

delay from the original timetable. The cost of the alternatives selected for this first line is estimated at about \$ 1,500 million. The possibility of an additional line, most of it over-ground, from Holon to the Arlozoroff station in Tel Aviv, has been examined.

*Ben Gurion Airport 2000:* Stage 1 (Terminal 3) of the Ben Gurion Airport 2000 project was opened at the end of 2004, with a delay from the original timetable, following an overall investment of \$ 800 million. At the initial stage, the terminal will serve some 9 million passengers a year, at conditions far superior to those prevailing today.

*Haifa Airport:* No progress was made in 2004. If the airport is constructed, it is expected to be in a BOT format. The project will double the length of the runway in the existing airport. The project is to be based on the complementary services of other projects, such as the Carmel tunnels and the Krayot–Haifa bypass road.

*Seaports:* The Hayovel port in Ashdod is due to open in mid-2005, with a delay from the original timetable.

#### 4. The construction industry

##### a. Main developments

The downward trend in the activity of the construction industry continued in 2004. Hopes of a recovery, based on indications evident in the first half of the year, were dashed, and the product and output of the industry even declined for the seventh year in succession, by 7.1 and 9.8 percent respectively. The slump in the industry was particularly prominent in view of the general growth trend in the economy as a whole and the improvement in demand fundamentals.

The industry's share of business-sector product continued to contract, and reached 6.9 percent, similar to its share prior to the influx of immigrants, and almost half its share in the peak year of 1996 (12.3 percent). The industry's contribution to business-sector product in 2004 was negative, a 0.5 percentage-point decline, further to the 0.3 percentage-point dip of the preceding year.

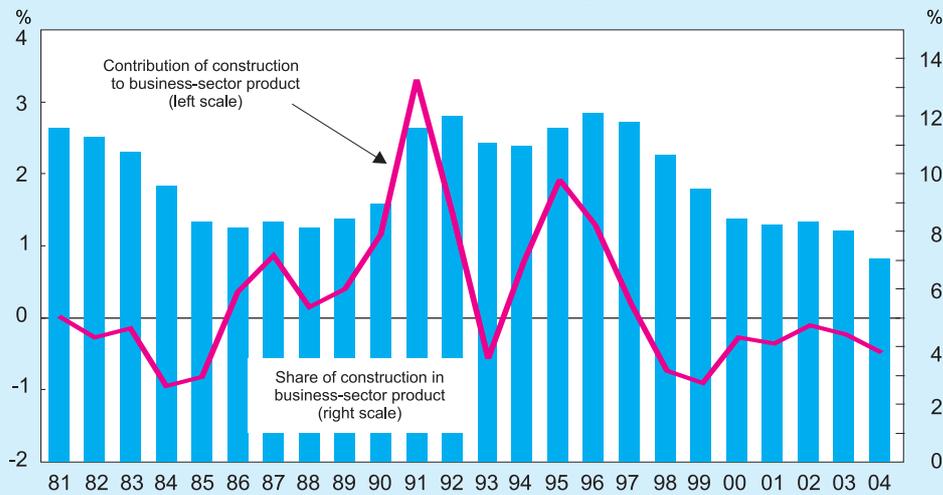
All the components of the industry's output contracted: in nonresidential construction the decline accelerated and comprised a decline of 15.3 percent in nonresidential construction and of 15.7 percent in earthworks. Residential construction, which accounts for over half the industry's output, contracted by 6 percent. The rate at which defense construction grew slowed markedly (apparently due to the slower rate at which the security fence was erected), and its output stabilized at the previous year's level.<sup>48</sup>

Alongside the contraction of construction activity, there was a decline in the extent of factor inputs employed in the industry and a slight increase in equipment capital stock, while the number of persons employed (Israelis and foreign workers) fell by about 5.2 percent.

<sup>48</sup> In 2003 the steep rise in defense construction (38.1 percent) moderated the decline in total output.

The product and output of the industry declined for the seventh year in succession, a decline that was particularly prominent in view of the general growth trend in the economy as a whole.

**Figure 1.25**  
**Direct Contribution of Construction Product to Business-Sector Product, 1981-2004 (at factor cost, 1995 prices, percent)**



SOURCE: Based on Central Bureau of Statistics data.

**Table 1.30**  
**Output and Product in Construction, 1990–2004<sup>a</sup>**

	2002	2003	2004	Annual average change (percent)				
				1990–96	1997–2002	2002	2003	2004
Total output (NIS million, 2000 prices)	45,569	43,987	39,693	13.3	-3.8	0.1	-3.5	-9.8
Residential	20,954	20,013	18,805	12.0	-5.4	0.0	-4.5	-6.0
Nonresidential	21,092	19,750	16,721	18.0	-3.0	-0.3	-6.4	-15.3
Other <sup>b</sup>	3,524	4,225	4,167	2.0	2.4	3.9	19.9	-1.4
Of which Defense construction	1,877	2,592	2,603	0.7	4.3	9.7	38.1	0.5
Apartments under construction ('000)	63.9	59.5	57.1	18.8	-8.5	-9.0	-6.9	-3.9
Construction time for residential construction (months)	23.8	24.1	22.9	-0.8	2.8	8.2	1.3	-5.0
Total area of building starts ('000 of sq. m.)	7,948	6,533	5,956	16.9	-6.9	4.1	-17.8	-8.8
Residential	5,497	4,920	4,640	15.4	-7.0	4.1	-10.5	-5.7
Nonresidential	2,450	1,613	1,315	19.1	-6.8	4.2	-34.2	-18.5
Total area of building completions ('000 sq. m.)	8,463	7,995	6,588	12.8	-3.2	-5.7	-5.5	-17.6
Residential	6,165	5,525	4,825	11.8	-3.0	-0.6	-10.4	-12.7
Nonresidential	2,298	2,470	1,764	15.3	-3.9	-17.1	7.5	-28.6
Residential starts ('000 units)	33.3	31.1	28.4	17.0	-9.2	4.3	-6.5	-8.9
Residential completions ('000 units)	38.8	34.3	31.7	13.0	-4.9	-1.3	-11.6	-7.6
Apartments offered for sale ('000) <sup>c</sup>	22.5	20.8	19.1			-11.3	-7.4	-8.4
Change in construction product <sup>d</sup>				15.2	-3.5	-1.1	-2.9	-7.1

<sup>a</sup> Calculated from unrounded figures.

