5. Construction

The output and product of the industry declined in 2003 for the sixth successive year, mainly because of the fall in demand.

The output of the construction industry declined in 2003, for the sixth consecutive year, encompassing both residential and nonresidential construction. The 5 percent decline in total output does not reflect the full severity of the state of the industry; the contraction in the area of building starts is far sharper—19 percent. Output fell by 4 percent in residential construction and by 9 percent in nonresidential construction (Table 1.33). The relatively moderate decline in total construction output is due to the steep 40 percent rise in defense construction—the security fence. The downward trend in activity persisted throughout the year, the industry's product fell by 4 percent, and the contraction in its share in business-sector product also continued, reaching less than 8 percent (Figure 1.30).

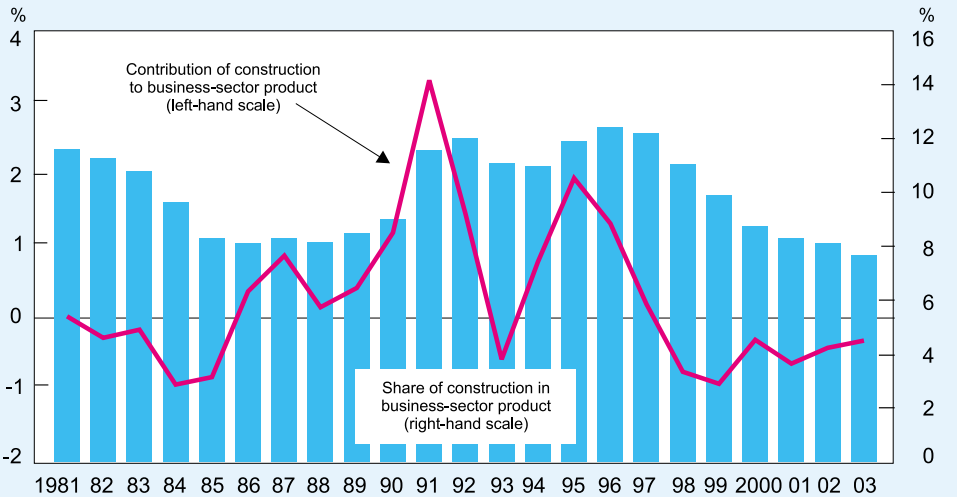
The main reason for the decline in output was the contraction in demand—as indicated by the fall in prices—although supply-side constraints were also at work, among them the government's policy of reducing the number of foreign workers.

Table 1.33
Output and Product in Construction, 1990–2003[a]

			Annual average change (percent)				
	2002	2003	1990–96	1997–2002	2001	2002	2003
Total output (*NIS million, 2000 prices*)	41,935	40,012	13.3	–5.1	–6.3	–4.0	–4.6
Residential	17,871	17,176	12.0	–7.9	–10.8	–8.8	–3.9
Nonresidential	20,542	18,620	18.0	–3.3	–2.2	–0.9	–9.4
Other[b]	3,522	4,216	2.0	2.4	–3.1	3.9	19.7
of which Defense construction	1,877	2,592	0.7	4.3	–0.1	9.7	38.1
Apartments under construction (*'000*)	63.0	58.8	18.8	–8.7	–10.0	–9.6	–6.7
Construction time for residential construction (months)	23.8	24.1	–0.8	2.8	–7.2	8.2	1.3
Total area of building starts (*'000 of sq. m.*)	7,886	6,394	16.9	–7.0	–21.7	3.8	–18.9
Residential	5,453	4,844	15.4	–7.1	–25.5	3.7	–11.2
Nonresidential	2,433	1,550	19.1	–6.9	–11.8	4.0	–36.3
Total area of building completions (*'000 sq. m*)	8,430	7,784	12.9	–3.4	–3.4	–6.1	–7.7
Residential	6,153	5,409	11.9	–3.1	–5.4	–0.8	–12.1
Nonresidential	2,277	2,375	15.3	–4.1	1.5	–17.8	4.3
Residential starts (*'000 units*)	32.4	29.7	17.0	–9.6	–30.5	2.0	–8.5
Residential completions (*'000 units*)	338.6	33.5	13.1	–5.1	–9.0	–2.2	–13.3
Apartments offered for sale (*'000*)[c]	22.5	20.2			–17.8	–11.3	–10.0
Change in construction product[d]			15.2	–4.8	–7.3	–5.0	–3.9

[a] Calculated from unrounded figures.
[b] Includes defense construction and an estimate of maintenance.
[c] End-period figures.
[d] The definition of the construction industry was changed in 2002, and the equipment-assembly industry was added. Retroactive product figures changed in consequence, and there may be discrepancies between those given here and in previous reports.
SOURCE: Based on Central Bureau of Statistics data.

