Chapter 8
The Housing Market

- The housing market continued to slow in 2023 due to rising costs of housing credit and the post-pandemic upturn in home prices. The deceleration was reflected in a decrease in the number of transactions and the first decline in home prices since 2018.
- Until the Swords of Iron War began, the pace of building starts remained brisk and the supply of homes continued to grow despite the falloff of demand; this was in view of the expedited planning and marketing processes in previous years and interest rate increases that raised the price of holding undeveloped land for long.
- The combination of slowed demand and continued vigorous homebuilding created an increase in stock of new unsold homes, particularly in central parts of the country, and a decline in prices of new homes and those in usually high-demand areas.
- The decrease in new home sales impaired builders' cash flow. As builders had to borrow more to sustain construction activity, their demand for land purchase declined.
- Housing transactions dropped steeply when the war began but rebounded perceptibly in November and December. The war had a stronger effect on the housing market than did previous security events due to the severity of the blow that it dealt to the home front and the war front, its duration, and the extent of reserve mobilizations.
- When the war began, the employment of Palestinians, who had accounted for about one-third of construction-industry labor prior to the war, was prohibited. In addition, most construction sites were idled in the first two weeks of the war by order of the Home Front Command and local authorities. They were gradually reactivated from late October onward, but as of year's end 28 percent of residential construction sites (weighted by the number of housing units in each site) were still closed and work in those that were opened proceeded at less than full extent.
- The government's measures to replace Palestinian workers with foreign labor have not paid off at the present writing. In the long term, accelerated introduction of advanced construction technologies may weaken the industry's dependency on low-skilled labor.
- The war underscored the need to upgrade old dwellings that lack reinforced safe spaces, in all parts of the country. However, even though this amplifies the importance of urban renewal precisely in the areas that are most susceptible to earthquake danger and security threat, little is being done because its economic viability for builders is still too low.
- The planning authorities approved a record 168,400 dwellings in 2023, notwithstanding the challenges of the war. Experience shows, however, that the approval of plans neither assures nor expedites their implementation. Many obstacles occur in the stages that follow planning approval, for reasons including the dependency of building on investments in infrastructure and solving statutory problems.

Table 8.1
Selected housing market data, 2018–2023

	2018	2019	2020	2021	2022	2023
Factors of demand[a]						
General population (rate of change)	1.9	1.9	1.8	1.7	2.0	2.1
Population aged 25–44 (rate of change)	1.2	1.2	1.0	0.9	1.6	
Average real wage per Israeli employee post (rate of change)[b]	2.7	2.1	3.1	4.9	-1.7	1.9
Average net real household income (rate of change)	3.7	2.4	-0.9	0.5	4.9	
Unemployment rate[b] among those aged 25–64 (annual average)	3.5	3.4	14.6	9.6	3.3	3.0
Weighted real interest rate on new mortgages[c] (annual average)	1.7	1.5	1.1	0.8	1.7	3.4
Real per capita GDP (rate of change)	2.1	1.8	-3.2	7.6	4.4	-0.1
Rate of those planning to buy a home in the next 12 months[d] (annual average)	8.4	8.0	6.4	7.4	5.6	3.6
Factors of supply						
Building starts (thousands of housing units)	55.4	56.6	56.2	64.0	67.7	62.0
of which : Dwellings not for sale under construction (thousands of housing units)	19.4	20.6	16.4	19.1	24.1	20.8
of which : Rental dwellings (thousands of housing units)	1.7	2.9	2.5	2.4	3.1	2.0
Building completions (thousands of housing units)	52.8	53.3	50.2	47.1	52.6	57.9
Construction duration of completed buildings, weighted by number of units in the building (months)	29.3	29.2	31.2	31.0	33.1	32.8
Stock of homes under active construction (end of year, thousands of housing units)	123.7	126.7	133.0	150.0	166.2	170.3
Building permits (thousands of housing units)	51.9	56.9	53.8	73.4	76.7	72.8
Real investment in residential construction (rate of change)	0.5	3.4	-7.8	16.8	16.1	-8.0
Housing units approved in the district committees and in the VATMAL (thousands)	151.6	140.6	95.3	108.1	158.4	168.4
Land marketed in ILA tenders (thousands of housing units)	43.1	38.9	26.3	63.4	80.6	55.5
Outcome data						
Housing transactions (thousands)[e]	91.2	101.1	101.5	150.1	114.5	75.6
of which : New homes sold (thousands)	31.4	40.4	40.6	57.0	41.0	29.2
of which : With government support (thousands)	9.7	16.7	13.9	14.6	9.5	6.9
Home prices - nominal (rate of change during the year)	-0.8	4.2	4.0	13.1	14.7	-0.6
Home prices - real (rate of change during the year)[f]	-1.3	4.1	4.8	10.4	9.3	-3.3
Rents - nominal (rate of change during the year)[g]	1.9	2.8	0.2	3.3	6.3	3.1
Rents - real (rate of change during the year)[f,g]	1.4	2.7	1.0	0.8	1.3	0.3
Rate of households that do not own a home (annual average)	27.5	29.7	28.9	31.3	30.4	
Rate of households that own one home (annual average)	62.4	61.2	61.0	59.5	59.5	
Rate of households that own two or more homes (annual average)	10.1	9.1	10.1	9.2	9.9	
Percentage of homes purchased by investors as a share of total purchases (annual average)	14.0	12.8	14.2	18.0	14.3	13.8