<sup>b</sup> Includes defense construction and an estimate of maintenance.

<sup>c</sup> End-period figures.

<sup>d</sup> The definition of the construction industry was changed in 2002, and the equipment-assembly industry was added. Retrospective product figures changed in consequence, and there may be discrepancies between those given here and those in previous reports.

SOURCE: Based on Central Bureau of Statistics data.

For the first time this decade the increment in households exceeded the supply of new units.

For the first time this decade the increment in households exceeded the supply of new units, a development that could find expression in demand pressures, leading to a rise in prices in the near future. The situation could be further aggravated because pessimistic expectations regarding future economic activity have led to a decline in building starts: the number of starts in 2004 was lower than in the equivalent period in 2003 also in the private sector, which is usually characterized by the construction of medium-sized and large apartments in the Tel-Aviv conurbation.<sup>49</sup> In the public sector too, where new units are generally smaller and built in national priority and peripheral areas, there was a particularly steep 40 percent decline in government-initiated construction. Total building starts amounted to only 28,400—a relatively small number in view of the population growth rate and increment in households expected in the next few years.

In 2004 both the demand constraint and the supply constraint contributed to the contraction of the industry's output.

In contrast with previous years, the reduction of the industry's output in 2004 cannot be attributed solely to the demand side. Whereas Israel's GDP growth rate has not generated a significant shift in demand (as reflected by the relative stability of housing prices), and the demand constraint has remained high, it would appear that the supply constraint—a shortage of professional workers,<sup>50</sup> the higher price of labor inputs, and increased financing difficulties—also prevented the expansion of companies' construction activity. This hypothesis is borne out by the Bank of Israel's Companies Survey, which attests to the effectiveness of the supply constraint.

Although demand for residential construction was higher in the first half of 2004 than in 2003, this does not mean that activity in this sphere rallied, as in 2003 the level of activity reached its nadir in the last few years. In the second half of the year demand dropped again.

During the year the effect of the basic factors determining the level of demand in the long and short term was mixed. Most of these factors improved—the general wage level rose, permanent income increased, and mortgage interest fell—but according to various sources<sup>51</sup> the effect of the improvement was restricted to certain segments of the population. It is reasonable to assume that the demand of most of the public for housing was affected primarily by pessimistic expectations regarding personal economic stability, based on the high unemployment rate and occupational uncertainty, inter alia in view of the steep rise in the extent of part-time jobs. This was supplemented by changes in government policy which were detrimental to persons eligible for housing subsidies. In addition to the differential effect of the economic growth process, in 2004 the housing market was also characterized by regional heterogeneity in construction activity: alongside clear signs of a recovery of demand in the Tel-Aviv conurbation, there was total stagnation in the periphery.

<sup>49</sup> Private sector building starts dipped moderately, and in the last two years their share of total starts has been relatively stable.

<sup>50</sup> Based on contractors' reports to the Bank of Israel's Companies Survey.

<sup>51</sup> See, for example, Dr. Shlomo Swirsky and Ettie Connor-Attias, A Portrait of the Social Situation, Report of the Adva Center, 2004.

As regards nonresidential construction, it may be assumed that the conclusion of the process of adjusting capital stock to changes in economic activity and the creation of excess supply in various spheres caused the reduction of this construction category in the industry's output.<sup>52</sup>

*b. Residential construction*

In the housing services market (renewed rental contracts) real prices fell by 1.6 percent, despite the rise in permanent disposable income, which is the main factor affecting demand. The decline in demand for housing services is ascribed to the demographic changes of the last few years (see below). The relative price of owner-occupied housing (deflated by the CPI) remained stable, after declining continuously in recent years,<sup>53</sup> and local-currency appreciation vis-à-vis the dollar, especially in 2004:IV, checked a further rise. In the development of real housing prices there was a pronounced difference between regions: the price of average-size apartments (2.5-3 rooms) in the Tel-Aviv conurbation were up by 4.4 percent over 2003, while in the periphery they were down by 2.2 percent due to low demand levels, which led to a steep drop in construction activity. Data on prices and quantities indicate that there was a slight improvement in activity in the first half of 2004, with a renewal of the decline in the second half. The main demographic and economic factors affecting the level of housing demand will be discussed below.

In the development of real housing prices there was a pronounced difference between regions.

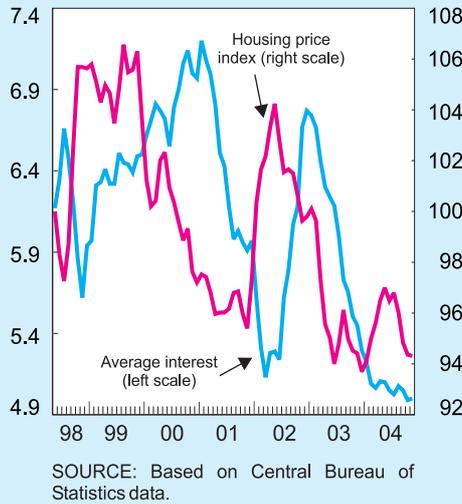
The population growth rate slowed in 2004 because the rate of natural increase stabilized and the rate of immigration to Israel, which amounted to only 21,000 immigrants in 2004, similar to the number prior to the mass immigration of the 1990s, continued to contract. The increment in households expected in the coming years is not significant either, because of the stability of the share of the 25-34 age-group, the group which accounts for the majority of additional households and those moving to bigger homes in the last few years. On the one hand, these developments, together with low expectations regarding the extent of immigration to Israel, should act to dampen demand pressures and prevent the expansion of investment in accommodation. On the other, however, the gap between the increment in households and the supply of new units could create pressures of this kind in the near future, thereby causing prices to rise.

The improvement in individuals' economic situation was expressed in a 2.4 percent rise in disposable income and a 2.7 percent increase in the real wage. These variables attest to the ability to pay back mortgages and hence their increase serves to indicate a rise in the potential demand for housing.