Figure 1.30
Direct Contribution of Construction Product to Business-Sector Product, 1981–2003 (at factor cost, 1995 prices, percent)



SOURCE: Based on Central Bureau of Statistics data.

Despite the contraction in the output and total number of employees in construction, the number of Israelis employed rose as a result of the drop in the number of foreign workers. The industry's total contribution to employment of Israelis is smaller, however, because the decline in its output also affects other industries with a high domestic component.[37]

Reducing the number of foreign workers was found to function particularly efficiently when the economy is far below full employment. In addition to the high substitution rate in this situation, the effective demand-side constraint on the expansion of activity prevents the substitution of workers from exerting upward pressure on the wages of Israelis, and hence the substitution process has not had an adverse effect on activity.

Residential construction

The output of residential construction dipped moderately. The area of building starts and completions fell more steeply.

The output of residential construction, reflecting the stock of area in which construction activity is ongoing and the rate of progress, declined by about 4 percent in 2003 due to the drawing-down of the stock of apartments under construction and the slowing of the rate of construction. The area of building starts and completions fell by some 11 percent.

The main reason for the contraction of activity was the fall in demand. Most of the fundamentals underlying the demand for housing continued to decline in 2003: per capita GDP declined for the third year in succession; the population growth rate, and especially the number of households, was very low, and returned to the level evident in

[37] The multiplier effect. In 2000–2002 the number of persons employed in industries producing raw materials for the industry fell at the same rate as the construction industry's output.

Table 1.34
Indicators of Supply and Demand, the Housing Market, 1990–2003

			Annual average				
	2002	2003	1990–96	1997-2002	2001	2002	2003
Permits for private residential construction	25,085	22,717		30,088	–15.8	0.2	–9.4
Number of transactions[a]	91,962	82,274	116,051	95,051	0.2	–4.1	–10.5
Residential land (*units*)[b]	14,375	15,205	39,806	21,313	–37.3	2.1	5.8
Private-sector apartments[c]	14,599	11,390	13,455	14,739	3.8	0.4	–22.0
Population (*'000*)	6,570	6,690	5,232	6,204	2.4	2.0	1.8
Households (*'000*)[d]	1,847	1,881	1,392	1,723	3.6	2.0	1.8
Per capita GDP (*NIS million, 2002 prices*)	70,049	69,692	64,383	71,517	–3.2	–2.8	–0.5
Housing loans taken by eligible persons	32,111	30,075	52,025	39,006	–5.2	–12.1	–6.3
of which Immigrants	6,757	6,021	22,166	9,741	–9.8	–16.8	–10.9
Young couples	20,093	20,003	18,971	23,126	–1.8	–6.8	–0.4
Total mortgage loans (*NIS million, current prices*)	20,024	16,167	12,997	18,636	–7.2	14.3	–19.3
of which Nondirected	15,537	12,048	7,479	14,150	–1.8	11.2	–22.5
Average interest on nondirected mortgages[e]	5.75	6.05		6.06	6.42	5.75	6.05

[a] 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.

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

[c] Until 1998, in the 24 largest towns; as of 1998, in the entire country.

[d] Excluding institutions, student dormitories, Kibbutzim, and individuals not residing in a settled community (Beduim in the south, etc.), and immigrant absorption centers.

[e] 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.

the 1980s; housing grants were slashed during the year. The number of mortgages taken plummeted, and total mortgages fell by about 20 percent.[38]

Demand fell in the housing services market, as is indicated by the decline in prices. Rents, as reflected in renewed contracts, dipped in dollar terms, so that the trend cannot be explained solely by indexation. The fall in asset prices was also due to an increase in the annual average of real long-term interest rates. As a result of these factors apartment prices fell by 6 percent (relative to the CPI, annual average, Table 1.36). This, together with the rise in construction costs (expenditure on labor and primary

[38] These figures, as well as those for total housing transactions and sales in the private sector, were undoubtedly affected by the protracted strike by the Land Registry Office, which temporarily halted the implementation of transactions, so that the decline in demand is biased upward.