[a] Rates of change are shown as the average of the current year compared with the average of the previous year.
[b] A correction due to the COVID-19 crisis in 2020 and 2021: The real wage corrected for the composition of employees, and the broad unemployment rate (including employees temporarily absent for reasons having to do with COVID-19, and nonparticipants who stopped working after being dismissed or because their place of work closed during the COVID-19 period).
[c] Assuming an annual inflation rate of 2 percent.
[d] The Central Bureau of Statistics Consumer Confidence Index. The rate of respondents who believe that it is quite likely or very likely that they will buy a home in the next 12 months.
[g] Market transactions only. Excluding inheritances, transfers with no payment, among relatives, etc.
[f] Adjusted for the Consumer Price Index excluding housing.
[g] Rents in new and renewing contracts (the owner-occupied housing services item in the Consumer Price Index).
SOURCE: Central Bureau of Statistics, Ministry of Construction and Housing, Israel Tax Authority, Israel Land Authority, and Bank of Israel.

1. MAIN DEVELOPMENTS

The increase in domestic interest rates that began in April 2022 moderated demand for homes and reduced the number of transactions by making housing loans more expensive, while at the same time, it gave builders an incentive to start construction and market projects on land they had already purchased because funding their outstanding credit for the land had become costlier. This process abetted the continued increase of new and unsold housing stock and allowed home prices to fall for the first time since 2018. The number of transactions decreased steeply at the beginning of the war in October but rebounded in November and December. The impact of the war on housing supply is expected to be longer-lasting because the construction industry is suffering from an acute labor shortage due to the ban on employing Palestinian workers, who

accounted for one-third of total industry employment before the war. The protracted cooling of housing demand, coupled with difficulties and uncertainties about the functional continuity of the construction industry in wartime, restrained builders' demand for land and caused success rates and bids in Israel Land Authority (ILA) auctions to decline. Short- and medium-term inelasticity of supply in the construction industry may be reflected in the contraction of new-home supply in the next few years, notwithstanding the planning authorities' consistent efforts to increase it.

2. TRANSACTIONS

Prior to the war, the housing market was in a protracted slowdown.

Prior to the war, the housing market was in a protracted slowdown. The deceleration, which began in early 2022, continued into 2023 and coincided with the rising cost of housing loans and the upward movement of home prices in the post-pandemic period (Table 8.1). In the period preceding the eruption of the war, the decline in the number of transactions was milder in the periphery and the Jerusalem District than in the Tel Aviv and Central districts (Table 8.2). It appears that homebuyers chose less costly dwellings in the periphery,[1] whereas the slowdown in high tech dampened demand for expensive dwellings in the central areas.[2] The apparent reason for the increase in transactions in the Jerusalem District was the large number of transactions in government-subsidized dwellings, almost all of which were in Jerusalem. Thus, in January–September, the share of such dwellings in total purchases stood at 19.3 percent in Jerusalem as against 10.3 percent in the Central District.

The third quarter saw indications of recovery in housing transactions and the onset of a decline in home prices, particularly of new dwellings. The Swords of Iron War, erupting on October 7, 2023, cut short the indications of recovery and dropped transactions to a low level resembling only that in the first lockdown of the pandemic crisis. Figure 8.1, reflecting the impact of past security events on the number of transactions in the housing market, shows that the effect was relatively weak and brief. The reason, it seems, is the short duration of these events (of which the longest, Operation Protective Edge in summer 2014, lasted fifty days) and their focus on limited areas. The impact of the Swords of Iron War is different due to the severity of its blow to the home front and the war fronts, the duration of the fighting, and the extent of reserve mobilizations. After the war began, the adverse impact on the housing market was most severe in the Southern and Northern districts—as expected because localities there were evacuated—and also in the Haifa District, and it was relatively mild in the Central and Tel Aviv districts in comparison with developments in the first three quarters of the year.

[1] Including government-subsidized dwellings (Buyer's Price, Target Price, etc.). In six Southern District cities (Ashdod, Ashkelon, Sederot, Beersheva, Ofakim, and Dimona), for example, some 2,500 such apartments were sold in January–September 2023, roughly one-fourth of all dwellings (new and second-hand) sold in these cities during that time.

