]	Non-financial business	Business[a]	Non-financial business
Industry share of GDP[c]	6.5	10.5	23.8	38.5	65	43.4
Industry share of bank creditd	27.6	34.3	20.9	26.0	30.8	38.3
Bank credit share of GDP	4.3	3.3	0.9	0.7	0.5	0.9
Debt/capital ratio of quoted companiese		3.3		1.1		2.0
Debt/balance sheet ratio of quoted companies		68.6		49.3		57.6

[a] The data in the table do not differentiate between construction companies' activity in Israel and abroad.
[b] Not including electricity and water.
[c] For 2009.
[d] For 2009:Q3
[e] Correct to 2007:Q3.
Source:Based on Central Bureau of Statistics and Bank of Israel data.

average (around 16,000 dwellings); therefore, it sufficed only to keep the lag from worsening during the year. Since the last auction was announced in late December, it may at the most reflect some advance on the coming year as against the ordinary monthly distribution. Given the time-consuming nature of the planning and approval proceedings (two years or more), their effect on prices is not necessarily immediate; furthermore, it is rare for all the land offered in the auctions to be sold. As for the geographic distribution, about half of the auctioned land was in the Southern and Northern districts (not including Haifa), where demand is relatively low. However, the effect of this auctioning may be more significant than in the past, since prices increased in all districts.

Overall, the industry—especially its housing segment—became more profitable in 2009 due to the perceptible increase in housing prices, the decline in input prices, and the upturn in product per worker. The enhanced profitability was augmented by the easing of financing difficulties due to the increase in sales from inventory of dwellings coupled with a shorter lapse of time from the beginning of dwelling construction to dwelling sale. These developments benefited the industry and eased the credit crunch that might, according to expectations, have been especially serious in the construction industry because of its typically high level of leveraging. This was evident in the ratio of bank credit to industry product, the ratios of debt to capital and the balance sheet, and the industry's share in total bank credit (Table 2.13). The Companies Survey also indicates that financing difficulties eased during the year, reporting that financing difficulties had increased when the crisis was at its worst (fourth quarter of 2008 and first quarter of 2009) and had been the dominant supply constraint then. From the second quarter on, conditions in this respect became much easier despite the decrease in bank lending to the business sector. Additional factors

that helped attenuate the financing difficulties were the resumption of public issues in the third quarter, in which the construction industry was dominant; the diversion of activity from non-housing construction to housing construction; and the increase in investment in dwellings under active-construction as opposed to those not yet started, the number of which decreased even though their prices went up. The resulting picture shows that the segment of the industry that specializes in building for the business sector and lacks flexibility is more vulnerable, in the present slump, than the segment that specializes in homebuilding.

The combination of higher housing prices, lower input prices and higher output per worker worked to increase profitability and to ease the credit crisis in the industry, which is characterized by a high degree of leverage.

(4) The land reform

The reform and its goal—in May 2009, the government resolved to carry out a land reform.[44] The purpose of the reform is to streamline the work of the authorities, foremost the Israel Lands Administration (hereinafter: ILA), at two levels. The first level concerns friction and red tape vis-à-vis the citizen; it was resolved to reduce them mainly by transferring title to residential zoned urban land[45] for residential and employment uses (hereinafter: the buildings) to its lessors. The second concerns the planning, registration, and release of land and the adaptation of land use to the needs of the economy, concurrent with the shortening of planning proceedings. The goal in both levels of action is to regularize the status of built land and enhance efficiency in the planning and releasing of land in future.

To attain these goals, a government land authority (hereinafter: the Authority) is to be established, focusing on long-term planning policy and release of land and ceasing all involvement in detailed planning. Practically speaking, the Authority shall replace ILA, cutting red tape and reducing its duties by (among other things) organizational and functional restructuring; defining and apportioning duties among the various authorities—the municipal authority, the Planning Administration at the Ministry of the Interior, the new Authority, the Ministry of Construction and Housing (hereinafter: MCH), and others—and making the release of land and its subsequent registration less cumbersome. The reform also recomposes the ILA Council (that of the new Authority) so that it will have a majority of government representatives; this will make it subordinate it to the government.[46]

Background of the reform—the background of the reform is the high level of concentration in ILA's hands, originating in the management of state ownership of 93 percent of land countrywide (including the Jewish National Fund and the Development

[44] Government Resolution 123 of May 12, 2009 (ILA 5) was presented to the Knesset together with the approval of the budget as part of the Economic Arrangements Bill. After first reading, the matter was separated from the Arrangements Bill and was referred to committee separately. At the present writing, the authority has not yet been established because this action also depends on the conclusion of agreements with ILA labor and its representatives in the Histadrut.

[45] Not only in cities but in all localities.

[46] While the statutory aspect of the Authority remains vague, it is subordinate to the government de facto because a majority of its members represent the government.

Authority)[47] and the retention of ownership even after the land is leased out. Thus, ILA is a junction through which every land transaction passes—be it in planning, release, and performance, for buildings or for urban land for development, and even in the sale and/or expansion of dwellings—and for which its approval is required. Furthermore, ILA is subordinate by law to the ILA Council itself; the Council is not subject to government decisions and only half of its members represent the state. The other half of its members represents the Jewish National Fund, which thwarts the implementation of many decisions, such as the transfer of title of its land. Also, many decisions of the ILA Council over the years are not adequately clear and sometimes contradict previous decisions—a state of affairs that also breeds cumbersomeness. (The new Authority shall act to systematize all decisions made up to the end of 2009.) An additional problem is ILA's organizational structure, which is unwieldy and hard to control.[48] These circumstances have been detrimental to long-term planning, allocation and release of land, and service to the citizen[49]; they also create over-involvement in citizens' and municipal authorities' activities in developing land for residential, business, and other purposes. One may add the lack of transparency and of databases to the list.

Several committees discussed these matters in the past, most recently the Gadish Committee in 2005.[50] To mitigate citizens' dependency on the authorities, they proposed (in additional to the possibility of extending the term of the lease to ninety-eight years if not twice as long, coupled with the transfer of all rights) the transfer to lessor of title to residential-zoned urban land. (The committee did not discuss land zoned for business.) Although the government adopted the recommendations of the Ronen Committee in 1997 and those of the Gadish Committee in 2006, it has been implementing them very slowly.

The foregoing discussion shows that the reform is much called-for and is essentially predicated on the recommendations of various committees, foremost Gadish (and does not address itself to land owned by JNF). However, it encompasses more than the committees' recommendations in three main respects: it relates to businesses and not only to dwellings; it facilitates the preparation of individualized assessments for the transfer of title rights as recommended by the Gadish Committee—a situation that

[47] Rates of public ownership are 85 percent exclusive of the Southern District, 81 percent in the Central District, and 50 percent in the Tel Aviv District.

[48] The ILA is organized in the form of thirteen divisions and seven districts, creating redundancy, vague division of responsibilities, and unnecessary delays.

[49] The results of this situation include arrears in the recording of rights, estimated at 250,000 dwelling units, and the existence of more than 100,000 dwelling units that have not yet been discounted—the meaning of which is annual treatment for the performance of various actions, including collection of leasing fees and dealing with arrears.

[50] Report of the Public Committee for Reform at the Israel Lands Administration (Gadish Committee), which presented its recommendations to the Sharon Government in June 2005. Previous committees that discussed some of the matters—the Goldberg Committee (1986) and the Ronen Committee (1997) also recommended the transfer of title to residential-zoned land to lessors. Recommendations and draft legislation for the establishment of a land authority in Israel were also presented to the Gadish Committee.

may create a significant handover of wealth but also implements the recommendations in a better and more efficient way; and it transfers detailed planning from ILA/the new Authority and MCH to municipal authorities and private developers—a farther-reaching measure than the committees had recommended, stressing the need for control and supervision mechanisms. All these changes will help to regularize the situation of built land and encourage new building.

Systematizing the status of urban built land for housing and business—an organized effort to record rights in discounted buildings (approx. 250,000 dwellings) in the Land Registry and to discount the non-discounted buildings (more than 100,000 dwellings) will be outsourced instead of having it done by the ILA or the new Authority. This activity will be undertaken in part for a fee and will distinguish between housing and businesses:

For housing—exemption from payment for high-density building and small low-rise dwellings, up to 250 square meters, and for National Priority areas (Confrontation Line A and B). For residential plots of 250–1,000 square meters in area, the reform sets standard rates that correspond to land value (based on assessment tables). This contrasts with the recommendations of the Gadish Committee, which prescribed individualized assessment, and evidently makes the recommendations harder to implement. On the one hand, the very fact of collecting a fee from more affluent population groups reflects a balancing social approach; on the other hand, improving the registration process and setting standard rates of assessment as a function of land value, instead of individualized assessment, may benefit well-off population groups specifically.[51]

For business—this aspect was neither discussed by the various committees nor debated before the reform. The motives for switching from lease to title, noted above, are apparently similar in the cases of housing and of businesses. The pricing of the changeover to title is already determined from the first meter, in contrast to dwellings, and according to assessment tables that take account of the heterogeneity of business buildings in accordance with land value. Here, too, however, at up to 1,000 square meters, reduced standard assessment rates were set (as with dwellings of 500–1,000 square meters) instead of individualized assessment; therefore, they imply the possibility of a benefit for business buildings, i.e., the transfer of wealth. Since the number of business structures is immeasurably smaller than the number of residential buildings, the advantage of efficiency and implementation is less as well. Therefore, it is not clear whether the avoidance of individualized assessment, a more understandable practice in the case of dwellings, is also necessary where businesses are concerned. It is also noteworthy that in contrast to the claims and fears of a takeover by tycoons and monopolistic behavior, the transfer of title was limited to five dunams (about half a

[51] For example, to obtain an increase in building rights before the reform, one had to pay the ILA a "permission fee" at the rate of 31 percent of the betterment—the difference between the discounted lease and the value of the land after the betterment. In the reform, two reduced levels were established, differentiated by size of the plot, and a standard incentive for "early birds," with the calculation based on land value.

hectare) and, in new releases of land, to sixteen dunams—in contrast to the pre-reform situation (leasing), in which no such limits existed.