Table 1.35
Factor Inputs and Productivity in Construction, 1990–2003

			Annual average change (percent)				
	2002	2003	1990–96	1997–2002	2001	2002	2003
Total employees (*'000*)[a]	208.3	203.6	9.8	–2.7	–6.7	–5.4	–2.3
Israelis	118.7	129.1	11.2	–3.9	0.3	1.5	8.8
Palestinians	15.0	18.7	–7.2	–12.4	–50.8	–48.3	24.7
Foreign workers	74.6	55.8		3.1	22.8	0.4	–25.2
Construction equipment capital stock (*NIS million, 2000 prices*)[b]	11,654	11,899	12.4	8.9	8.4	4.8	2.1
Cement sales (*'000 tons*)	4,379	3,931	13.6	–4.2	–2.7	–0.1	–10.2
Labor productivity[c]			0.7	–2.0	–0.1	–1.6	2.7
Real wage per employee post[d,e] (*2000 prices*)							
Deflated by output prices	5,708	5,163		1.5	–0.6	–3.6	–9.5
Deflated by CPI	5,705	5,409		1.5	–0.2	–4.0	–5.2
Total factor productivity			0.7	–3.9	–2.7	–3.0	1.2

[a] Includes an estimate of unreported foreign workers.
[b] Capital stock at beginning of year.
[c] Product per hour worked weighted by capital and labor: average weight of labor, 84 percent.
[d] Until 2002 the data were derived from the wages of Israeli and foreign workers, and after 2002 only from the wages of Israelis.
[e] Real wage deflated by the change in output prices or by the CPI.
SOURCE: Based on data from Central Bureau of Statistics.

commodities), served to reduce investment in housing, which is residential construction output by definition.[39]

The increment in apartments in the last two years exceeded that in households.

Construction of 30,000 units was begun in 2003—9 percent less than in 2002. It is not clear whether this is below the annual growth rate of the number of households in previous years. In 1998–2001 the average annual increment to households was 57,000. This rate fell steeply in 2002, when the increment was only 34,500 households, and in 2003 it appears to have been lower still.[40] No large increment to households is expected in the coming years on the basis of the age distribution of the population in Israel.[41] In 2002 and 2003 construction of 38,600 and 33,500 units respectively was completed—in excess of the increase in the number of households in those years.

The rise in the number of households is not independent of the economic situation: the recession may cause the establishment of a household to be deferred or motivate young people to remain with their parents. This will eventually lead to greater overcrowding, and if suppressed demand exists it may be released once the economic situation improves. This appears to be behind the assertion that there are not enough

[39] The industry's output is slightly higher than residential investment because part of the output of renovations is not recorded as investment.

[40] The figure is not yet available, but the rate of population growth slowed in 2003, *inter alia* because of a significant decline in immigration.

[41] Because the 20–24 cohort, which will establish households in the next few years, is almost identical in size to the 25–29 cohort. Naturally, an influx of immigrants could alter the conclusions drawn from this analysis.

Table 1.36
Selected and Relative Construction Prices, 1990–2003

(change over previous period, percent)

		Apartment prices according to owner-occupied housing survey[a]			Rent		Owner-occupied housing component of CPI		Prices		
	Apartment prices	Relative to CPI[b]	Relative to input price index	Relative to $	Relative to CPI	Relative to $	Relative to CPI	Relative to $	Input[c]	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
2000	–4.8	–5.9	–6.9	–3.4	–3.0	–0.4	–3.8	–1.2	2.2	2.4	1.7
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	3.4
2003	–5.7	–6.3	–9.5	–1.8	–4.1	0.5	–5.8	–1.3	4.2	5.0	5.2

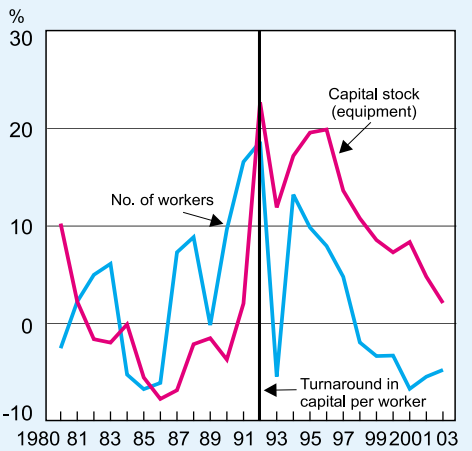
[a] The changes in apartment prices are obtained from the survey of housing prices (which are not included in the CPI since 1999).