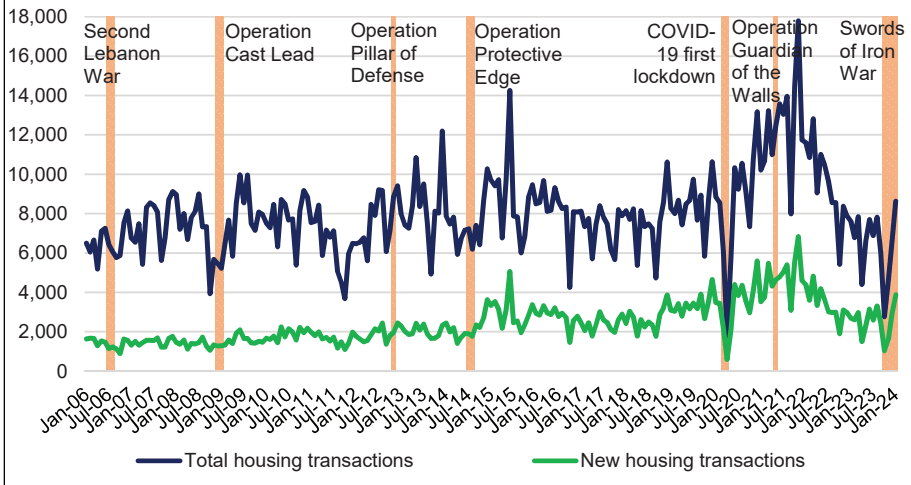
[2] Among homebuyers in Tel Aviv, the relatively large share of persons employed in high tech stands out. (See Chapter 9 in the Bank of Israel *Annual Report* for 2021.)

Table 8.2
Number of housing transactions*, and price changes, by district, selected periods

Period	Jerusalem district	Northern district	Haifa district	Central district	Tel Aviv district	Southern district	Total
January–September 2022 avg.	920	1,267	1,551	2,400	1,788	2,020	10,292
January–September 2023 avg.	686	968	1,189	1,622	1,103	1,435	6,849
Rate of change	-25%	-24%	-23%	-32%	-38%	-29%	-33%
October–December 2022 avg.	681	928	1,046	1,448	1,030	1,521	7,229
October–December 2023 avg.	511	587	707	1,120	783	841	4,660
Rate of change	-25%	-37%	-32%	-23%	-24%	-45%	-36%
Rate of change in home prices in 2023	1.0%	3.8%	2.9%	-1.1%	-3.7%	1.6%	-0.6%

* Market transactions only. Excluding inheritances, transfers with no payment, among relatives, etc.
SOURCE: Based on Israel Tax Authority and Central Bureau of Statistics.

Figure 8.1
Total Housing Transactions* and New Housing Transactions, Jan. 2006–Jan. 2024 (original data)

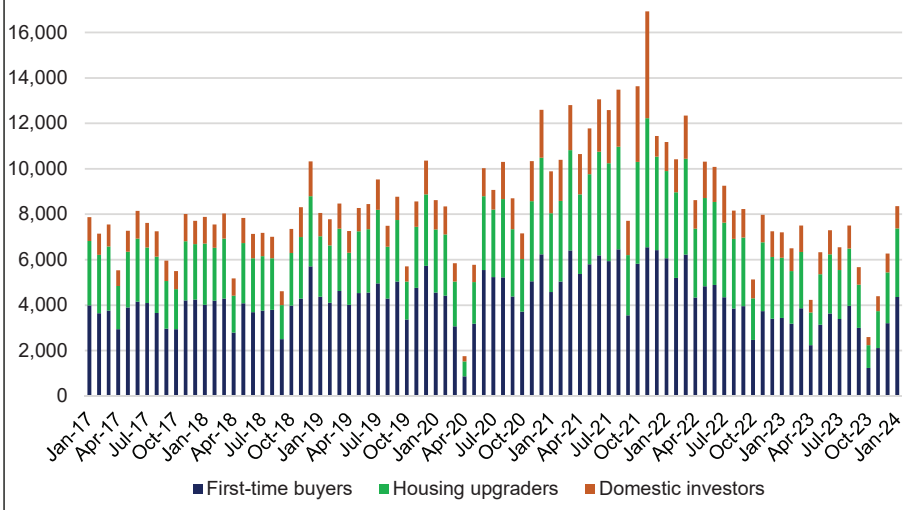


* Market transactions only. Excludes inheritances, transfers with no payment, etc.
SOURCE: Based on Central Bureau of Statistics and Israel Tax Authority.

Housing transactions plummeted when the war broke out but rebounded strongly afterward.

In 2023, transactions decreased in all buyers' categories (Figure 8.2), and did so at a similar rate: about one third in January–September 2023 relative to the year-earlier months in 2022. At the beginning of the fourth quarter, after the war had begun, the number of transactions, including sales of government-subsidized dwellings, plummeted. Transactions rebounded considerably later on and the pace accelerated in January 2024. The number of dwellings acquired by nonresidents after the war broke out dropped relative to their number in the first three quarters of 2023. The impact of nonresidents on the Israeli housing market is negligible; their share in purchases in 2014–23 was around 1.5 percent on average and, since they also sold dwellings, their net purchases were even fewer.