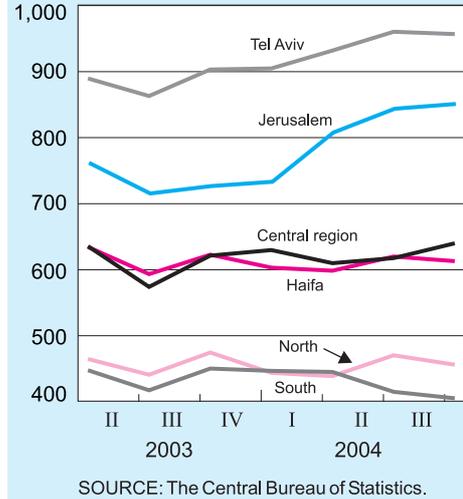
<sup>52</sup> Exact data on prices and quantities are not available for nonresidential construction, hence it is not possible to undertake a direct analysis of demand. According to the Levi Yitzhak price list the prices of commercial areas have fallen. See also the publications of Eshkol Business Information on rental housing.

<sup>53</sup> This situation appears to contradict the equilibrium state condition because the price of owner-occupied housing should decline in line with that of rents; note, however, that in 2004 there was a marked change in interest rates, and their decline affected the price of owner-occupied housing.

**Figure 1.26**  
Average Mortgage Interest and the Housing Price Index, May 1998 to November 2004



**Figure 1.27**  
Housing Prices, by Regions, March 2003 to September 2004 (NIS '000)



Average mortgage interest reached its lowest level in the last ten years.

Average mortgage interest, which fell monotonically for the second consecutive year, reached its lowest level in the last ten years and stabilized at around 5 percent at the end of 2004. This decline stemmed mainly from the fall in short-term interest rates (up to 5 years). Because the elasticity of the demand for housing is estimated as being high,<sup>54</sup> it is reasonable to assume that the lower interest rate acted to increase demand. Nonetheless, it is doubtful whether it is possible to regard the rise in the extent of mortgages as underpinning the recovery of housing demand, as interest-rate developments led to a sharp increase in remortgaging, and this activity accounted for over half of mortgage transactions during part of the period.

Data on the number of housing transactions (new and second-hand units) attest to a significant increase in the first half of 2004, with a monthly average of 8,019 transactions, up by 11 percent over 2003. The number of transactions amounted to about 96,000 in 2004, the highest figure for four years. Although the share of new units in total transactions fell,<sup>55</sup> the 6 percent increase in sales of new apartments in the private sector was notable. By contrast, there was a sharp 26 percent decline in sales of new apartments whose construction was initiated by the government, as well as of those under construction.

<sup>54</sup> Zvi Eckstein, Ami Barnea, and Menahem Fellerman (2001), "The Demand for Credit in the Construction Industry," Bank of Israel Discussion Paper 98.01.

<sup>55</sup> According to data from the Ministry of Construction and Housing, this dropped from 36 percent in 2000 and 2001 to 26 percent in 2004. This figure attests to the deterioration in the situation of contractors and the prosperity in the market for second-hand apartments.

Note that in comparison with the first half of 2003, the data could indicate a rise in demand, but it would be a mistake to draw this conclusion. There are two reasons for this: first, security tension increased (the war in Iraq), serving to reduce the level of activity in the first half of 2003; and second, because of the strike in the public institutions at the end of 2003 many transactions undertaken then were recorded only at the beginning of 2004, so that the final reports of transactions by the tax authorities might be biased upward.<sup>56</sup> In addition, in the first half of 2004 demand was affected by further exogenous factors, such as the rise in investment in Israeli real estate by French Jews,<sup>57</sup> due to the increase in anti-Semitic acts there.<sup>58</sup> Investment in real estate by French Jews consists mainly of purchases of large and luxurious apartments in the Tel-Aviv conurbation, along the coastal plain, and in Jerusalem—which could partly explain the rise in prices in those areas at the beginning of the year.

In the second half of 2004 it transpired that the signs of recovery evident in the first two quarters were ephemeral, as expressed in the trend shift in the principal indicators—the 10 percent decline the number of apartment transactions and the 15 percent drop in the extent of mortgages taken—in the second half of the year, and the slowdown or fall in real housing prices throughout most of Israel.

In view of the persistent economic growth, the question arises why demand for housing did not expand. The differential effects of growth, together with the high unemployment rate, which increases uncertainty regarding the ability to pay back loans,<sup>59</sup> served to dampen demand and deter many people from embarking on housing transactions. Other factors which acted to restrain demand during the year were the low inflation environment, which reduced the demand for apartments as an investment asset,<sup>60</sup> and the increased attractiveness of investment in the financial markets.

To the differential effect on the growth rate of the various population groups was added the cancellation of aid grants awarded to eligible persons and their replacement by subsidized loans at the beginning of 2003,<sup>61</sup> The effects of this move were felt mainly by the low- and medium-income socioeconomic classes, as well as by persons living in the peripheral areas. The number of eligible persons taking up mortgages plummeted by 27.6 percent in 2004. This decline encompassed new immigrants, who

The differential effects of growth together with the change in the rules of entitlement served to dampen housing demand.

<sup>56</sup> Purchase tax regulations permit a transaction to be registered within 50 days of its implementation.

<sup>57</sup> Based on reports from contractors and real-estate agents.

<sup>58</sup> The depreciation of the NIS vis-à-vis the euro also served to increase inward real-estate investment.

<sup>59</sup> Although the unemployment rate has declined, part-time and temporary employment has risen, and hence uncertainty has not been reduced.

<sup>60</sup> A deeper analysis of this subject may be found in Yona Rubinstein, “Housing Prices in Israel, 1974—96: a Financial Bubble?” in Leo Leiderman (ed.) *Inflation and Disinflation in Israel*, Bank of Israel, 1999.