[b] 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.

[c] According to the index of prices of construction inputs.

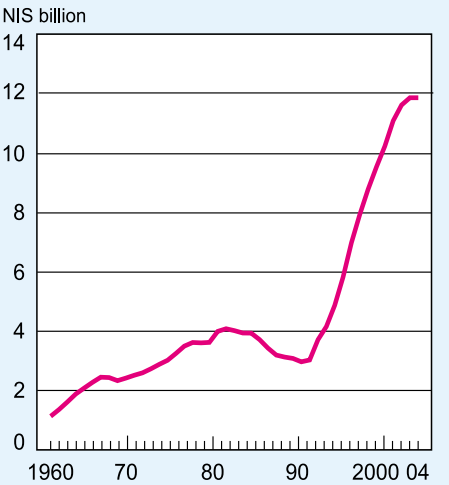
SOURCE: Central Bureau of Statistics.

Figure 1.31
Rate of Change of Capital Stock (Equipment) in Construction and in Number of Construction Workers, 1980–2003



SOURCE: Based on Central Bureau of Statistics data.

Figure 1.32
Capital Stock of Construction Equipment, 1960–2004 (2000 prices)



SOURCE: Central Bureau of Statistics.

building starts and that the government should act to increase them in order to avoid a rise in house prices once demand resumes. It is reasonable to assume that a rise in demand will lead to an increase in land and housing prices, as in fact happened in the early 1990s, but it cannot be assumed that the conditions behind it, chiefly the huge influx of immigrants, will recur in the foreseeable future. Be that as it may, in order to moderate price rises once demand resumes, the authorities should make a stock of planned housing available, so that a rapid supply-side response to an increase in demand is possible.

In addition, an examination of various indices of suppressed demand yields no evidence of its existence (see Box 1.7).

Nonresidential construction

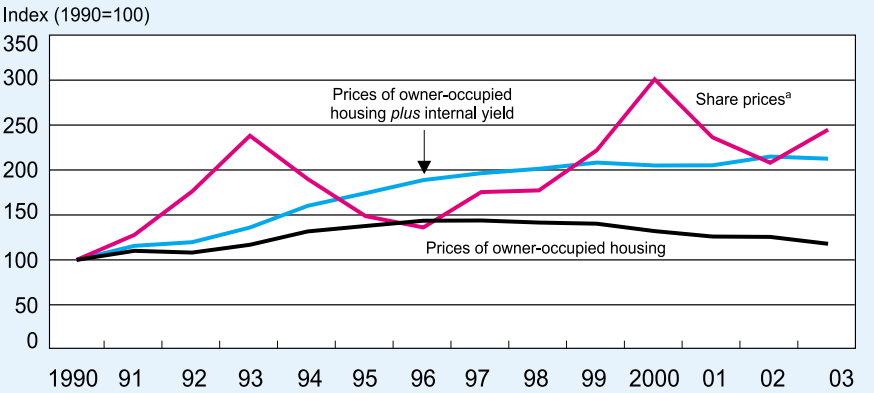
The output of nonresidential construction plummeted, and there was an unprecedented contraction in the area of nonresidential building starts.

The output of nonresidential construction declined by 9 percent—exceeding the fall in total fixed investment. This rate of decline of output, which is due to the rise in completions, does not reflect the full extent of the contraction of activity: the area of nonresidential building starts plummeted by an unprecedented 35 percent in 2003—attesting to a low level of expected demand for additional construction in the next few years. We do not have figures for the utilization of the stock of nonresidential buildings, but it would seem that in the wake of the steep decline in business-sector product in 2001–2002 there is a large surplus of nonresidential construction.