Figure 8.2
Housing Transactions* by Purchaser Type, Jan. 2017–Jan. 2024 (original data)



* Market transactions only. Excludes inheritances, transfers with no payment, etc.
SOURCE: Based on Israel Tax Authority.

The difficulty in continuing to build due to the effects of the war (see elaboration in the Housing Supply section), which aggravated industry risk, may have deterred purchasers from buying homes in projects that were far from completion. However, an analysis of data on new-home transactions revealed no major change in the share of dwellings purchased "on paper"—new homes that would be delivered more than two years after purchase: 68.7 percent on average in the first three quarters of 2023 and 65.3 percent in the fourth quarter.[3] One factor that may promote the purchase of new homes at the present writing is that they come with a reinforced safe space built

[3] At least some sales "on paper" are of homes sold under presale arrangements that take place when the lending bank requires this as a condition for the beginning of funding within the framework of a construction loan. Due to the increase in risks occasioned by the upturn in interest rates, banks toughened their demands for presales in 2022. The need to sell dwellings in order to obtain funding usually induces builders to offer larger discounts on presales.

to the latest standard. Buying a new dwelling, however, rarely provides an immediate solution in this respect because the dwelling is still under construction and occupancy is foreseen only months or even years later.[4] Against this background, the share of new dwellings purchased for delivery within half a year increased slightly, to 10.4 percent of transactions on average in the fourth quarter as against 7.3 percent in the first three quarters.

3. PRICES

Home prices declined in 2023 for the first time since 2018. The decrease in areas generally in high demand, caused mainly by accumulation of unsold new-housing stock, led the way.

Home prices edged downward by 0.6 percent in 2023, for the first decline since 2018 (Table 8.1). The downward trend began in March but reversed direction in November and December (Figure 8.3). The decrease in prices in 2023 was strongest in high-demand areas—the Tel Aviv and Central districts (Table 8.2)—and its main determinant was the accumulation of unsold stock of new dwellings. In the estimation of the Central Bureau of Statistics (CBS), 56 percent of all new dwellings that remained unsold, some 38,000 as of year's end, were in these two districts. (For comparison, the annual average of the new-home sales in these two districts together in 2019–22 was around 21,000, 47 percent of all new dwellings sold during this time.)[5] Prices in the other districts continued to rise.[6]

As further evidence of the contribution of unsold housing stock to the decrease in prices, new-home prices fell in 2023 by 2.2 percent, outpacing the decline in the total Dwellings Price Index (Figure 8.3). New-home prices began to fall in September 2022 and have been declining almost continually since then, and at an even faster pace net of government-subsidized transactions. By all appearances, the effective prices of new dwellings sold in the free market fell even more than did the CBS's index due to various benefits that are not embodied into dwelling list prices, such as add-ons and revisions at occupants' request and at builders' expense, deferral of payments, participation in housing-loan payments, and even participation in payment of real-estate purchase tax. In November and December 2023, the Newly-built Home Price

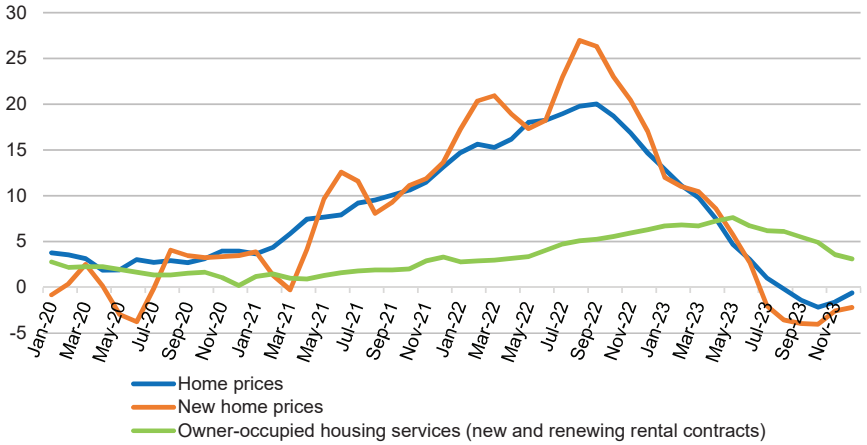
[4] Hardly any dwellings were sold for immediate occupancy; their share among all new dwellings was only 1.2 percent both before and after the eruption of the war.

[5] The Central Bureau of Statistics estimates are based on all dwelling units designated for sale on the basis of permits issued; it is possible that some dwellings were sold even before a permit was received or, alternatively, sales were delayed in projects which already received permits. In an alternative calculation that examined the extent of starts of dwellings for sale as against sales of new dwellings, i.e., the change in inventory of dwellings for sale, it was found that unsold housing stock in the Tel Aviv, Central, and Jerusalem districts increased by 5,200, 3,600, and 1,300, respectively, in the past two years, whereas in the Haifa, Southern, and Northern districts more new dwellings were sold than were under construction.