As for the transfer of title to nonresidents, the new situation clashed with the fundamental concept of preventing such transfers. Therefore, transactions of this kind are subjected to limits and entail special approval from the Council.[52]

Planning and release of land—as explained above, the purpose of the reform is to release more land and encourage new building. New land will be released only by sale and only after parcelization and registration. This situation will shorten the proceedings by obviating the need for further involvement of ILA/the new Authority after the land is released; such will also be the case regarding the expansion of buildings. (However, these actions entail the approval of the other statutory authorities.)[53]

As for the planning and development of urban land, the reform leaves much latitude for private developers and municipal authorities (and other statutory authorities) and, practically speaking, excludes the ILA from all involvement in planning and development. (Where disagreements arise, matters will be deliberated by a projects committee in which a majority of members represents the government.) In this matter, the activity of MCH is also limited in large urban clusters. This is a novelty, since ILA and MCH had been excessively involved in these domains. The granting of greater latitude to private developers and municipal authorities is basically desirable because it reduces concentration and, therefore, should enhance the matching of land release with the needs and development of the economy. It should be kept in mind, however, that a municipal authority is less able to apply control, review, and enforcement than central government, and such is the case in planning as well. Therefore, all these areas of activity need significant reinforcement. The expansion of the municipal purview may also reduce density in urban areas, clashing with the provisions of Town Building Plan 35, because municipal authorities usually try to attract affluent populations, which prefer low-density housing.

The land reform is meant to reduce frictions and to work towards better alignment between the marketing of land and the needs and developments in the economy. At the same time, municipal planning and executive bodies should be strengthened and monitoring mechanisms put into place.

The government resolutions also charged the Authority with releasing enough land each year for the construction of at least 35,000 dwellings, at least 25,000 thereof in public auctions (in contrast to the actual release of land for 16,000 dwellings per year in the past decade). These numbers were evidently determined on the basis of an estimate of needs that corresponds to the annual increase in households, which is estimated at 35,000–40,000. This will act to increase the release of land, bring down housing prices, and enhance welfare. Also, by downscaling its operations and focusing on the release of land, the reform will enhance the ability of ILA/the new Authority to attain these goals. However, an evident difficulty in implementing this resolution is foreseen: to be released under the terms of the reform, the land must be recorded in the Land Registry after parcelization. Therefore, this part of the reform depends on initiative and planning by the municipal authorities—a situation for which

[52] In regard to sales to nonresidents, a caveat will be recorded in the Land Registry concerning all buildings in which title is handed over.

[53] These matters are dealt with in an amendment to the Planning and Building Law that the government resolved to pass at the present writing.

the authorities do not yet seem to be prepared, since ILA and MCH were intensively involved in these activities before the reform. In the longer term, these conditions will encourage the release of more land in high-demand areas, where entrepreneurship will presumably be stronger there.[54] It is also important to stress that here, too, mechanisms that will assure strict compliance with the national outline plan, which encourages high-density building, are needed.

Restructuring and recomposing the ILA—beyond these remarks, the structural-functional change and the change in the composition of the ILA, giving the government a majority, is desirable *per se*: it is in line with the Gadish Committee recommendations to make the system more efficient—by focusing the Authority's activity on the release of land (and also on supervising and enforcing the state's rights in the land) and assuring governability. However, even though the Council's decisions should be consistent with other government decisions, such as Town Building Plan 35, various entities may be underrepresented.

In sum—the reform is basically a welcome development because it shortens, streamlines, and systematizes the processes of planning, release, and registration of land and, in the future, should increase the amount of land released. However, in regard to title to business buildings and the granting of greater latitude to private developers and municipal authorities—these matters were not thoroughly debated before the reform. Therefore, principles should be sketched out (in conjunction with experts) and control and supervision mechanisms should be implemented without delay in order to guard the public interests. Furthermore, the municipal planning entities need to be reinforced.

Box 2.4
The real estate industry at the focus of the global crisis—overview and effects on real activity

The real estate bubbles that various countries experienced in the past decade lie at the focus of the global crisis. The purpose of this Box is to describe the extent of the phenomenon and its effects on product and activity of the construction industry.

The increase in housing prices began in the mid-1990s after the bursting of real estate bubbles in the late 1980s in various countries such as the UK, Sweden, and, above all, Japan. From the beginning of the current decade, the upward movement of prices accelerated as U.S. interest rates were slashed to historically low levels in order to stimulate economic activity at large. The bubble burst in

[54] This situation is prejudicial to the goal of population dispersion, since MCH will continue to take the initiative and do the planning in weak areas.

2008–09, indicators of which were already visible in 2006–07, as became clear after the fact. Figure 1(a), contrasting the annual rates of change in real prices in the past two years with those in 2001–07 in the OECD countries,[1] elicits several interesting points:

(1) The increase in prices was broad-based. Figure 1 shows that the surge in housing prices was common to many countries in North America[2] and Europe. Outliers, i.e., countries where prices declined, were Israel, Germany, and Japan—the last-mentioned has not yet recovered from its crisis in the late 1980s—and Switzerland, where prices went up moderately. Israel's similarity with Germany is interesting; Germany absorbed its eastern sector in the early 1990s, coinciding with mass immigration to Israel, and prices there fell steadily from 1995 to 2008. The example of Switzerland is also interesting: there, too, prices declined steadily and moderately over a decade (the 1990s), much as in Israel. Therefore, the increase in prices in the first decade of this century reflected a slow and steady adjustment process, unlike Israel, where a rapid adjustment took place in 2009. Notably, Switzerland has proved resilient in the current crisis (Figure 2.9) notwithstanding the difficulties that its financial conglomerates encountered.

2. The increase in prices in Israel in the past two years stands out in its direction and its intensity. An international comparison shows that in the past two years, prices rose only in Israel, Switzerland, and Australia. Given the decrease in prices in Israel during the bubble years abroad, the increase in 2008–09 is unsurprising. Even though its intensity resembled that of countries that participated conspicuously in the current bubble, in the case of Israel the period at issue is too short—two years—to signal future developments, as against some seven years abroad.

3. Concurrent with the decrease in prices abroad in the past two years, housing construction starts and/or building permits also fell steeply (Figure 1[c]). During the bubble period, the number of starts and permits also increased and the overall average annual growth rates in the various countries in 2001–05 were 5–20 percent (not shown). The increase in supply, however, did not halt the increase in prices. This situation is consistent with the approach that says that a rapid change in housing prices is largely driven by demand, not by supply, because the supply side is relatively inelastic. By implication, an increase in demand not driven by a fundamental need for housing services

[1] The average shown only for brevity and it reflects a continuum of price increases up to 2006, usually. See also example in Figure 1.4.

[2] The increase in U.S. prices, which seems relatively small in this comparison, is based on the OFHEO (Office of Federal Housing Enterprise Oversight), which addresses itself to existing dwellings and not to new ones and takes account of quality differences. The Case-Shiller index shows a much greater increase.

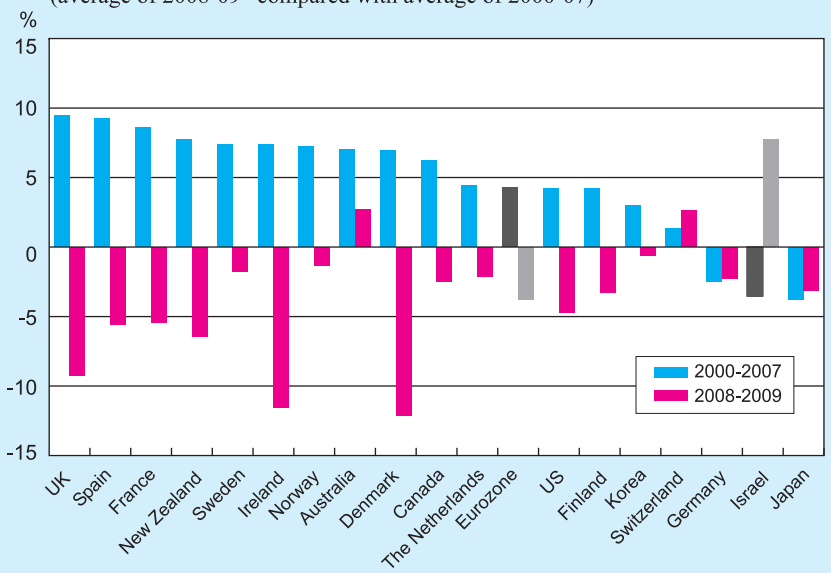
creates a bubble process because the increase in supply cannot keep up with the increase in demand.