<sup>61</sup> In August 2003 the ‘Eitam Program,’ which had a moderating effect on the market response to the cancellation of the grants, was instituted. For an analysis of the effect of the aid program, see Bank of Israel, *Annual Report 2001*, the section on construction and the discussion of the effect of the ‘Scharansky Law.’

displayed a high rate of mortgage-taking in recent years,<sup>62</sup> as well as veteran residents (a 21.7 percent decline). As regards newly-weds (with few eligibility points), many of them may have chosen to take mortgages on the open market because of their attractiveness and the narrowing gap between interest rates on mortgages for eligible persons and those offered by the banks. The effect of the policy of replacing aid grants by loans, together with the cancellation of the location grant, on other eligible persons was significantly negative. It was reflected by a marked decline in the number of eligible persons taking mortgages, especially in the peripheral areas, where the loans accounted for a large proportion of an apartment's price, alongside the intensification of demand pressures in the Tel-Aviv conurbation.<sup>63</sup> The low level of demand in the peripheral areas may also be explained by the fact that the population is waiting for the policy to be brought up to date. Even though, according to estimates, the housing aid grants item in the budget of the Ministry of Construction and Housing will be halved, statements made during the year have mentioned the possibility of reinstating some of the benefits. As a result, the public's expectations have been adjusted, and suppressed demand, a feature that has been seen in the past when temporary aid programs were introduced, has developed. The sudden cancellation of the benefits which compensated in the past for the lack of attractiveness and high risk of investing in housing in the northern part of Israel, in Galilee, and in the Negev, led to the erosion of the relative advantage of these areas and had an adverse effect on activity in the industry. However, as there is no long-term plan, which would require the creation of new employment opportunities, the erection of an infrastructure, etc., it is doubtful whether reinstating the benefits can constitute an adequate solution to the problem of demand in the peripheral areas.

The increase in demand in the first half of the year appears to have been perceived as temporary, and hence did not lead to adjustment on the supply side. It may also be assumed that the rate at which demand rose was not sufficient to justify an adjustment of this kind. This is borne out by contractors' expectations of demand developments, which are derived from many different sources of data: the number of building starts, which has been declining for four consecutive years, fell by 8.9 percent in 2004, a process which will determine the level of activity in the coming years; the number of private-sector building permits, which serves as another indicator of expectations regarding future activity in the industry, rose by only 1.2 percent; the number of building completions continued to contract in 2004, a result of the low number of starts in the last two or three years and of the longer construction time (which has risen to an average of 26.1 months per project).<sup>64</sup> These factors served to accelerate

<sup>62</sup> According to Ministry of Housing data, about 72 percent of eligible immigrants who arrived in the 1990s took up mortgages.

<sup>63</sup> Ministry of Housing data support this contention, and according to them sales in peripheral areas (where most of the eligible population is situated) has fallen by 70 percent since the program went into effect in April 2003. The extent of mortgages taken up in the Negev fell by 41 percent in 2004, and in Galilee by 34 percent.

<sup>64</sup> Two factors which may have influenced the rate of construction are the decline in demand and the shortage of skilled workers.

the decline in the stock of apartments in the final stages of construction and, together with the erosion of stocks, caused prices to rise.

Another indicator of weaker activity in the industry was the decline in the amount of credit taken from the banking system by contractors. According to data supplied by the Supervisor of Banks, real credit fell to NIS 131 million in 2004, compared with NIS 137 million at the end of 2003. This trend attests to both the contraction of activity and financing difficulties—a constraint which according to the Bank of Israel's Companies Survey was aggravated in 2004. There was also an increase in the ratio of total credit to the construction industry and credit to the public at the banks' cognizance (including off-balance-sheet credit) in 2004, and this was in the vicinity of 20 percent, a high level which requires loan-loss provision in accordance with the directives of the Supervisor of Banks. The proximity to the limit causes closer scrutiny of projects and makes it particularly hard for small contractors to raise funds. The ratio of total

**Table 1.31**  
**Indicators of Supply and Demand, the Housing Market, 1990–2004**

	Annual average					Annual average change (percent)		
	1990–96	1997–2002	2002	2003	2004	2002	2003	2004
Permits for private residential construction	30,061	25,018	22,917	23,191		0.3	–8.4	1.2
Number of transactions <sup>a</sup>	116,051	93,631	83,441	86,519	96,232	–13.0	3.7	11.2
Residential land (units) <sup>b</sup>	38,853	21,312	14,375	15,205	16,594	2.1	5.8	9.1
Private-sector apartments <sup>c</sup>	13,455	14,739	14,599	11,477	12,188	0.4	–21.4	6.2
Population ('000)	5,232	6,204	6,570	6,690	6,806	2.0	1.8	1.7
Households ('000) <sup>d</sup>	1,392	1,723	1,847	1,881	1,914	2.0	1.8	1.7
Per capita GDP (NIS million, 2000 prices)	64,000	71,750	70,492	70,121	71,887	–2.7	–0.5	2.5
Housing loans taken by eligible persons	52,025	39,006	32,111	30,123	21,808	–12.1	–6.2	–27.6
<i>Of which</i> Immigrants	22,166	9,741	6,757	6,028	4,515	–16.8	–10.8	–25.1
Young couples	18,971	23,126	20,093	20,035	15,686	–6.8	–0.3	–21.7
Total mortgage loans (NIS million, current prices)	12,997	18,636	20,024	16,167	19,053	14.3	–19.3	17.9
of which Nondirected	7,479	14,150	15,537	12,048	15,886	11.2	–22.5	31.9
Average interest on nondirected mortgages <sup>e</sup>		6.06	5.75	6.02	5.06	5.75	6.02	5.06

<sup>a</sup> By date of implementation of transaction; including new and second-hand apartments, and unrequited gifts to relatives; excluding bequests, apartments sold as part of a farm, protected-rental apartments occupied when the sale went through, some apartments in industrial or commercial buildings sold as a package deal, and the 'Build your own home' program.

<sup>b</sup> According to number of transactions implemented (as distinct from those offered), excluding units as yet unplanned; data from Israel Lands Administration.

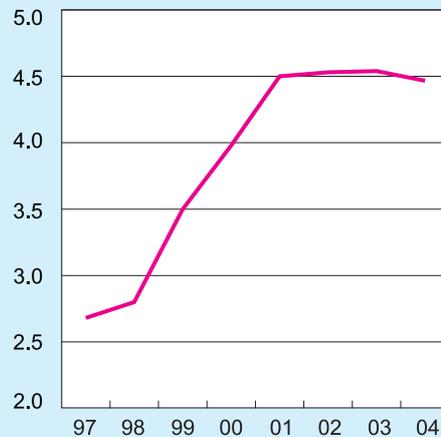
<sup>c</sup> Until 1998, in the 24 largest towns; as of 1998, in the entire country.

<sup>d</sup> Excluding institutions, student dormitories, Kibbutzim, and individuals not residing in a settled community (Beduin in the south, etc.), and immigrant absorption centers.