[6] It is premature to discuss developments in housing prices since the beginning of the war. Aggregate data from the Southern District do not attest that prices did not fall in some localities. After the Second Lebanon War, housing prices in the five localities most badly hit by rocket fire declined by nearly 7 percent relative to other localities in northern Israel. See Y. Elster, A. Zussman, and N. Zussman (2017), "Rocket: The housing market effects of a credible terrorist threat," *Journal of Urban Economics* 99, 136–147.

Index began to rise again, possibly due to the renewed demand for new dwellings due to expectations of a slowdown in supply due to the war and of a shortage of these dwellings in the medium-to-long term.

Figure 8.3
Home Prices, New Home Prices, and Owner-Occupied Housing Services, Jan. 2020–Dec. 2023 (rate of change in the past 12 months, percent)



SOURCE: Central Bureau of Statistics.

4. DEMAND FOR HOMES

The population growth rate in 2023 resembled that of the previous year (Table 8.1) even though immigration slipped from 73,000 to 45,000. Although the jobless rate remained low and average wages climbed, the upturn in the interest rate on housing loans and the high housing prices dampened demand for home purchases. Demand for reduced-price dwellings remained strong but supply contracted relative to 2022. Thus, only one large lottery in the "Apartment at a Discount" program took place in the review year, in which some 97,000 households signed up for the right to acquire 7,000 dwellings in seventeen localities. Repeat lotteries were held for only 137 dwellings. In late December, another lottery of 6,800 dwellings was opened for registration; roughly 105,000 households signed up and the winners were declared in early March 2024. The reason for the paucity of dwellings in these lotteries may have been the decrease in marketing of land for "Target Price" projects (Table 8.4). Also released by lottery in 2023 were grants for the purchase of second-hand dwellings per Government Resolution 737, which offers a NIS 50,000 grant to buyers of dwellings in high-density buildings that command a price of NIS 300,000–600,000 in any part of the country. The scheme was budgeted for two years, 2023–24, at NIS 100 million, and was earmarked for 1,000 grants per year for purchasers who do not own a dwelling. More than 20,000 households signed up for the first lottery but few of the winners exercised their grant entitlement (the take-up period is limited to six months

from the date of winning) apparently due to the small number of suitable dwellings in the market. In all of 2023, fewer than 2,600 such dwellings were sold,[7] some 70 percent of which were in the Southern and Northern districts.

As demand for home purchases declined, rent levels continue to rise (Table 8.1) but at a slower annual rate than in 2022, particularly in the fourth quarter of the year (Figure 8.3).[8] The reasons for the slowdown include the return of short-term tourist rental dwellings in Tel Aviv to the general rental market[9] and a decrease in demand from students, army reservists, and additional population groups.

When the war broke out, residents of localities near the southern and northern borders had to evacuate and move to safer areas. Some are still living in hotels or provisional housing.

When the war broke out, an unprecedented situation came about: the lengthy evacuation to safer areas of inhabitants of localities along the southern and northern borders. At the peak of the outflow, about 250,000 people left their homes in an organized manner or on their own. By the middle of January 2024, there were around 134,000 evacuees and self-evacuees, of whom 57,000 were still accommodated in hotels.[10] Given the average household size, some 44,000 households were involved.[11] The homes of some "Gaza envelope" and northern-border evacuees were demolished or badly damaged, ruling out return even when the security situation improves and requiring longer-term solutions to these citizens' housing woes.

The evacuation of so many people from their homes might have caused rental prices to accelerate more quickly but, as noted, rental prices actually fell after the war began. Many of the evacuees are still living in hotels at this writing; the dearth of inbound tourists induced owners of short-term rental properties to lease them to residents on a long-term basis, as noted above; and some construction companies offered to host evacuees in dwellings not yet sold or leased.[12] As for longer-term solutions, the "Tekuma Administration" signed contracts for temporary accommodation in several towns while some evacuees will be hosted in small localities under provisional housing arrangements—especially spacious mobile homes or prefab structures.[13] (For the purview of the Tekuma Administration, see Chapter 7 in this Report.)

[7] Only some of these transactions are first-home purchases for which the grant is given. Cross-tabulation of data from different sources shows that only 60 percent of total purchases within this price range in 2023 can be attributed to first-home buyers.

[8] For elaboration on rent and its development during the year, see Chapter 3 in this Report.

[9] According to WeCheck, Ltd., the supply of small homes (1–2 rooms) for rent in Tel Aviv, which were probably rented out to tourists in the past, increased visibly: 1,923 in November 2023 and 1,721 in December 2023 as against 909 in September 2023 and 569 in December 2022.

[10] According to data from the CBS and the Information and Knowledge Center for Support of the Home Front in the Special Emergency Situation.