4. In the OECD countries, a strong correlation was found between the development of prices and the development of GDP. Several factors support the possibility of a disproportionately large effect of the housing industry in comparison with its weight on GDP. Comparison of Figure 1(a) with Figure 1(b) shows that the direction of housing prices (upward or downward) resembles that of growth rates (although at different intensities), even though the construction industry usually generates only about 6 percent of business-sector product in these countries and residential construction usually generates only around half that share.

The housing market almost certainly has a disproportionately large effect on GDP, beyond its effect on related industries such as appliances, furniture, brokerage and attorneys' services. The real estate crisis, especially in housing, has even broader and severe implications than those of the crisis in share prices, even though housing prices cannot fall to zero as share prices can.[3] The main reason for this is extensive exposure to credit, along two main paths, (1) lending to the construction industry (contractors/developers), which significantly exceeds the share of the industry in product (Table 2.13), and (2) the inventory of properties, which has a far-reaching effect for several reasons: (a) The wealth reflected in homeownership is distributed much more equitably and widely than shareholdings; therefore, a change in home prices has a broader and stronger effect on the middle and lower classes. Furthermore, dwellings are a major component in the public's assets portfolio because, unlike shares, one cannot hold them in small portions. (b) For many, homeownership also involves liabilities. Therefore, a change in housing prices creates an exposure; an abrupt downturn in prices may render net assets negative. In contrast, the purchase of shares by the public at large does not create an exposure because it is usually part of saving. (c) The large inventory of dwellings also serves as collateral for working capital, thus helping to increase consumption and finances small business. Therefore, a change in housing prices amplifies the change in the size of the collateral and, in turn, acts pro-cyclically and has a broad effect on consumption and financing of small business—a situation that may intensify and prolong an economic downturn. Share assets, in contrast, are usually less accepted as collateral for loans and share-backed loans are much smaller than housing loans (due to the severe volatility of share prices). (d) Accordingly, the financial (lending) sector is also susceptible to broader implications if the credit risk is realized. This situation leads to a credit crunch and, by so doing,

[3] See, for example, Dean Baker (2008), "The Housing Bubbles and the Financial Crisis," *Real-World Economic Review,* 46.

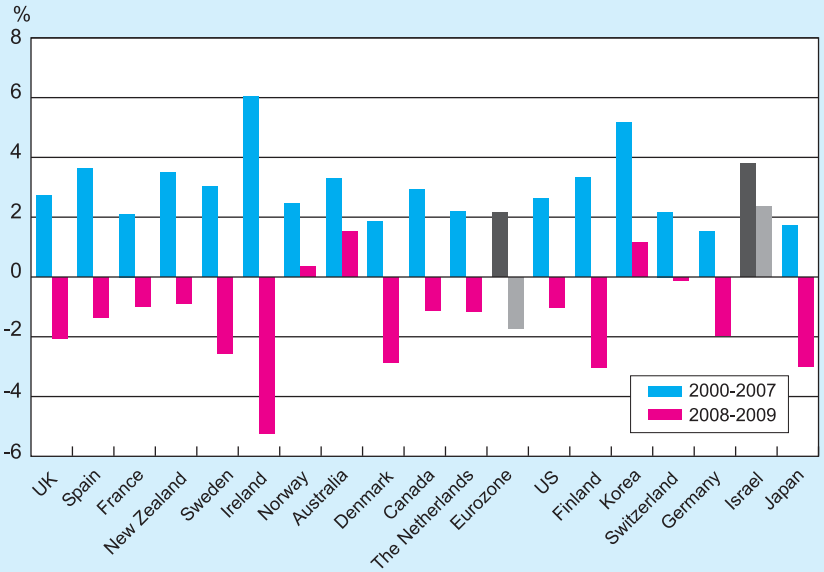
Figure 1
The Change in Real House Prices
(average of 2008-09[a] compared with average of 2000-07)



[a] For 2009, the latest figure for each country was compared with the same period in the 2008.

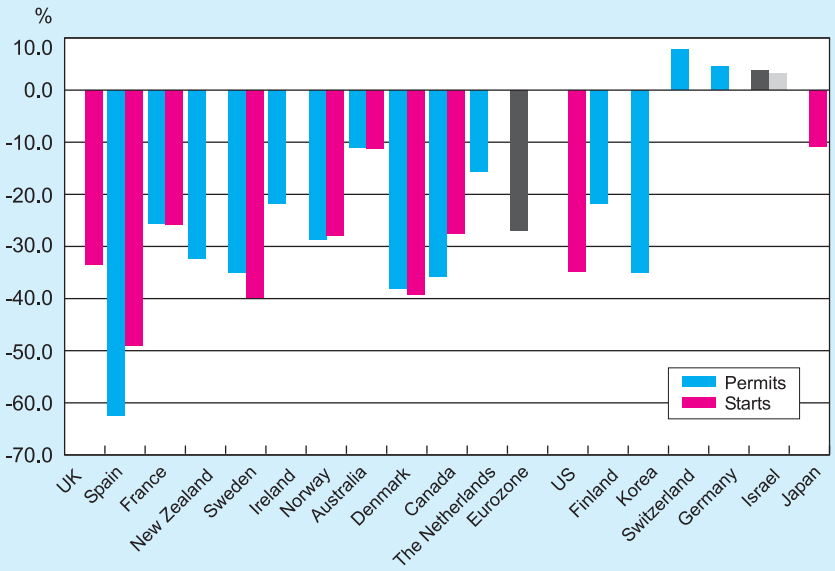
SOURCE: Based on OECD Economic Outlook November 2009 and Central Bureau of Statistics data.

Figure 2
Growth Rates, Annual Averages
(average of 2008-09 compared with average of 2000-07)



SOURCE: Based on OECD Economic Outlook November 2009 and Central Bureau of Statistics data (2009 data up to the third quarter).

Figure 3
Change in House Building Permits and Building Starts
(average of 2008-09[a] compared with average of 2000-07)



[a] For 2009, the latest figure for each country was compared with the same period in 2008. Data on permits in Israel have been available since 2002.

SOURCE: Based on OECD Economic Outlook November 2009 and Central Bureau of Statistics data.

aggravates the negative business cycle. Furthermore, since mortgage-backed credit is much greater than the financial intermediary's equity and the collateral (the dwellings) cannot be exercised rapidly when a crisis becomes widespread, the financial intermediaries' survivability also comes into question.

All these reasons illustrate the vast importance of identifying a bubble in the real estate market, although this is theoretically and practically hard to do. (See also Box 1 in Chapter 3.)

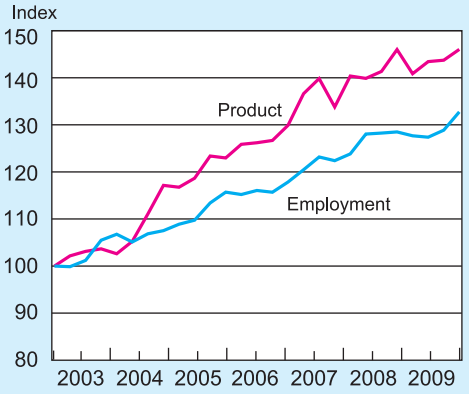
This Box sends two main messages: (a) real estate activity usually correlates positively with price changes; nonetheless, due to the relative inelasticity of supply, it is not strong enough to keep up with housing demand that does not originate in a fundamental need for housing services. (b) The implications of real estate business cycles for the economy, especially at times of crisis, are much broader than the industry's share in GDP.

c. Commerce and services

The moderate decline in output and employment in commerce and services in 2009 was a result of the fact that only a small part of their activity takes place abroad, which is where the crisis originated. Furthermore, the effect on these industries in 2009 was small since they had already experienced a serious slowdown in early 2008.

Commerce and services product—57 percent of business-sector product—increased slightly in 2009 but the rapid growth in 2004–08 came to an end. The global crisis affected these industries' activity less acutely than other industries, especially manufacturing. Two main factors explain the mildness of the blow to commerce and services. First, the prime cause of the crisis originated abroad. Exports of services account for 20 percent of service activity and the commerce industry operates only in the domestic market, unlike manufacturing, in which 40 percent of activity is for export. Second, the decrease in global demand for services was somewhat gentler than the decrease in demand for goods.[55] Another reason is that these industries suffered mildly in 2009 because their activity had already slumped badly in early 2008, probably due to the financial crisis abroad and fears that it would worsen and due to the detriment to consumer confidence, which struck the domestic economy at an early phase.

Figure 2.14
Commerce and Services Product and Employment, 2003-09



SOURCE: Based on Central Bureau of Statistics data.

Table 2.14
Main Trade and Services Indices, 2004–09

(rates of change, percent)

	Share in trade and services product (%)	GDP	Labor input	Real wage per employee
2004–08				
Trade and services	100	7.7	3.1	1.9
Trade	29	5.5	2.2	0.9
Services	71	8.6	3.4	2.3
2009				
Trade and services	100	1.9	7.0	0.3
Trade	30	2.4	8.6	-0.4
Services	4	1.8	6.5	0.5
Hotels and restaurants	70	0.7	5.9	-2.3
Banking, insurance and financial services	14	2.3	6.4	1.9
Personal and other[a]	6	3.2	15.0	-1.6
Legal, accounting, architecture and engineering	13	2.6	3.2	-1.2

[a] Including community, social and personal services, and services to households by individuals.
SOURCE: Central Bureau of Statistics.

[55] For expanded discussion, see Chapter 7, "The Balance of Payments."