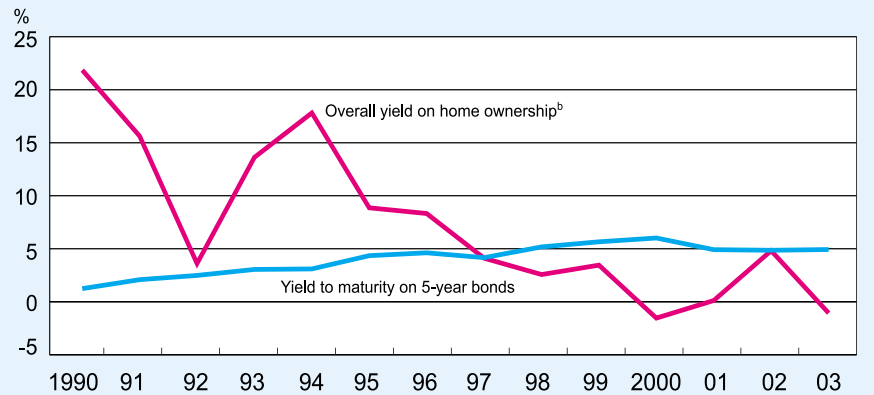
In spite of the increase in business-sector product in 2003, demand for nonresidential construction appears to have continued falling, as indicated by lower rents.[42]

[42] There are no data from the CBS on the volume and price of nonresidential construction, so that it is impossible to analyze demand directly. According to the Levi-Yitzhak price list, however, prices have fallen.

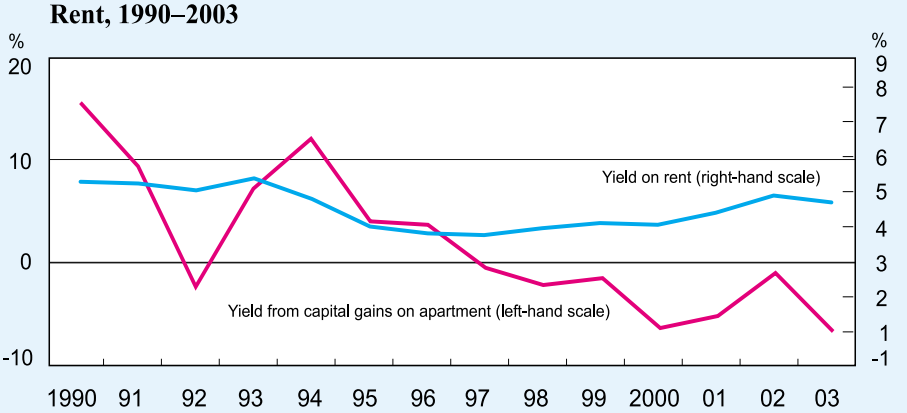
Figure 1.33
Real Indices: Prices of Housing and Shares,* 1990–2003



Real Yield on Home Ownership and on CPI-Indexed Bonds, 1990–2003



Yield from Capital Gains on Owner-Occupied Housing and from Rent, 1990–2003



* Prices and yields deflated by CPI. All figures are annual averages.
[a] Share prices were calculated without deducting the dividend included in the General Share-Price Index.
[b] 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.

The demand side: employment and productivity

There was considerable substitution of Israeli for foreign workers in 2003, so that the number of Israeli construction workers rose even though output fell.

Labor: in 2003 the composition of employment in construction changed sharply, as a result of the policy shift from the end of 2002 regarding the employment of foreign workers. The number of foreign workers fell by an annual average of 19,000, and the number of Israelis employed rose by about 10,000. This would appear to be a low substitution rate, but because of the contraction of demand and the addition of 4,000 Palestinian workers, it is in fact very high. As a result of the substitution process, 63 percent of all construction employees in 2003 were Israelis, compared with only 50 percent in 2000.

The process of reducing the number of foreign workers played a part in the contraction of construction activity. First, the industry is characterized by massive employment of illegal workers, and their expulsion created a temporary shortage of manpower until substitutes could be recruited and trained. The difficulties this process created for the industry are indicated by the Bank of Israel's Companies Survey, which attested to the growing shortage of manpower in 2003.

Second, as expected, the substitution process made the labor component more expensive, as is indicated by the index of construction inputs. The real wage per Israeli employee post declined by 5 percent,[43] apparently due to the change in the composition of employment with the addition of low-paid workers, whose wage was nevertheless higher than that of the foreign workers they replaced. This is indicated by the rise in the labor costs of plasterers, tilers, and stonemasons and outside laborers in the index of construction inputs.