<sup>e</sup> As of 31.10.2002, the interest is the average effective interest calculated as the weighted average of the interest on new loans (whether supplementary or not) extended by banking corporations for home purchase, or by mortgaging a home. Until 31.10.2002 the average interest was calculated as the weighted average of nondirected loans from bank sources extended or renewed by the mortgage banks.

SOURCE: Based on data from the Ministry of Construction and Housing, the Israel Lands Administration, the Income Tax Commission, and the Central Bureau of Statistics.

**Figure 1.28**  
**Ratio of Credit to Product in**  
**Construction and Real**  
**Estate,<sup>a</sup> 1997–2004**



<sup>a</sup> Ratio of credit to the construction and real estate industry to the product of the construction industry.

SOURCE: The Central Bureau of Statistics and data of the Banking Supervision Department in the Bank of Israel.

credit to the industry's product, which indicates the risk level of construction companies, was down in relation to the preceding year, but remained high—a development which might lead to the higher cost of credit in the future (Figure 7). Nevertheless, nonbank financing substitutes increased in 2004, especially bonds. Many of the companies which went public in 2004 were construction and real-estate companies.

As regards the geographical distribution of building projects, there is a discernible trend for contractors to move their activity to the central region. This is due to the slowdown in sales and the erosion of profits in the peripheral areas, increasing both the financing burden and credit difficulties.

Land sales policy also has a clear effect on activity in the industry. The

government controls most of the land, and hence determines the supply of units in the long run. The low extent of land allocation relative to the rise in the number of building starts causes the stock available for construction to contract, thereby making land more expensive as demand increases. In recent years the trend has been to increase the supply of land for residential construction, and this rose again in 2004, by 9.1 percent, but in quantitative terms it is still less than the target set by the government. In the context of the economic recovery, preparing an adequate stock of land at this stage is essential in order to enable the market to respond rapidly once demand revives, as well as to moderate the expected increase in prices. Planning is no less important: The elasticity of the industry's response to fluctuations in demand in the various regions should be assessed in order to ensure that the incremental quantity will be in line with changes in demand. Releasing land and redefining land uses or amending the intensity of its use, will enable the supply of available land to rise so that costs and prices may decline. The utilization of tenders in 2004 indicates that there is a lack of adjustment between the extent of land sold, on the one hand, and the development of activity in the industry and shifts in demand, on the other. This is a clear indication of surplus supply of land in the peripheral areas and maximum utilization in the principal demand areas, where the land component accounts for 61 percent of apartment prices.<sup>65</sup>

<sup>65</sup> See Zvi Eckstein and Menachem Perlman (1996), "The Privatization of Land in Israel," *Applied Economics*, June.

*c. Nonresidential construction*

The output of nonresidential construction fell by 15.3 percent in 2004, despite the increase in business-sector product, representing a cumulative drop of over 20 percent in the last three years. This may be explained by the adjustment of the stock of structures to the level of product and employment in the business sector in recent years, alongside the conclusion of the impact of mass immigration and the creation of surplus supply of structures in various sectors (manufacturing, commerce, and offices).<sup>66</sup> Declines in the area of completions in nonresidential structures and of rents, in view of the rise in business-sector product this year, may indicate the existence of a surplus of built-up areas, due to the drop in demand.

A positive development in the area of nonresidential construction is the rise in investment—in both structures and roads—at the end of the year, although this does not indicate a trend.

**Table 1.32**  
**Factor Inputs and Productivity in Construction, 1990–2004**

	2002	2003	2004	Annual average change (percent)				
				1990–96	1997–2002	2002	2003	2004
Total employees ('000) <sup>a</sup>	208.7	204.8	194.2	9.8	-2.7	-5.3	-1.9	-5.2
Israelis	119.1	129.8	128.7	11.2	-3.8	1.8	9.0	-0.8
Palestinians	15.0	18.7	17.0	-7.2	-12.4	-48.3	24.7	-9.1
Foreign workers	74.6	56.3	48.5		3.1	0.4	-24.5	-13.9
Construction equipment capital stock (NIS million, 2000 prices) <sup>b</sup>	11,653	11,899	11,926	12.4	8.9	4.8	2.1	0.2
Cement sales ('000 tons)	4,379	3,931	3,692	13.6	-4.2	-0.1	-10.2	-6.1
Labor productivity				0.7	-0.8	2.4	1.2	-0.8
Real wage per employee post, <sup>c,d</sup> (2000 prices)								
Deflated by output prices	5,708	5,286	5,006		1.5	-3.6	-7.4	-5.3
Deflated by CPI	5,705	5,529	5,478		1.5	-4.0	-3.1	-0.9
Total factor productivity <sup>e</sup>				0.7	-2.7	1.0	0.1	-1.9

<sup>a</sup> Includes an estimate of unreported foreign workers.

<sup>b</sup> Capital stock at beginning of year.

<sup>c</sup> Until 2002 the data were derived from the wages of Israeli and foreign workers, and after 2002 only from the wages of Israelis.

<sup>d</sup> Real wage deflated by the change in output prices or by the CPI.

<sup>e</sup> Product per hour worked weighted by capital and labor: average weight of labor, 84 percent.

SOURCE: Based on data from Central Bureau of Statistics.

<sup>66</sup> The area of building completions of nonresidential structures fell by 29 percent, another sign of a surplus of built-up areas.

## The supply side

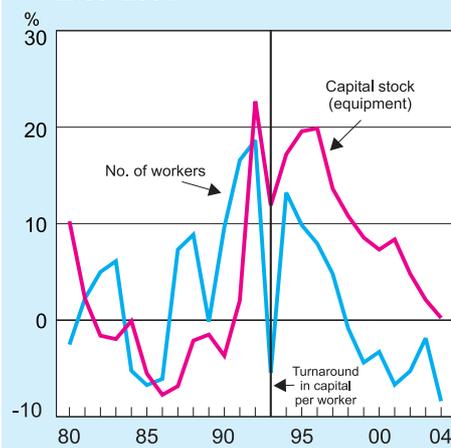
### Employment

In 2004 there was a decline in the number of employed persons in all groups, including Israelis.