All commerce and service industries took part in the standstill of activity in 2009 relative to 2008. However, the flat annual data do not reflect developments during the year because most aspects of commerce and services began to improve early in the year and the recovery consolidated itself as the year progressed (Figure 2.15). The paltry growth in 2009 reflects the low beginning-of-year level that was occasioned by the steep decrease in the second half of 2008.

Due to the mildness of the damage to commerce and services product, the crisis had only a minor effect on employment in these industries. Labor input in commerce and services slipped a little in 2009 relative to 2008, especially due to the contraction of commerce, but the number of persons employed expanded due to the recovery of industry product in the second half.[56] Nominal wages in commerce and services were essentially unchanged; due to inflation, however, real wage decreased by 4 percent in both industries and fell especially steeply in banking and financial services.

(1) Commerce

Commerce product, constituting 17 percent of business-sector product, decreased relative to 2008 even though activity turned upward during the year. The falloff in average product in 2009 relative to 2008 reflects the effect of the downturn of activity in the second half of the previous year as a corollary of the development of private consumption and, especially, current consumption. Since current consumption is especially sensitive to income, it decreased in the second half of 2008 and rebounded from the second quarter of 2009 onward due to an increase in the public's wealth and the resurgence of consumer confidence.[57]

(2) Selected services

Financial and business services: product of the financial institutions,[58] constituting 10 percent of business-sector product, increased in 2009. The adverse effects of the financial crisis on this industry's product already took place during the previous year. Pursuant to the direct effect of the global crisis on financial entities' earnings, especially in 2008, and particularly the indirect effects of the general recession, real wages at financial institutions decreased at an especially steep pace, probably abetted by fears of a deeper and lengthier crisis than the one that actually ensued.

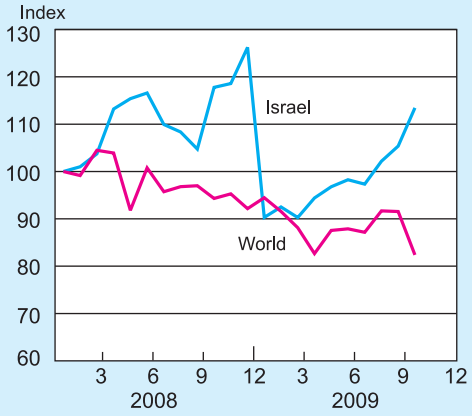
Business services product—roughly one-fourth of business-sector product—inched upward in 2009. The intensity of the damage caused by the global crisis on this industry was reflected in a freeze-up of activity in early 2008 and a precipitous decline in the last quarter of that year. Exports of business services plummeted during this time; this

[56] For expanded discussion, see Chapter 5, "The Labor Market."
[57] For a more extensive analysis of private consumption, see Section 2a of this chapter.
[58] For extensive reportage on the banking industry, see Supervisor of Banks, *2009 Annual Survey*, to be published in the summer, and Chapter 4, "The Financial System," in this Report.

largely explains the decrease in industry activity in 2009, since domestic uses were essentially unchanged.

Computer and R&D services constitute for roughly one-third of the business services. Much like activity in the other commerce and service industries, this industry's activity did not increase in 2008; it slowed during that year, contracted at the end of the year, and started a volatile recovery in early 2009. The extent of capital raised in the venture-capital market—the locomotive of growth for startup firms in this industry—was badly affected and fell to almost half of the previous year's level due to its sensitivity to the financial difficulties that were typical of the recent crisis. Capital-raising rebounded only slightly during the year and displayed a volatility that reflected uncertainty abroad about the pace of the recovery of activity.

Figure 2.15
Tourist Arrivals in Israel compared with the Rest of the World



SOURCE: Based on Central Bureau of Statistics data.

The recovery in incoming tourism to Israel preceded to a large extent the recovery in the rest of the world.

Tourism and hotel services: average industry product, accounting for 2.5 percent of business-sector product, was unchanged in 2009 relative to 2008 after steady growth from 2004 onward. The standstill in tourism activity, which began in 2008, originated in a protracted decrease in turnover from domestic-tourist person-nights starting in 2008 and a steep decrease in turnover from inbound tourism—due to the crisis—at the beginning of the year. Although turnover from both sources began to rise later in 2009, the level at year's end remained far below that preceding the global crisis.

Inbound tourism contracted badly but nearly all the decline took place at the beginning of the year. A gradual recovery began later but slowed toward year's end. However, the recovery of inbound tourism largely preceded the recovery of global tourism, which did not manifest itself in the data until year's end (Figure 2.16). According to the WTO (the United Nations World Tourism Organization), the recovery is expected to continue. Thus, global tourism is projected to grow by 3–4 percent in 2010.

The share of tourism exports in GDP is low relative to other countries even though Israel has a high ranking with respect to number of tourist sites.

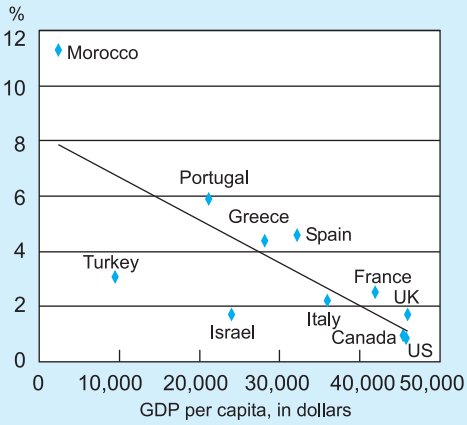
Exports of tourism services generate 1.5 percent of Israel's GDP, low by international comparison (Figure 2.16).[59] However, exports of tourism services are usually an important component in the product of developing countries, whereas advanced countries and those with high per capita GDP base themselves on other industries, especially those that are intensive in technology and human capital. Figure 2.17, comparing Israel's share of exports of tourism services in GDP with that of other countries in consideration of per capita GDP, shows that Israel's rate is low even when

[59] Source of data: *Travel and Tourism Competitiveness Report*, 2009, *World Trade Organization Compendium of Tourism Statistics*, 2009. Source of per capita product data: IMF.

one recalls that Israel is a relatively developed country, i.e., it is below the trend line in the share of tourism-services exports in per capita GDP.

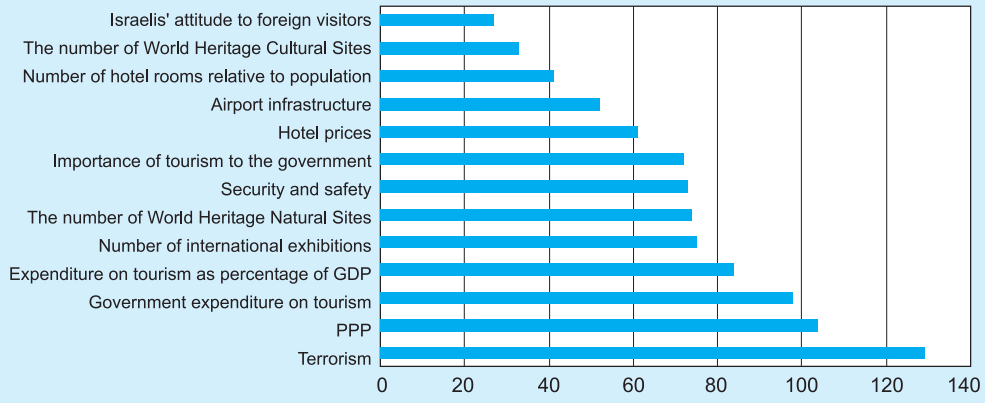
A WTO publication ranks countries in various aspects that may affect the extent of tourism. The relatively low weight of exports of tourism services in Israel's GDP raises questions because, according to this publication, Israel ranks high in the number of sites of interest that it offers. Much of the answer traces to fear of the fragile security situation in the region; according to the aforementioned publication, this is Israel's main weakness. The publication also shows that Israel ranks poorly in the number of international expositions and fairs that it hosts and that it attributes little importance to tourism. According to a Ministry of Tourism survey, for example, the poor maintenance of downtown areas in "touristy" cities diminishes inbound tourists' satisfaction, exacerbating Israel's weakness in the tourism field. (For an expanded discussion of the matter, see Box 2.4 in the 2008 Bank of Israel Annual Report.)

Figure 2.16
GDP Per Capita and the Share of Tourist Services Exports in GDP, 2007



SOURCE: Based on Central Bureau of Statistics data.

Figure 2.17
The Strengths and Weaknesses of Israel's Tourist Industry (Israel's rating among 133 countries)



SOURCE: Based on Central Bureau of Statistics data.

Table 2.15
Transport and Communications, Main Indicators, 2009

(annual change, percent)

	Share in total commerce and services product (%)	Product, at 1995 prices	Labor input	Real wage per employee	Output price relative to CPI
Transport and communications	100	-4.0	2.9	-0.1	-2.0
Communications	42	1.7	5.9	6.2	-1.0
Transport and storage	58	-7.7	1.3	-1.5	-2.8
of which Buses, taxis and trains	15	-8.8	1.8	-2.0	0.7
Trucks	16	-3.2			-6.6
Air and sea transport, airports and seaports	13	-7.9	-5.5	-4.0	-4.3

SOURCE: Central Bureau of Statistics.

d. Transport and communications

The output of the transportation industry declined sharply by 8 percent due to the global economic crisis, which was greater than the effect on other industries.