Capital stock: the process of mechanizing the construction industry, expressed in the capital/worker ratio, continued in 2003. Nevertheless, investment in construction equipment plunged, so that capital stock at the beginning of 2004 was lower than at the beginning of 2003—a reversal of the steep rising trend evident in the last decade.[44]

Finance: there appears to have been some deterioration in this sphere, too. The industry's debt/GDP ratio has risen, attesting to a decline in the repayment ability of construction companies and rise in their risk. Real ex post interest soared in 2003; total balance-sheet credit extended to the industry by the banking corporations rose, especially to nonresidential construction (up by about NIS 1 billion), despite the decline in the industry's output and in contrast with the general trend in credit to the business sector. The ratio of construction-industry indebtedness to total nonresidential indebtedness also rose, and exceptional indebtedness, derived from the deviation from the industry limitation, increased by NIS 0.8 billion, which could make credit to the industry more expensive.

Productivity: after many years (since 1997) in which productivity declined, reflecting the failure of the industry to fully adapt factor inputs to the contraction of activity, labor productivity and TFP rose, surprisingly, in 2003, in spite of the decline in activity and the substitution of workers.

[43] Relative to the CPI.

[44] For a detailed discussion, including international comparisons, see the equivalent chapter in Bank of Israel, *Annual Report* 2002.

Housing prices

Long-term trends: in the last six years the real price of units has fallen consistently, by a cumulative 20 percent. This is a marked change from the rising trend of housing prices since the establishment of the State in 1948 and until 1996. It is the result of changes in the underlying causes of demand for housing—the slower rate of population growth after the influx of immigrants, and the decline in per capita GDP in recent years. Since the decline in demand also comprises a cyclical element, current prices would appear to be below their long-term equilibrium level.

Housing as a component of the asset portfolio: an examination of the overall return on owning an apartment as opposed to investing in shares since 1990 indicates that there is hardly any difference between the two (Figure 1.33). Whereas shares are more risky, as is clearly indicated by the fluctuations in their price,[45] and the long-term return on them could be expected to be higher, the low tradability of apartments may require a similar premium. The overall return on owning an apartment, which comprises capital gain *plus* the internal return, was negative in 2003, compared with a steep rise in share prices. A long-term view indicates that the gap between the two investment channels in 2003 is no more than a temporary deviation from the long-term link between them.

Developments during the year: residential construction output stabilized during 2003, while the contractionary trend of nonresidential construction appears to have persisted, and was 10 percent lower in the second half of the year than in the first half.[46] The steep drop in area of building starts in 2003 will hamper the recovery of output in the near future. Thus, the recovery of the construction industry does not appear to be at hand.

Box 1.7
The Stock of Housing and Overcrowding

We examined overcrowding in Israel, to see whether the recent recession exacerbated the situation, i.e., created repressed demand. The data do not support this contention.

Constructing a long-term time series of the stock of housing in Israel

Since 1948 the stock of housing has been measured at only one point, in the framework of the population and housing census held in 1995.

[45] The comparison is problematic because it is possible to invest in a diversified portfolio of shares but not in a 'portfolio' of housing, so that the average price of the latter does not express the risk involved in owning an apartment.

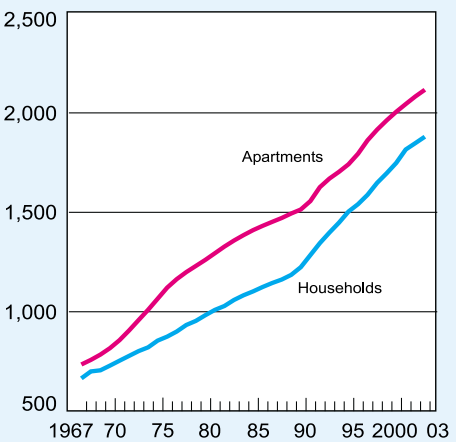
[46] According to seasonally-adjusted data.

A series for the stock of housing was constructed on the basis of the assumption that the amortization rate is zero. A higher assumption of the amortization rate 'creates' a larger stock of housing by 1995, and it is unreasonable to suppose that such a stock existed in the late 1960s. The assumption regarding the amortization rate appears to be extreme, but is justified on several counts.