The number of persons employed in the construction industry fell by 5.2 percent and reached 194,200. Employment in the industry in the last few years has been characterized by marked changes in the number and composition of employees. The shift in 2004 was expressed in a decline in all groups of employed persons, including local workers. Against the backdrop of the ongoing reduction in activity and growing pessimism, there was a growing tendency among employers to reduce the number of Israeli workers, whose employment costs are relatively high. Concurrently, the policy of deporting foreign workers persisted this year, and in the last two years their number has fallen by a cumulative 38.5 percent. Since dismissals of foreign and Palestinian workers exceeded those of Israeli workers, the composition of employment changed, and the industry's dependence on non-Israeli workers fell from about 36 percent in 2003 to 34 percent in 2004.

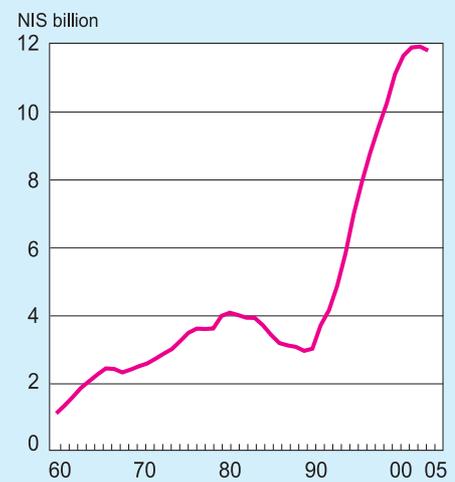
Starting in 2004:III signs of substitution between groups of workers began to emerge. The number of Israeli workers declined while that of Palestinians rose (apparently due to the relaxation of the closure policy), as did that of foreign workers.

**Figure 1.29**  
Rate of Change of Capital Stock (Equipment) in Construction and in Number of Construction Workers, 1980–2004



SOURCE: Based on Central Bureau of Statistics data.

**Figure 1.30**  
Capital Stock of Construction Equipment, 1960–2005 (2000 prices)



SOURCE: Central Bureau of Statistics.

*Production costs*

Although the real wage (per employee post) of Israeli workers was 1 percent lower in 2004 than in 2003, the change in the composition of workers and the rise in the wage of non-Israeli workers (due to the reduction of their supply) led to an increase in the average wage in the industry. All the components of the index of construction inputs rose, including wages. Prices of building materials, and haulage services rose steeply as a result of the depreciation of the NIS vis-à-vis the euro.

*Capital stock and productivity*

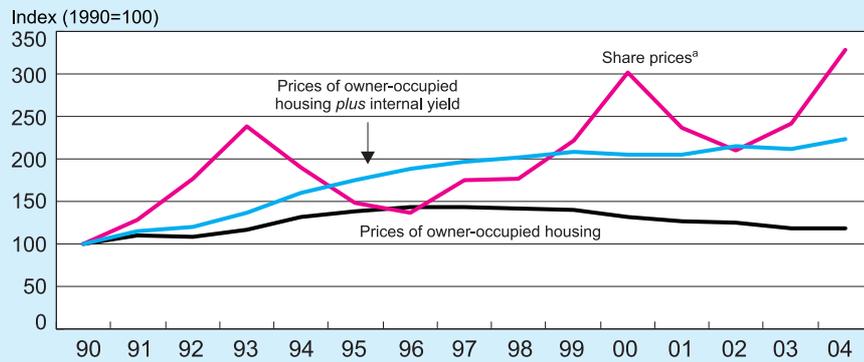
Capital stock per worker rose further in 2004, a positive indication that the process of mechanization is continuing. Investment in construction equipment, however, continued along the downward trend of the previous year, and declined by 6 percent.

Labor productivity went down in 2004 because labor inputs declined by less than did production capacity. Total factor productivity, which takes capital inputs into account, decreased by 1.9 percent. However, there are at least two reasons for regarding these results with some misgivings, namely, the lack of statistical data on the number of persons (both legal and illegal) employed in the industry, and the sensitivity of productivity to changes in the composition of output.

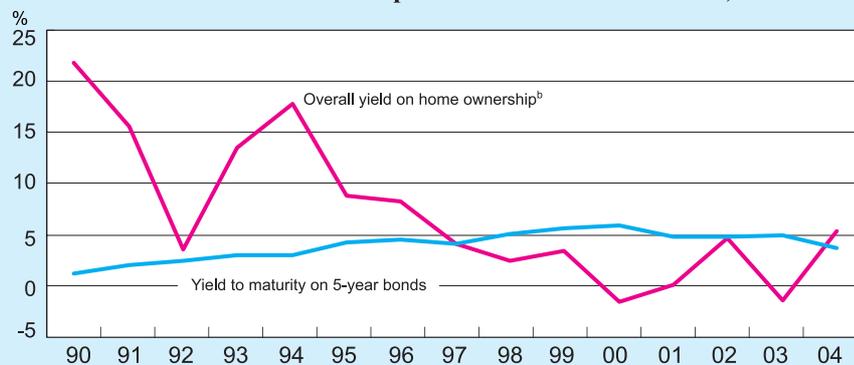
*Purchase of apartments for investment*

Relative to the alternatives, apartments were not considered an attractive component of the investment portfolio in 2004 either. Total yield (from rent and capital gains) was 6.71 percent, less than that on shares, which soared by 17.6 percent. Although the yield on shares, which are risky assets, is not comparable with that on an apartment, the relatively low liquidity of real-estate assets and the lack of elasticity in the distribution of the real-estate portfolio require a premium similar to that of shares.

**Figure 1.31**  
**Real Indices: Prices of Housing and Shares,\* 1990–2004**



**Real Yield on Home Ownership and on CPI-Indexed Bonds, 1990–2004**



**Yield from Capital Gains on Owner-Occupied Housing and from Rent, 1990–2004**



\* Prices and yields deflated by CPI. All figures are annual averages.

<sup>a</sup> Share prices were calculated without deducting the dividend included in the General Share Price Index.

<sup>b</sup> The yield on home ownership includes yield on rent and from capital gains, calculated from change in housing prices, according to average apartment price as calculated by CBS. Rent is calculated according to the CBS survey (October 1994), referring to average rental apartment.

SOURCE: Based on Central Bureau of Statistics data.