Transport product, constituting 6 percent of business-sector product, receded at a steep pace of almost 8 percent due to the global economic crisis, taking the most severe beating of all industries (Table 2.15). Activity bottomed out in the second quarter of the review year and began to rebound in the second half. The decrease in activity lowered real wages in all sub-industries of transport.

Land-transport product declined due to the general decrease in economic activity and, in particular, downturns in employment in industries that use poorly schooled labor—a population of bus-riders—and also in inbound tourism, which uses public-transport and taxi services. Air and sea transport product contracted due to the strong downturn in activity—shipping of freight and transport of passengers to and from Israel and by Israeli firms on international lines—in late 2008 and early 2009.

The output of the communication industry rose this year by 1.7 percent.

Communications-industry product, constituting 4 percent of business-sector product, increased by 1.7 percent in the review year due to upturns in use and the introduction of new products in the Internet and mobile-telephony sectors (Table 2.13). Industry labor input expanded by 5.9 percent and real wages climbed by 6.2 percent after falling by nearly 4 percent in 2008. Since the percent of expenditure for communications decreases in inverse relation with personal income (i.e., elasticity is below-unit), the effect of a decrease in personal income (downturn in the business cycle) on the industry is relatively mild.

Transportation and communication, energy and water are primarily infrastructure industries which have external effects on the economy as a whole and therefore their importance is greater than that reflected in their share of GDP.

Infrastructure: transport and communications, energy, and water are infrastructure industries that have externalities for the economy as large and are much more important than their share in GDP would suggest. An improvement in the quality of public transport and road infrastructure,[60] for example, expands employment

[60] Road infrastructure and private transport (excluding trips on toll roads) are not included in industry product.

Table 2.16
Dsitribution of Income in the Communication Market, by Type, 2003–08,

(percent)

	2003	2005	2007	2008
Land line	24	17	15	14
Mobile	49	54	55	55
International operator	7	7	6	6
TV: cable/satellite	13	13	12	13
Internet	5	8	9	10
Other	3	2	2	2
Total (NIS million)	21,841	24,371	27,989	28,720

SOURCE: Economics and Budget Division, the Ministry of Communications.

opportunities, improves the quality of the match between workers and firms,[61] and thereby increases GDP and reduces unemployment. To fulfill the external advantages of the infrastructure, transport, and communications industries, government regulation and supervision are crucial; in recent years, this factor has had a salutary effect on the industry's efficiency and competitiveness.[62]

Communications: the communications industry is divided into six main sectors (Table 2.16). The share of the land-line sector in revenues is falling due to the substitutability of this service with the mobile sector and technological improvements that are cutting costs and enhancing competition. Until 2006, Bezeq was the only player in this sector; since then, its share in the land-line market has been declining steadily—to 80 percent in September 2009.[63] The share of the mobile and Internet sectors has been rising due not only to technological improvements but also to the introduction of new services. In the cellular field, the introduction of virtual operators—operators who rent air time from an ordinary cellular operator (which owns the infrastructure)—became possible in the beginning of 2010. This reform will enhance competition in the field without the increase in radiation that the introduction of another ordinary cellular operator would entail.

Public transport: new bus companies have begun to operate, particularly on interurban lines, in addition to the veteran Egged and Dan companies. Today, some 20 percent of lines are served by such companies. The reform that admitted the new operators abets better and less expensive service and is well-suited to the non-metropolitan area of activity. In metropolitan areas, unified and centralized management in operating public transport is needed and, in the West, is commonplace.

Metropolitan areas require unified and centralized management for the operation of public transportation.

[61] Road infrastructure makes a significant contribution to the increase in commuters' wages. See Ronni Frish and Shay Tzur (2008), "Transport Infrastructure Investment, Commuting, and Wages," Bank of Israel Research Department, Discussion Paper Series 2008.03.

[62] For an indication of this, the quantity of infrastructure and the quality of regulation in Israel are evidently not materially different from the norm in developed countries. See Ran Sharabany (2008), "The Effect of Infrastructure Capital on Manufacturing Industries in Israel, 1990–2003," Bank of Israel Research Department, Discussion Paper Series 2008.05.

[63] Source of data: Ministry of Communication.

Table 2.17
Indices of Competition in Airline Transport for Passengers via Ben Gurion Airport, Scheduled Airlines

	2004	2005	2006	2007	2008	2009
Market share of minor companies[a,b,c]	0.49	0.48	0.51	0.54	0.57	0.58
Spread of companies[b,d]	3.59	3.64	3.79	4.27	4.85	4.76
Routes with 3 or more airlines	0	0	1	1	6	8

[a] The market share of minor companies is defined as 1 minus the market share of the dominant companies of the total number of passengers on scheduled airlines. In the case of Ben Gurion Airport, it is 1 minus El Al's market share. The larger the share of the minor companies, the greater the degree of competition.

[b] The two indices refer to the scheduled airlines that operated flights to and from Israel throughout the year. Air France and KLM are treated as a consolidated company, as are Lufthansa, Swiss, Austrian and British Midland.

[c] A calculation including charter flights, that have declined considerably, shows that the market share of the dominant airlines has increased. In other words, there is less competition.

[d] The companies spread index is the inverse of the index of concentration, which is the sum of the squares of the scheduled airlines' market shares of all passengers flying to and from Israel. The invesre of that index is the generally accepted index of competition (spread) in a particular industry. As the spread increases, so does competition.

SOURCE: The Ministry of Transport Civilian Aviation Authority.

In such areas, it is undesirable to have several operators of different kinds of public transport because in this case a bus operator will have no economic motive to feed the mass-transit lines of another operator, its direct competitor. In a metropolitan area, investment in mass-transit is needed (see Box 2.5). Once high-capacity means of transport other than buses are added, an organizational restructuring of public transport[64]—the establishment of unified management instead of the private monopoly that exists today—will be needed there.

Lowering the prices of air transportation will increase the export of tourism and goods, will create a more open economy and will also increase consumer welfare.

Open skies: lowering the cost of air transport will increase exports of tourism services and goods, make the economy more open, and even improve consumers' welfare by lowering the cost of imported goods and vacations abroad. In the EU and the U.S., brisk competition among airlines is facilitated by (1) a flexible aviation policy and (2) strong demand for air-transport services, which allows a proliferation of carriers to exist and compete. In Israel, in contrast, the level of competition is relatively low.

A series of government decisions in 2008 and early 2009 created greater flexibility in air transportation policy.

Israel's aviation policy became more flexible in 2009, abetting competition. However, demand for air-transport services decreased; this will reduce the number of listed carriers until demand recovers, thereby mitigating competition. The level of competition in Israel's air-transport sector in 2009, as reflected in the indicators, was basically unchanged (Table 2.17).

A series of government resolutions in 2008 and early 2009 made aviation policy more flexible by gradually liberalizing the country's aviation accords. The revised accords will allow multiple carriers to operate regular flights and allow listed carriers

[64] For expanded discussion, see report of the Sadan Committee for Examination of the Public-Transport Reform, October 2007.

to determine the capacity and frequency of these flights without having to obtain government approval. Regulations allowing the Antitrust Authority to limit code-sharing agreements whenever they mitigate competition were also set forth.[65]

Table 2.18
Distribution of the Israel Electric Corporation Electricity Generating Capacity,[a] by Types of Fuel (percent)

	2008	2009
Gas	15	35
Coal	42	41
Fuel oil	5	4
Diesel oil	39	20

[a] There are hardly any private electricity generating companies.
SOURCE: Israel Electric Corporation.

At the de facto level, however, the liberalization trend in Israel's bilateral aviation accords did not continue in 2009, mainly due to the decrease in demand for air transport to and from Israel. Apart from an accord, there must be a carrier that is willing to operate flights, and this willingness exists chiefly at times of high demand for transport services to and from Israel. Liberal aviation accords already exist for many destinations that enjoy high volumes of traffic from Israel, whereas as for countries that generate such traffic in low volumes, an accord that adds carriers will not improve competition significantly because no additional carrier will be eager to enter the market.

Regulations allowing the Antitrust Authority to limit code-sharing agreements were enacted at the end of 2008. Until then, agreements among airlines on lines to and from Israel did not entail the Authority's approval. The limitation of code-sharing agreements between an Israeli airline and a foreign airline that operates on the same route will enhance competition. Sixteen code-sharing agreements between El Al and other listed carriers were reviewed in 2009; six of them were nullified by the Antitrust Authority on grounds of anti-competitive effect, five were approved by the Authority—mainly relating to connecting flights and not to dividing the market—and five were withdrawn by El Al.

The Israel Antitrust Authority has begun to place limits on joint ticketing arrangements (code sharing) among Israeli airline companies, which have limited competition.

Electricity infrastructure: in view of the increase in demand for electricity and difficulties in approving a coal-fired plant, an emergency program to increase the Israel Electric Corp.'s production capacity by means of gas-fired combined-cycle power plants was implemented. Such plants are relatively fast to build. The implementation of this program increased production capacity by 3 percent in 2008 and another 2 percent by the beginning of 2010. The approved development plan calls for an increase of another 13 percent (1,525 MW) by 2011.

In view of the increased demand for electricity and the problems in approving coal-burning plants, an emergency plan has been implemented to increase the Israel Electricity Company's production capacity.

In 2009, production units that burned diesel fuel and heavy fuel oil—expensive and polluting fuels—were converted to cheaper and less polluting natural gas (Table 2.18).