[11] The estimate of the number of households is based on CBS data for 2022, showing that the average household size in the Jewish sector was 2.97 in the Northern District and 3.12 in the Southern District.

[12] According to media reportage, several companies have taken initiatives of this kind irrespective of rental contracts that were signed by the Tekuma Administration and are mentioned in Footnote 13.

[13] For example, 136 families from Nir Oz moved to Kiryat Gat, 140 from Kibbutz Re'im to Tel Aviv, 55 from Kibbutz Sufa to Ramat Gan and 25 others to Ofakim; 110 from Nirim will move to Beersheva. In addition to these, temporary housing arrangements will be made in six kibbutzim (Hatzerim, Shefayim, Eilot, Mishmar ha'Emek, Revivim, and Netzer Sereni) and Omer. Also, companies were chosen to build prefab neighborhoods as interim solutions; the Tekuma Administration estimates their extent at some 400 structures.

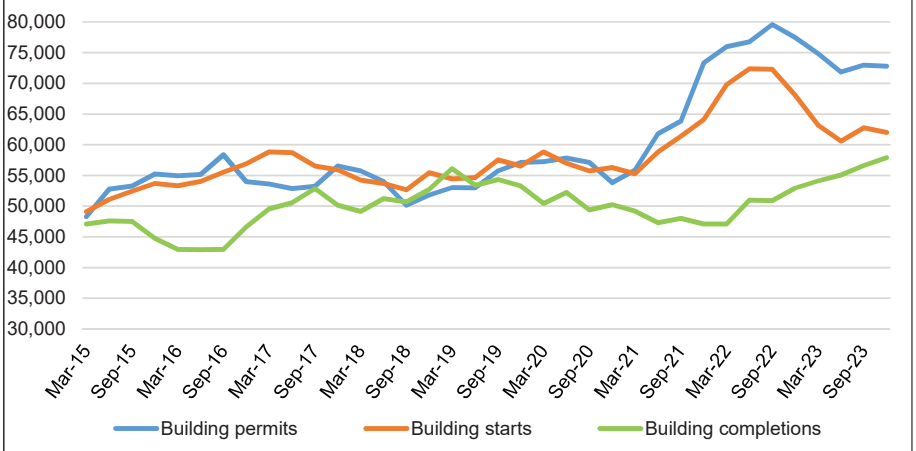
5. SUPPLY OF HOMES

a. Residential construction prior to the war

Despite the cooling off of the housing market in general and the new-home market in particular (Figure 8.1), residential construction activity remained brisk by past standards (Figure 8.4). The annual pace of building starts at the end of the third quarter of 2023 was 61,600 gross and 57,700 net (excluding dwellings demolished for vacate-and-build purposes). Building permits for 73,200 homes were issued; building completions continued to grow, albeit more mildly; and residential construction investment continue to expand.

Although the housing market and, particularly, the new-housing market cooled, residential construction activity remained vigorous relative to the past.

Figure 8.4
Building Starts and Completions in the Past Four Quarters, 2015:Q1–2023:Q4



SOURCE: Based on Central Bureau of Statistics.

Developers did not cut back on their activity in response to the decrease in demand for homes, because in 2021 the Israeli housing market set records in the number of transactions, the rate of increase in prices, marketing of land, and land prices. Mortgage lending also rose. Much of the land acquired then became ripe for construction in 2023. Land purchases in ILA auctions include the stipulation that construction must be completed within a specified period of time, usually four years from the date on which the transaction is approved. Concurrently, the steep increase in interest rates made it much more expensive for builders to hold reserves of land because undeveloped land yields no revenue and entails funding expenses, which increased considerably since the interest rate increases began in April 2022. Loans that builders took for land acquisition in 2021 were issued for two to three years and at higher leverage ratios than those accepted today; thus, they may be difficult to renew. To free themselves from credit they had taken to buy land and advance to the stage of bank construction loans for their projects, builders must, among other things, comply

Interest rate increases contributed to expediting building starts.

with the share of equity actually deposited and the share of presale set forth in their contract with the lending bank. At times when the housing market slows, obtaining a building permit, developing the land, and starting actual construction may help to create certainty among potential homebuyers, promote the sale of the dwellings, and, thus, bring the builder closer to meeting the lending bank's requirements and activating the construction loan. The accumulation of unsold new dwelling stock specifically in the Tel Aviv and Central districts reinforces this argument because the ratio of land prices to dwelling prices is the highest in these districts, as is the credit taken to buy land there—giving builders a greater incentive to apply for building permits and begin construction.

The number of residential projects for sale with bank funding declined on quarterly average in the first three quarters of 2023 relative to the second half of 2022 by a moderate 3 percent, and the number of projects not yet compliant with the terms for the onset of bank funding climbed by 4.5 percent during that time.[14] To expedite construction activity, the government decided to establish a mechanism that would reduce the rate of presale that funders demand of builders of high-density housing by issuing a state guarantee to cover the increase in risk. The mechanism is meant for projects that exceed fifty dwellings and the government allocated up to NIS 50 million to operate it in 2024 (Resolution 1383).