- The assumption concerns the *physical* amortization rate of housing (i.e., the rate at which structures are demolished, irrespective of their value); some structures may have no economic value, the prices of apartments in them reflecting solely the value of the land.
- The series for completions does not include illegal construction, and hence constitutes an underestimate of the number of housing units.
- Israel is a young country.
- Even when a zero amortization rate is assumed, the stock of housing in 1967–94 is considerably higher than the number of households.

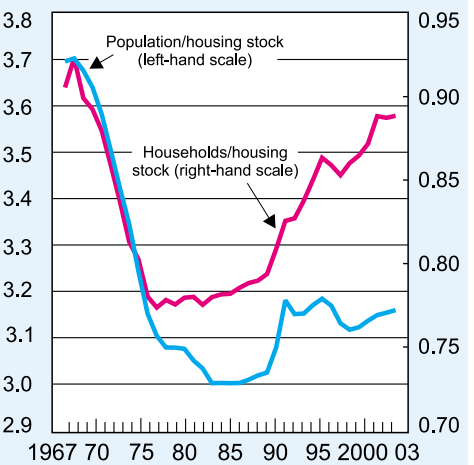
As Figure 1 shows, the number of apartments is far greater than the number of households. In 1995 the difference between them was 240,000, and is explained by the fact that some 100,000 apartments were used for business rather than residential purposes, and some 80,000 (5 percent of the total stock) were empty.[1]

Figure 1
Stock of Apartments and Households in Israel, 1967–2003 ('000s, assuming amortization on apartments = 0)



SOURCE: Based on Central Bureau of Statistics data.

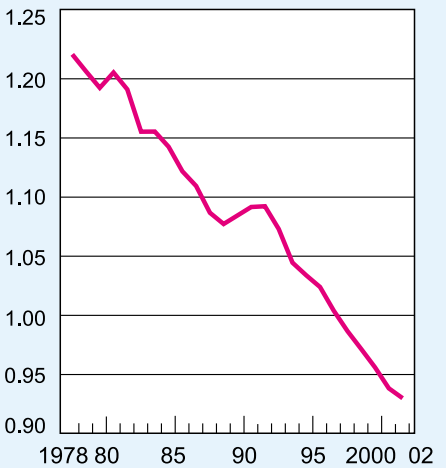
Figure 2
Ratio of Number of Households and Population to Housing Stock, 1967–2003



SOURCE: Based on Central Bureau of Statistics data.

[1] This seems surprising, but as in every market where there is friction due to the search process, there is a natural vacancy rate. The number of empty apartments is high in places where a large proportion of them are rented; e.g., in Tel Aviv, where the vacancy rate is six percent—above the national average.

Figure 3
Number of Persons per Room, 1978–2002



SOURCE: Based on Central Bureau of Statistics data.

The figures take into consideration the total stock of housing, assuming that the proportion of apartments used for other purposes is endogenous to some extent, and dependent on the relative price of housing.[2]

The figures describe various indices of overcrowding. Figure 2 shows a 'jump' in the population/housing stock ratio at the beginning of the influx of immigrants, since when—throughout most of the 1990s—there has been stability. Starting in 1998 this ratio has risen only slightly relative to 2000.

The series for the number of households indicates that there was a rising trend in the 1990s, although average household size has fallen. This index has remained stable in the last three years. Both series clearly indicate a declining trend in overcrowding in 1967–77 and a rise following the influx of immigrants.

Figure 3 describes a different index of overcrowding—the number of persons per room. According to the Labor Force Surveys of the CBS, this index has fallen steadily since 1978, even though the influx of immigrants led to a temporary deviation from the trend. Overcrowding fell even during the deep recession of 2001–2002.

The increase in overcrowding due to the rise in the ratio of households to apartments (Figure 2) does not appear to be consistent with its declining trend as indicated by the ratio of persons to rooms (Figure 3). Note, however, that a large stock of apartments is used for other purposes, and this is in line with the apparent deviation: since the ratio of households to apartments at the end of 2003 was still low—0.9—the process of returning apartments to residential use may not yet have ended. In conclusion, there is no evidence of a rise in overcrowding in recent years, i.e., suppressed demand, because of the recession, so that no upward pressure on prices can be expected from this quarter in the near future.

[2] It may be assumed that this proportion declines over time, for various reasons, but another housing census is required in order to examine it.