Functioning of the ports: since the reform in 2004, the organizational structure of Israel's ports has been composed of three government-owned companies that

[65] To compensate the airlines for the change in policy, the rate of state participation in security expenses was raised from 50 percent to 60 percent and willingness was expressed to increase state participation to as much as 75 percent upon the signing of an aviation accord with the European Union, which will encourage competition.

In 2009, production units were converted from diesel fuel and oil to natural gas.

Table 2.19
Operational Facts about Israel's Seaports, 2001–09

	Efficiency index			
	Average per hour dwelling productivity in port (containers)[a,b]		Average number of containers handled (TEUs per ship)[c]	
	Haifa	Ashdod	Haifa	Ashdod
2001	17.9	9.2	840	511
2002	18.5	11.1	906	535
2003	17.3	11.7	1,014	513
2004	22.5	12.9	1,033	544
2005	24.2	14.5	1,107	586
2006	21.7	17.8	1,053	692
2007	13.3	15.5	1,149	809
2008	18.6	20.8	1,251	828
2009	27.7	25.4	1,134	893

[a] The data for 2006 do not include the third quarter, because of the Lebanon war.

[b] The number of hours from the time work started on the ship till the harbor pilot leaves the ship after guiding it out of the port and the ship sails.

[c] TEU—Twenty-foot equivalent unit: a unit of measurement equal to the space occupied by a standard twenty-foot container.

SOURCE: The Ministry of Transport Shipping and Ports Authority.

In 2009, the functioning of the seaports improved.

operate the ports—Haifa, Ashdod, and Eilat—and a government-owned company for management. As for the maintenance and development of port assets, the Ministry of Transport's Shipping and Ports Authority possesses centralized supervisory powers.

The competition between the ports is limited since most users are "captive" or, in other words, forced to use a particular port, primarily due to geographic location.

Examination of the indicators of port performance in the long term shows that the performance of the ports improved in 2009 (Table 2.19). This is mainly due to an improvement in labor relations and, to some extent, an increase in average vessel size, which reduces average working time—an indicator that tests logistical services by cross-country comparison, services—allowing Israel to improve its ranking from 33rd in the world in 2007 to 31st in 2009.[66]

In order to improve competition in the future, it is important that the future operation and development of the ports be carried out only under the auspices of a third party which is unrelated to the existing port companies.

Competition among the ports is limited because the main users are captive clients—they must operate at a certain port, mainly due to its geographic location. There is much potential for competition within the port, i.e., among quays, each one run by someone else.[67] To enhance competition in the future, it is important that the future operation and development of quays take place only under the auspices of a third

[66] A review of the relevant components of the index for port performance shows almost beyond doubt that our situation in 2009, by international standards, did not deteriorate relative to 2007.

[67] Israel Ports Corp., *Competition at Israel's Ports*, TASC Strategic Consulting.

party, i.e., one that is unrelated to the existing port companies. Every privatization of the existing port companies should allow third operators to enter.

The reform in port charges, which has been delayed, will encourage competition to some extent.

The port-charges reform: the reform in port charges, delayed thus far, may encourage competition somewhat by better reflecting the ports' true costs and, for this reason, allowing competition to develop in fields now considered loss-making, e.g., exports of freight (due to the structure of the charges). The reform of the charges should also change the composition of payments made to the port companies, so that a larger share of the payment for port services will come from shipping companies—in contrast with the current situation, in which most of the payment is from freight owners. This would put the shipping companies in a stronger position vis-à-vis the ports because, unlike the individual freight owner, they can alter their behavior in order to improve competition. Although the reform has gone through all the stages to gain professional approval, including hearings for interested parties, it has not yet been brought before the Charges Committee for approval and then to the Ministers of Transport and Finance for their signature on the order. Note that in the past there have been several attempts to correct anomalies in port charges but they failed, among other reasons, because of the power of groups that would be adversely affected by the proposed reforms.

Due to the water shortage, the government decided in 2008 that the amount of desalinated water will be increased by 600 million cubic liters as soon as possible. The decision has significant budget implications.

Water system: *infrastructure and rates*—consumption of potable water in Israel in 2008 was 1,365 million cubic meters, 58 percent of which by households. Due to several especially dry years and water rates that did not reflect the damage inflicted on the water reserves due to use of water when the reserves were very low, a water shortage has come about. In response, the Government decided in 2008 to increase the quantity of desalination to 600 million cubic meters with the greatest possible celerity. The resolution increases the Government's liabilities on account of desalination (Table 2.20).

Rate policy: the committee for reform of water rates[68] determined that the real costs of producing water, especially desalinated water, should be built into the rate in order to avert excessive demand. Indeed, following the outline that the committee sketched, household water and sewerage rates were raised by 40 percent at the beginning of 2010. To make sure that the water rates would continue to reflect the real cost of delivering services, the committee also determined that the rates should be raised whenever additional desalination plants become operative.

Water rates have been raised significantly.

The water rate for the household consumer has little effect on per-capita water use. Dahan and Nisan, in a study on the price elasticity of demand for water,[69] found on the basis of data for households in Jerusalem in 2003 that a 1 percent increase in the rate beyond the increase in the price index reduces per-capita water demand by 0.18

[68] Water Authority, Reform of Water Rates, Interim Report, November 2009, http:/www.water.gov.il/NR/rdonlyres/3CC88160-ABFA-46D7-A6D6-2847F0124D77/0/ReformaNov09.pdf

[69] Dahan, M., and U. Nisan (2007) "Unintended Consequences of Increasing Block Tariffs Pricing Policy in Urban Water," *Water Resour. Res. 43*, W03402, doi: 10.1029/2005WR004493.

Table 2.20
Water Desalination in Israel, Quantities and Costs, 2008–14

End of year	Capacity of seawater desalination plants (million m^3)[a]	Increase in capacity since end of previous year (million m^3)	Current value of government commitment for increase in private eneterprise seawater desalination (NIS million, at December 2010 prices)[b]	Household consumption (million m^3)[c]
2008	130	130	2,866	759
2009	140	10	220	667
2010	270	130	2,866	724
2011	287	17	375	736
2012	287	0	0	748
2013	412	125	2,756	759
2014	537	125	2,756	772

[a] Capacity is the water production ability during 20–25 years, according to the conditions detailed in the agreement with the state. Production usually takes place at night, when electricty is cheap and available, as per the commitment in the agreement.
[b] Establishing desalination capacity involves the government in a fixed capacity-related payment. The current financial commitment per million m3 at 5 percent interest is about NIS 22 million (before VAT)—the amount the government will pay owners of desalination plants for their fixed costs only. The capacity is for 20–25 years. The figure is calculated according to the current value of the commitment for privately owned seawater desalination plants operating currently.
[c] The figure of water consumption in 2009 is the Water Commmission estimate. The estimate for 2010 is based on the assumption that water consumption declined permanently in 2009, and that in 2010 it will be at the average level of 2008–09. For the following years it is assumed that consumption will rise in line with population growth, at 1.6 percent a year (the Central Bureau of Statistics forecast).
SOURCE: The Water Authority.

percent. The demand elasticity found by Kislev et al.,[70] in a study on data for the years 1975–99 was far lower. In an estimate of the equation for per capita demand for water in 1982–2009, in which the independent variables were the index of water prices for domestic use, GDP per capita at constant prices, and the amount of annual rainfall (as in a year with high precipitation there is less demand for water to water gardens) elasticity was higher—an increase in the water rate of 1 percent more than the rise in the CPI reduces water consumption per capita by 0.3 percent. This statement must be qualified, however: due to the structure of water rates, the indices of water prices are also affected by switches from low-priced tariffs to higher-priced ones, resulting in an over-estimate of elasticity.[71]

[70] Bar-Shira, Ziv, Nir Cohen, and Yoav Kislev, "Residential Demand for Water in Israel," November 2005.
[71] Water tariffs are not determined by the equilibrium between supply and demand, but exogenously. Thus, it is possible to estimate only the demand function, not the demand and supply functions simultaneously. Moreover, since some of the variable are stationary and some are not, the residual was tested for stationarity, and was found to be stationary.

Box 2.5
Land transportation—basic facts and policy topics

Investment in land transportation is composed of investment in roads and in public transportation. Investment policy has direct consequences for economic efficiency. The question considered here is whether, at the national level, and especially at the metropolitan level, the policy of investing in land transportation is economically effective, and whether it is consistent with the government's policy of encouraging growth in high-density construction in the central region. This box will consider only whether investment should be shifted between roads, railways, and mass transit systems; and between outlying regions and the central region; we will regard the current volume of investment in land transportation as given.

1. Land transportation: trends in the sector and an international comparison

Investment: Most investment in land transportation is in roads, with a substantial rise in investment in railways in recent years (Table 1). The growth in railway investment is partly in the central region and partly in outlying regions.

a. Roads

Investment in roads has been relatively high since the mid-1990s: The proportion of spending on roads in Israel is 0.8 percent of GDP—fairly high for countries with a similar topographic structure. The comparison to countries similar to us in this respect is relevant, because topographic structure has a major impact on road capital. In Switzerland, for example, there are many expensive road tunnels, while there is much less need for tunnels in Israel. The UK, Ireland, and Spain have a topographic structure similar to that of Israel.