**Table 1.33**  
**Selected and Relative Construction Prices, 1990–2004**

	(change over previous period, percent)												
	Apartment prices according to owner-occupied housing survey <sup>a</sup>				Rent				Owner-occupied housing component of CPI				
	Apartment prices	Relative to CPI <sup>b</sup>	Relative to input price index	Relative to \$	Relative to CPI	Relative to \$	Relative to CPI	Relative to \$	Relative to CPI	Relative to \$	Input <sup>c</sup>	Output	Product
1990–96 (annual average)	21.8	7.6	9.3	13.2	13.1	19.1	7.9	13.6	13.4	13.3	13.5		
1997–2002	2.2	-2.2	-2.0	-4.3	2.5	0.4	0.3	-1.8	4.4	4.8	4.3		
2001	-3.5	-4.6	-4.8	-6.4	2.3	0.3	3.0	0.9	1.3	1.5	1.3		
2002	5.3	-0.4	0.8	-6.6	5.6	-0.9	5.8	-0.8	4.5	5.3	3.3		
2003	-5.7	-6.3	-9.5	-1.8	-4.1	0.5	-5.8	-1.3	4.2	5.0	3.6		
2004	-0.4	0.0	-5.0	1.1	-1.6	-0.5	-2.5	-1.4	4.8	4.0	4.8		

<sup>a</sup> The changes in apartment prices are obtained from the survey of housing prices (which are not included in the CPI since 1999).

<sup>b</sup> The method of calculating the CPI and the index of residential construction input prices is based on the calculation of these indices for the relevant period. The average of the price index was calculated for each period. As of January 1999, the CBS has calculated the CPI in a new way, with a different weighting system for the goods and the services included in the basket, and a different way of measuring the housing item. According to the new method, changes in rent (according to renewed contracts only) are used as an estimate of the use made by the occupant in the housing services of the apartment owned.

<sup>c</sup> According to the index of prices of construction inputs.

SOURCE: Central Bureau of Statistics.

**Box 1.9**  
**Investment Cycles and the Housing Shortage**

The main question in the area of residential construction is how many available apartments are needed in order to guarantee adequate housing. The point of departure for any assessment of this kind is the ratio between the number of households and the number of housing units, as this should give an initial indication of the balance between supply and demand.<sup>1</sup> An analysis of the development of this index is essential for identifying potential demand pressures, which could influence relative prices of apartments as well as activity in the sphere of residential construction.

Demand for housing is affected by a variety of factors, both economic and demographic. The main economic factors determining long-term demand include permanent income and the interest rate; the demographic factors include shifts in the rate of natural increase and the composition of the population. In the short run a wide range of events and other variables are likely to have an effect; these include demographic shocks (immigration), exchange-rate movements, developments in the area of rental housing, government intervention, speculative trends, expectations of the public, etc.<sup>2</sup> The heterogeneity of the population and the effect of changes in economic conditions gives rise to greater variance in the probability that an individual or group of individuals will establish a household and purchase an apartment. When this probability grows, pressure on the existing stock of apartments increases, and as the gap between the population and the supply of new apartments widens, the shortage of potential housing rises, and may be reflected in higher prices.

According to data for 2003, Israel's population numbered some 2 million households and the stock of housing was 2.1 million units. The ratio between these two parameters, which is derived from those data, was 1.07 units per household—a situation that is no different from that of most European countries and better than some. However, in the last five years this ratio has been trending downward, and in view of the continued growth of the population and the number of households in recent years this can be ascribed to the reduction of the supply of new housing units.

The development of the series on building completions over the years is in line with the demographic and cyclical changes evident in Israel, with two episodes in which supply responded to the decline in immigration in the first half of the 1990s (Figure 2) featuring prominently. Since the increment in new

<sup>1</sup> Assuming that one unit is required per household.

<sup>2</sup> According to a report by ERCG, a research and economic consultancy which has developed a model for forecasting prices and quantities in the residential construction industry in Israel, issued in February 2003.

**Number of Apartments per Household, 2002**



SOURCE: Eurostat, and based on Central Bureau of Statistics data.

apartments is largely a function of two variables—building starts, which are derived from expectations of the level of future demand, and construction time—the supply of apartments is lagging two years (the average construction period) behind starts.

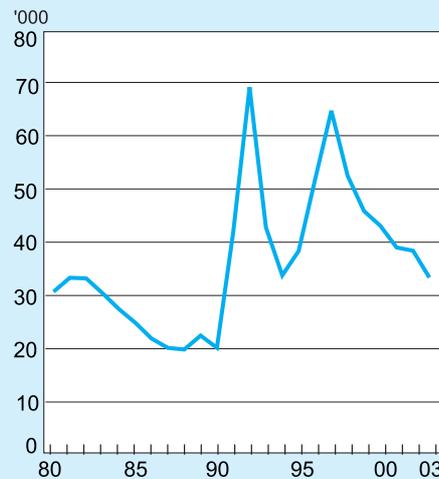
The aggregate data, which show the gap between the supply of apartments and demand in the country as a whole, do not indicate the regional distribution of potential supply. It would appear, however, that developments in the housing market can be more readily understood on the regional than on the national level, because economic and demographic factors have differential effects in different areas.

Figures 3-5 present the distribution of building completions and incremental population in Israel by region in three periods.

The absolute numbers derived from these two series made it possible to calculate the ratio between them, constituting an indication of the potential housing shortage in various regions.<sup>3</sup> The main findings are as follows:

<sup>3</sup> It is not possible to analyze the ratio between the increment in households and the flow of apartments because there are no by-region data on households.

**Total Apartment Completions, 1980–2003**



SOURCE: The Central Bureau of Statistics

In the 1980s the growth rate of the stock of housing was low, only about 1 percent, compared with 5 and 6 percent in the 1960s and 1970s respectively. The population growth rate was also lower than previously, but still higher than that of apartments, and averaged 1.5 percent. The areas in which the ratio between the incremental population and additional new apartments was high were the Jerusalem region and the central and southern parts of the country.

In the first half of the 1990s the shortage of potential apartments was greater than in the 1980s, both nationally and regionally. This was the result of extreme demographic shifts and the delay in adjusting the supply of apartments to supply shocks in the initial stages. The distribution of the population appears to have been affected only slightly by the various incentives such as subsidized loans, grants, the availability of government-initiated housing, etc. Evidence of this may be found in the attitude of the population to the supply of apartments, as these were plentiful in the peripheral areas, which benefited from government support, as well as in the Tel-Aviv conurbation, which attracted many of the immigrants because of better employment opportunities.