Due to the decline in new-home sales and prices, the shifting of demand to peripheral regions, where housing prices are lower than in high-demand areas, and the relatively high proportion of government-subsidized transactions (more than one fourth of all new dwellings sold in the first three quarters of 2023), the developers suffered a perceptible loss of revenue.[15] The need to move ahead with projects under construction forced them to fund activity by going further into debt. (For elaboration, see Chapter 4 in this Report.) Credit for land purchase, the main component of developers' bank credit, stopped growing from the first quarter of the year onward (stabilizing at NIS 100 billion) due to the slowdown in marketing of land by the ILA and the decrease in land prices. In contrast, borrowing for projects under construction increased from the beginning of the year (to the end of the third quarter) by 35 percent, from NIS 36 billion to NIS 49 billion, in view of the slowdown in new-home sales.

The developers' need for credit evidently finds additional expression in a recently expanded payment arrangement for homebuyers: "bullet" or "balloon" settlement of mortgage loans, in which buyers make no periodic payments of principal for three years and then switch to an ordinary settlement involving repayments of principal and interest (using a Spitzer amortization table). This loan replaces bank credit that the builder receives within the framework of project financing by allowing it to receive the money up front (unlike the conventional arrangement, in which

[14] These data were taken from a new report to the Banking Supervision Department that began in the second quarter of 2022. Therefore, no past data for comparison exist.

[15] The developer initiates and manages the project, buys the land, sells the dwellings, and deals with all buyer-related matters. It can perform actual construction by means of in-house contractors or by subcontractors.

most of the payment is received when construction is completed) and to pay lower interest because the mortgage-loan rate is lower than that of business credit. For the homebuyer, the arrangement makes it possible to save the cost of indexation to the Residential Construction Inputs Price Index on account of the sum transferred to the builder.[16] The share of "bullet" or "balloon" loans in total housing-loan performance was 11 percent on average in 2023 as against 6 percent in 2022, an anomalous 18.5 percent in December 2023, and more than 14 percent in January and February 2024.

b. The war's effect on residential construction activity

Residential construction sites began to reopen in late October but work has not resumed in full due to labor shortages.

Most construction sites were idled during the first two weeks of the war. From the end of October onward, they gradually reopened under restrictions imposed by the Home Front Command and local authorities. The work resumed only in part, due to a labor shortage brought on by the ban on admitting Palestinian workers to Israel territory. Until the war, this source accounted for roughly one-third of industry labor. (More than 100,000 workers from the Palestinian Authority areas and Gaza, documented and not, were employed in Israel prior to the war.) Additional determinants of the shortage were the mass mobilization of army reserves and fear among some Israeli Arab workers of coming for work at construction sites. (The impact of the war on the employment of Arab Israelis in the construction industry is discussed in Box 5.2.) Table 8.3 gathers the findings of the CBS surveys concerning the impact of the war on construction-industry activity; they attest to the severity of the effect[17] but also demonstrate the rebound of the industry even though acute labor shortages persisted.[18]

Table 8.3
Indices of the war's impact on construction industry activity

	First wave (Oct. 24–26, 2023)	**Second wave** (Nov. 19–20, 2023)	**Third wave** (Dec. 19–20, 2023)
Percentage of businesses in the construction industry that reported:			
· Volume of employment of less than 20%	62	34	24
· Serious impact (more than 50%) to income	73	44	46
· Shortage of workers as the main factor in the impact on activity	59	42	43
· Decline in the demand for dwellings as the main factor in the impact on activity	59	32	34
Percentage of residential construction sites that were inactive at the end of the month, weighted by number of units	**October**	**November**	**December**
	59	36	28

SOURCE: Central Bureau of Statistics.

[16] We have no information about whether customers who choose this track receive additional benefits for earlier payment.

[17] The Central Bureau of Statistics flash surveys, however, may paint an overly pessimistic picture. Thus, during the COVID-19 pandemic, it was found that they had overestimated the intensity of the crisis.

[18] According to data from the Central Bureau of Statistics, residential construction sites were reactivated much more quickly than were nonresidential sites. At the end of December, 53 percent of nonresidential construction sites were idle, as against 36 percent of residential construction sites. Also, larger residential construction sites were reactivated more quickly; therefore, weighted by number of dwellings, the share of inactive sites was even lower.

The recovery continued at the beginning of 2024; by the end of February, only 17 percent of residential construction sites (weighted by number of dwellings) were idle.