The supply index for evaluating road capital in Israel, which reflects Israel's relative position in 2008, indicates that Israel's situation is reasonable, compared with European

Table 1
Investment in Overland Transport, 2000–09
(NIS million, at 2005 prices)

	Roads	Israel Railways[a]
2000	4,801	469
2001	5,860	459
2002	5,659	1,085
2003	5,226	1,369
2004	3,105	1,879
2005	2,505	2,600
2006	3,334	2,441
2007	4,658	2,265
2008	4,500	2,024
2009	3,680	1,678

[a] A small part of the investment is in light rail
SOURCE: The Central Bureau of Statistics.

countries. The index of road capital intensity per GDP, obtained by dividing the road capital by the potential GDP,[1] shows that road capital intensity in Israel is slightly higher than in the UK, and lower than in Ireland (Figure 1). It should be noted, however, that the index gives only a partial picture. In Europe, with a much higher rail density than Israel, intercity transportation connectibility is higher.

Road density: The major investment in roads in recent years has reduced road density, according to the mileage index, divided by net road capital inventory[2] (Figure 2).

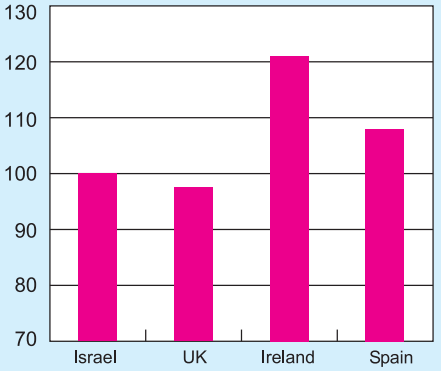
An international comparison (Figure 3) shows that road density in Israel is currently at a reasonable level compared with Western European countries. Road density in Israel is slightly higher than in the UK, Ireland, and Spain.[3]

Reservations about the comparison: **The level of motorization in Israel**—It should be noted that the level of motorization in Israel (the number of cars per 1,000 residents) is significantly lower than in European countries. The level of motorization rose in Europe in tandem with the standard of living. It therefore follows that Israel should prepare its road infrastructure for an increase in the level of motorization.

The average density—The calculation concerns only the average density; some roads are denser, and some are less so. It is important to keep in mind that density in the central region, particularly in the metropolitan areas, is higher than in outlying regions. It may therefore be worthwhile to invest in mass transit systems in the central region, in line with the usual practice in developed countries.

Additional aspects of road investment: **The positive external effects of system projects**: A road that changes the entire road system, e.g. Highway 6. It

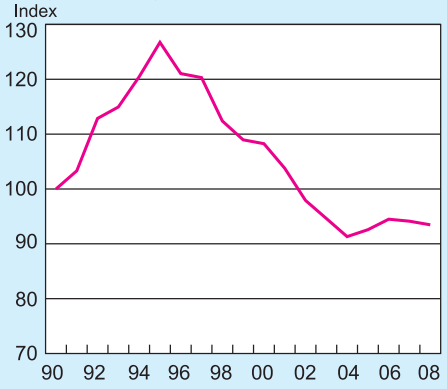
Figure 1
Index of Road Supply in 2008, Road Capital divided by Potential GDP
(Israel 2008 = 100)[a,b]



[a] Net capital is the cumulative expenditure on roads reduced by 2 percent a year, according to the method used by the Central Bureau of Statistics. The net capital is weighted by the price of the investments, which varies from country to country.
[b] Potential GDP neutralizes the effect of the business cycle on road intensity. To enable a comparison to be made between different countries, the potential GDP is weighted by PPP.

SOURCE: Data of the central bureaus of statistics of Ireland, the UK and Israel, and International Road Statistics 2009.

Figure 2
Road Congestion Index The Ratio of Mileage to Net Road Capital 1990-2008
(1990 = 100)

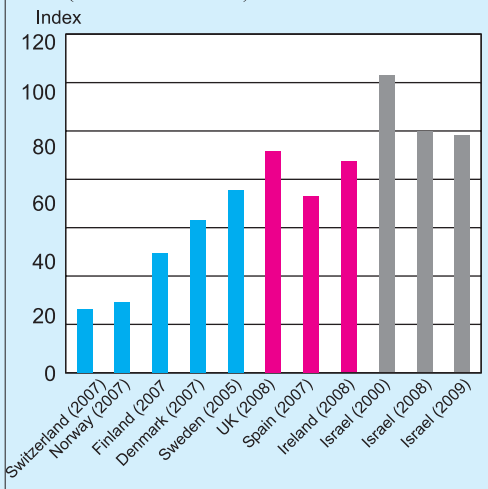


SOURCE: Based on Central Bureau of Statistics data.

[1] Using the potential GDP neutralizes the effect of the business cycle; see Note 2 to Figure 1.
[2] See Figure 1 for an explanation of the net capital.
[3] As noted above, the UK, Ireland, and Spain are suitable reference points for Israel, since road capital also depends on topographical structure.

generates mileage, meaning that it connects regions formerly having an inadequate connection between them, and thereby creates a new opportunity for the population living near the road, and improving its mobility. It therefore follows that measuring a road's benefit only according to the reduction in density is insufficient.

Figure 3
Congestion Index[a]
(Israel 2008 = 100)



[a] See Figure 1 for definition of net capital.

SOURCE: Data of the central bureaus of statistics of Ireland, the UK and Israel, and International Road Statistics 2009.

b. Segmenting passenger-kilometers by mode of transportation (modal split)

Public transportation in Israel accounts for a larger proportion of total transportation than the EU-15 average. The proportion of buses is high, while the proportion of railways is low.[4]

At the same time, the intensity of public transportation in Israel has fallen steeply in recent years, in contrast to the trend in the EU-15, where the proportion of public transportation has stabilized in recent years, and even increased (Table 2). One possible reason for the decline in this proportion in Israel is that the level of bus service in Israel, where it constitutes the bulk of public transportation, has deteriorated in recent years. With the rise in the standard of living, more passengers who previously had to travel by bus are now buying private vehicles.[5]

Table 2
Composition of Use of Transport by Mode (Modal Split), in Selected Countries, in Passenger Km (percent)

	1996			2002			2007			2008		
	Bus	Train	Car	Bus	Train	Car	Bus	Train	Car	Bus	Train	Car
15 EU countries	9.0	6.6	84.4	8.5	6.6	84.9	8.7	7.1	84.1			
Israel	27.8	0.8	71.4	24.3	2.4	73.2	21.0	3.4	75.5	20.0	3.5	76.5
The Netherlands	5.1	8.5	86.3	4.3	9.3	86.4	3.8	9.5	86.7			
UK	6.3	4.6	89.0	6.2	5.2	88.6	6.3	6.4	87.3			
Ireland	22.9	5.6	71.4	20.5	5.3	74.2	18.6	5.1	76.3			

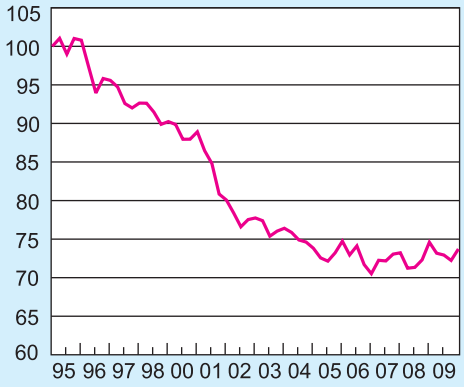
SOURCE: The Central Bureau of Statistics and Eurostat.

[4] The intensity of public transportation in Israel is also higher than expected in regression that explains the proportion of passenger vehicles by segmenting passenger-kilometers according to per capita GDP.

[5] See "Issues in Environmental Policy," Chapter 9, Section B.

Figure 4 displays an index of the level of bus service on regular lines. The level of service is measured by assigning weights to the supply of bus-kilometers, the number of seats, and the number of buses, divided by the labor force.

Figure 4
Weighted Index of Level of Bus Services,[a] 1995-2009
(2009 = 100)



[a] The level of bus services on regular routes is measured by weighting the supply of bus/kilometers, the number of seats and the number of buses, normalized to the labor force. This index is not trouble-free, as it does not relate to other relevant aspects of service such as keeping to schedules, cleanliness of buses, etc.

SOURCE: Based on Central Bureau of Statistics data.

c. Public transportation in metropolitan Tel Aviv

While it was found that use of public transportation was greater in Israel than in the EU-15, public transportation is used less at the metropolitan level in Israel than in leading European metropolitan areas.

In metropolitan Tel Aviv, including the inner city and an inner ring,[6] both the supply and the use of public transportation is inadequate. Almost every European metropolis offers a variety of modes of public transportation—bus, suburban railway, and underground railway—and some have complete road right-of-way. In Tel Aviv, on the other hand, the sole mode of public transportation is buses, which usually do not have road right-of-way.

A comparison between the supply of public transportation in metropolitan Tel Aviv and in Greater London, where the population densities are similar,[7] illustrates the small amount of public transportation in metropolitan Tel Aviv. The supply of public transportation in buses is reasonable, but other than buses, there is no other mode of public transportation in metropolitan Tel Aviv, except for a very small supply of railway-kilometers (Figure 5).