**Table 1**  
**The Ratio of the Rise in Population to the Rise in the Number of Apartments, 1980–2003**

	1980-1989	1990-1994	1995-1999	1990s	2000-2003
Jerusalem	4.64	6.87	4.74	5.81	6.03
The North	2.69	4.90	3.33	4.11	3.32
Haifa	2.23	6.98	3.19	5.08	2.49
Central area	3.34	5.53	2.94	4.23	3.59
Tel Aviv	1.17	5.60	0.15	2.87	1.59
The South	3.16	6.62	3.27	4.94	3.71
Judea and Samaria		4.38	5.12	4.75	4.46
Total	2.89	4.36	2.88	3.62	3.48

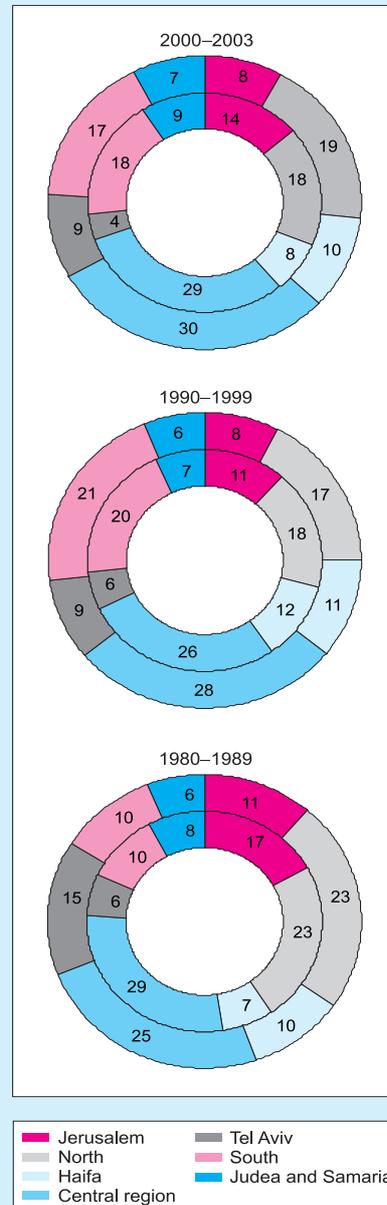
SOURCE: Based on Central Bureau of Statistics data.

In the second half of the decade the ratio between population growth and the number of apartments fell by almost 40 percent, and in some regions it was down by 50 percent from the preceding period. The reason for this was the industry's ability to fulfill expectations regarding the continued immigration and the increase in households. In regard to the Tel-Aviv conurbation, it may be assumed that emigration, explained by high housing prices, caused this index to plummet by 98 percent.

2000-2003: since the mid-1990s immigration to Israel has been declining constantly, as has the rate of natural increase. These two variables were expressed in moderate population growth—an annual rate of 1.8 percent. Concurrently, the

number of building completions contracted from 43,440 a year in 2000 to 31,700 in 2004. This decline in the supply of apartments means that the available stock required to check the market response to internal changes or external shocks, which cause demand to rise and affect prices, has contracted. The development of the index was not uniform in the various regions during this period: in the north it stabilized at a level similar to that evident in the preceding period, and in Haifa it even declined, while in the main areas of demand (the Tel-Aviv conurbation) the situation deteriorated. This development could lead to critical demand pressures, as most of the population with the highest potential for setting up households and improving accommodation is in the Tel-Aviv conurbation. Note that the average size of households in the Tel-Aviv conurbation is smaller than in the rest of the country, so that this index, which is based on population size, may even be biased downward in that region. Another indicator of potential demand pressure may be derived from the ratio between apartment prices and monthly income in the various regions, as this attests to the public's ability to buy apartments. In 2002 the purchase ability in the Tel-Aviv conurbation was estimated to be high.

**Composition of Population Increase and Apartment Completions,<sup>a</sup> by Region, 1980–2003**



<sup>a</sup> Outer rings—Composition of apartment completion. Inner rings—Composition of population increase.

SOURCE: Based on Central Bureau of Statistics data.

Changes in the level of housing shortage in recent years should be regarded from the perspective of the future. Thus, for various reasons (cost of land, demand-side effects, etc.) the Tel-Aviv conurbation is characterized by high prices, so that the intensification of the housing shortage could be translated into a further increase in prices when demand is realized (as in fact occurred in 2004). The case of Jerusalem is notable, because the shortage there, as indicated by the index, was exacerbated by the low increment in apartments and in the stock of housing. Although Jerusalem is characterized by large households (serving to bias the index upward) and a relatively low ability to purchase (relative to the rest of the country), the improvement in the security situation may heighten demand there and cause prices to rise, especially since it continues to remain attractive to buyers from abroad.

In the peripheral areas, where the stock of unsold apartments is relatively large, it is doubtful whether the supply of new apartments will increase in the near future. The population in these regions will continue to grow as a result of natural increase, although it is expected that the shift to the Tel-Aviv conurbation will persist because the deterioration in individuals' economic situation reinforces their tendency to move in search of work. The effect of these factors on the housing shortage index is not clear, but it is expected to remain high.

In conclusion, the index of the ratio between the increment in the population and the stock of apartments is a rough indicator of the potential housing shortage. Nevertheless, because of the dearth of data on the utilization of the stock of housing by uses,<sup>4</sup> and the possibility of a circular relation between the establishment of households and the housing stock, using indices of the availability of housing would seem to be insufficient. The true extent of the housing shortage may be obtained from analyzing the various factors in combination, namely, population areas, household size, apartment prices, the composition and distribution of the population, and expectations regarding future economic developments in Israel.

On the one hand, in the last few years the housing stock has been higher than the number of households, density has been low, and demographic shocks similar to those of the years of mass immigration are not expected. On the other, a decline in the ratio of housing stock to households, the contraction of the supply of new apartments, the decline in household size, and the erosion of the stock of unsold apartments, reflected in a rise in real prices, are all initial indications of the creation of a potential housing shortage. In view of the pace at which the industry has adjusted to shocks of various kinds (such as the influx of immigrants in the 1990s), it would appear that demand pressures could cause prices to rise, especially in the short term, when the existing stock is eroded.

<sup>4</sup> Latest data on the utilization of the stock of housing and its uses are taken from the last population census, 1995.