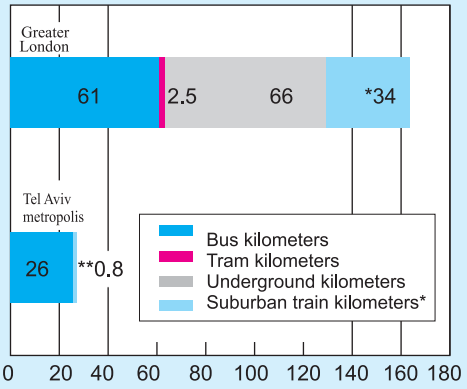
At the same time, we note that some of the intensity of public transportation in London can be attributed to the introduction of a traffic congestion charge.[8]

[6] Metropolitan Tel Aviv includes the inner city, Tel Aviv-Jaffa; an inner ring – Ramat Hasharon, Herzliya, Ramat Efal, Or Yehudah, Kiryat Ono, Bnei Brak, Givatayim, and Ramat Gan; and a middle ring – Kfar Saba, Ra'anana, Hod Hasharon, Petah Tikva, Ganei Tikva, Savyon, Givat Shmuel, Yehud, Beit Dagan, Kiryat Akron, Kfar Chabad, Be'er Ya'akov, Lod, Nes Ziona, Rishon LeZion, Rehovot, and Ramle. The population of metropolitan Tel Aviv is 2.23 million.

[7] Only Greater London is used for comparison, because its population density is similar to that of Tel Aviv (4,760 people per sq.km. and 4,820 people per sq.km., respectively). We assume that population density affects the intensity of public transportation and railways. Population density is determined by lightly populated areas belonging to the metropolis, among other things, and in many European metropolises, these areas reduce total density. For example, the urban area accounts for only 5.6 percent of the area of metropolitan Berlin – a figure that would distort the comparison, since most of the area of metropolitan Tel Aviv is urban.

[8] The supply and use of public transportation in London rose following the introduction of the traffic congestion charge in 2003. Nevertheless, there were wide gaps between Greater London and metropolitan Tel Aviv in the supply and use of public transportation before the charge was introduced.

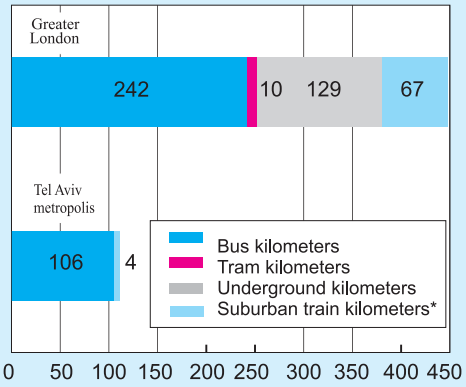
Figure 5
The Supply of Public Transport, 2006
(vehicle-kilometers per resident in the metropolis)



* Estimate.
** In the Tel Aviv metropolis these are Israel Rail's suburban lines.

SOURCE: For Greater London—EMTA (European Metropolitan Transport Authorities) 1.2009; for Israel—data on buses received from Adalya Co., and with

Figure 6
Use of Public Transport, 2006
(journeys per passenger per year per resident)



SOURCE: See Figure 5

The small supply of public transportation in metropolitan Tel Aviv is reflected in the low deployment and frequency of public transportation. The small supply decreases the use of public transportation, and causes people to rely on private vehicles (Figure 6). It bolsters the incentive for suburbanization, which has undesirable economic consequences—waste of land and other resources; inefficient use of infrastructure; a shifting of businesses from central Tel Aviv to its outskirts, thereby reducing the returns to scale that result from a concentration of businesses in one place; and a loss of work hours to traffic jams.

d. Railway development in recent years

Railway investment has greatly increased since 2000 (Table 1). The development plan has chiefly led to the extension of railways from Tel Aviv to fairly large towns (Rosh HaAyin, Kfar Saba-Hod Hasharon, Modi'in, Lod and upgrading of the routes to Ashdod and Ashkelon). Projects in progress also include connection of large towns with over 50,000 residents, and a focus on improving the availability of the existing routes and increasing speed on them.

e. A transportation development plan for outlying regions

A Transportation Development Plan for Outlying Regions was recently approved, and a plan for extending the railway to small communities in outlying regions is under consideration: The Israel Routes plan, approved by the government in early 2010, includes an extension of the railway system to large towns (Karmiel and Afula) and a small town (Beit Shean, with only 17,000

residents), road development in outlying regions in northern and southern Israel, electrification and purchase of rolling stock (carriages and locomotives) for railways, planning of additional railway routes in outlying regions, etc.

Table 3
Israel's Transport Plan

	Cost (NIS billion)
Ha'Emek–Beit She'An railway line	3.4
Acre–Carmiel railway line	3.4
Cross-Israel Highway extension to Somech Junction in the North	3.0
Cross-Israel Highway extension to Shoket Junction in the South	1.5
Railway—electrification and purchase of rolling stock	11.2
Roads—Eastern spur in the Galilee	2.5
Detailed planning and land requisition for projects in outlying areas as yet unauthorized	2.5
Total	27.5

SOURCE: Government decision 1421 of 24 February 2010.

The cost of the approved railway plan is approximately NIS 28 billion. In transportation projects, the current estimate, the initial estimate, is usually an underestimate.[9]

In the Valley railway project connecting a small community to the railway, an examination was conducted using a procedure for examining the economic return of transportation projects. The study showed, however, that its economic return was quite low. Such economic studies for projects should be given great weight.

According to the government decision, the plan is the first stage of a larger program to connect the periphery with the Central district, in line with its stated intention of creating a transportation infrastructure between Kiryat Shemona in the north and Eilat in the south.[10] The government also budgeted for detailed planning of railways and roads in the periphery. It should be noted that no examination of the economic viability of these plans was performed, or the results showed that their economic viability was doubtful.

f. The economic viability of connecting small towns to the rail system seems to be doubtful

The added value of connecting Dimona to the railway (in 2005)—a project for which NIS 180 million was allocated—was negligible: connecting this town of 33,000 residents to the railway contributed almost nothing economically to the town. Only 40 people a day currently travel to and

[9] See Box 6.3
[10] Section 1 of the Government Decision 1421 of 24 February 2010.

from Dimona by railway (Table 4). Furthermore, many of them are soldiers, who would travel by public transportation in any case.

Table 4
Rail Passengers on Dimona–Beersheba Line, 2006–08[a]

	Number of passengers per year	Number of passengers, average return journeys per working day
2006	29,000	56
2007	23,500	45
2008	21,000	40

[a] Train frequency in 2008—four trains in each direction per day.
SOURCE: The Central Bureau of Statistics and the Israel Railways website.

An examination of intensity of the use of and connectivity of towns to the railway according to population size in other countries

Both the intensity of railway use and the proportion of towns connected to the railway depend to a great extent on the period in which the railway was built: if, as in European countries, the railway was the sole mode of transportation when it was built, and there was no road and vehicle alternative, the degree of connectivity is high. If, as in Israel, a road system already existed when the railway was built, the degree of connectivity is lower. Today, in Israel, every community is connected to the road network. It is consequently correct to compare Israel to countries that are similar in this respect.

Table 5
Intensity of Use of the Railway and the Degree of Connectivity of Towns to the Railway, Israel and Selected Countries,[a] 2008

	Indices of intensity of use of the railway		Rail data and their reliability			Towns connected to the railway system, by population size			
	Passenger-km per capita	No. of passengers per year divided by population	No. of heavy-rail stations	No. of towns connected to railway system[b]	of which No. on which data are available	Median population of towns connected to the railway system[b]	25th percentile population of towns connected to the railway system[b]	Percent of towns connected to the system with populations less than 50,000[c]	Percent of end-point towns with populations less than 50,000[d]
Korea	660	21	195	155	89	165,846	71,216	14	13
Taiwan	378	8	216	65	53	100,000	37,150	36	N/A[e]
Israel	264	5	45	35	35	66,700	33,400	38	21

[a] The countries selected are those where the railway system was developed relatively late, when decision makers also had the possibility of building roads.
[b] As the data relate to the extent to which towns are connected to the railway system, the appropriate weight should be given to a town connected to several railway lines compared to a town connected to only one line. Thus a town which is on three railway lines is counted three times.
[c] There are reasonable grounds for assuming that towns not identified are in the main small towns, so that the number of towns connected to the railway system with populations of less than 50,000 in Taiwan and Korea is higher than shown.
[d] A town is counted according to the number of lines on which it is the end point.
[e] In Taiwan the railway line is circular, so there is no end point.

SOURCE: Stations and railway lines—Taiwan Railways Administration, Korrail–Korean Railroad Corporation, and Israel Railways. Town population sizes—http://www.populstat.info/ and http://www.fallingrain.com/world (the worldwide index of cities and towns). Information on intensity of use of the railway—International Union Railways-http://www.uic.org/spip.php?id_article=757&page=home .

We have therefore compared the railway in Israel with the heavy railway in two countries in which most railway development was post-WWII, when the alternative of connecting towns to the road network was possible.

The comparison in Table 5 shows that the intensity of railway use in Korea and Taiwan is greater than in Israel. At the same time, the towns connected to the railway are usually fairly large; only a few of them are small towns. It is possible that in other countries, in contrast to the railway development program under consideration in Israel, the focus is on better service (greater frequency and higher traveling speed) between large towns.

2. Policy recommendations

The comparison indicates that there is a shortage of public transportation in metropolitan areas relative to the road infrastructure in Israel. For example, it is worthwhile investing in development of a public transportation system in the Tel Aviv region. The comparison also shows that in other countries, when new railways are built, smaller towns are not usually connected to them, especially not small towns that would be at the end of the railway line. It is therefore correct for Israel's railway development program to focus on upgrading service quality in travel between large towns. In any case, alternative plans that have passed an economic viability test should be examined and compared. At the same time, as we have noted, it should be kept in mind that the development of interurban roads and railways has positive external effects.