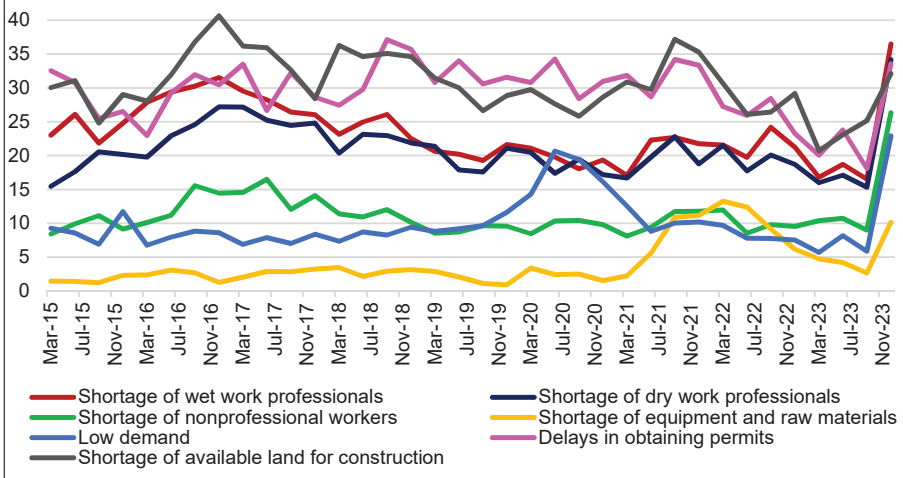
Performance data for the fourth quarter of 2023 indicate the industry's very rapid recovery: some 14,000 building starts, only 12 percent below the average in the first three quarters of the year, and 15,900 building completions and building permits for 21,100 dwellings, up 13 percent and 22.5 percent, respectively, relative to the three-quarter average. In building starts, the adverse effects of the war will probably be reflected in unusually lengthy construction times due to the shortage of Palestinian workers who specialize in structural construction works. Analysis of the characteristics of Israeli construction workers shows that only some, particularly those who specialize in structural construction works and building completion and finishing, do their work on site (Box 8.1). It appears that much effort was spent on completing the construction of projects, expediting completion procedures, and obtaining approvals from local authorities, firefighting services, the Home Front Command, water corporations, and so on. All of these are needed in order to present homebuyers with "Form 4," which allows them to move quickly into their dwellings equipped with the reinforced safe spaces.

Analysis of data from the Central Bureau of Statistics Business Tendency Survey shows that all constraints to construction activity worsened gravely when the war broke out—the labor shortage most conspicuously and also in housing demand and delay in obtaining permits/certifications (Figure 8.5). Job vacancies in the construction industry rose to 9.2 percent in the fourth quarter of 2023, compared to 6.4 percent in the year-earlier quarter; this was the only industry in which the share of vacancies increased during that quarter. For the time being, this distress was not reflected in an increase in Israeli workers' wages; indeed, the annual pace of wage growth per Israeli employee post in construction slowed in the fourth quarter of 2023 relative to the first three quarters of the year. The annual rate of increase in wage per employee post for foreign and Palestinian workers, in contrast, accelerated due to the recomposition of the labor force that followed the ban on employment of Palestinians. This may signal an expected upturn in construction wages if the program to replace Palestinian workers with foreign labor is implemented. Foreign workers, however, put in more hours and generate more output than do Palestinians.

Replacing Palestinian workers with foreign labor is a lengthy process; in the Second Intifada, it took five quarters.

The magnitude of the labor shortage that befell the industry is unprecedented. Prior to the Second Intifada, Palestinian workers accounted for 27 percent of industry employment, and when the Intifada broke out their numbers fell by about half but their employment was not terminated altogether. In 2000, Palestinians and foreign workers were employed in the construction industry in equal numbers (around 60,000), as against some 100,000 Palestinians and 28,000 foreign workers prior to the Swords of Iron War. After the eruption of the intifada, the population of foreign workers gradually increased and within five quarters managed to replace the Palestinians, who were barred from Israeli territory. The impairment to housing starts was mild at that time: a 7 percent decrease in the fourth quarter of 2000 relative to the average in the

Figure 8.5
Firms that Reported Serious Constraints on Expanding Activity in the Construction Industry as a Share of Reporting Firms, 2015:Q1–2023:Q4
(quarterly averages)



SOURCE: Based on Central Bureau of Statistics.

first three quarters of that year. Completions were more strongly affected, falling by one-third. Today, too, the government is trying to solve the labor-shortage problem by importing foreign workers, but this is a lengthy process. (For elaboration, see Box 5.1.) An alternative solution that may mitigate the dependency of the Israeli construction industry on Palestinian (and foreign) labor may be attained by assimilating innovative processes. This, however, is a long-term solution that entails preparations, investments, and, perhaps, government involvement as well.[19] (For elaboration, see Box 8.2.)

c. Urban renewal

Urban renewal projects are advantageous for builders at times of high interest rates: builders in such projects do not need large amounts of credit because they do not have to buy land and because they are able to sell added dwellings by the time construction costs and payments to holders of rights kick in. Expanded use of urban renewal is a desirable goal if it is accompanied by the requisite infrastructure adjustments because it enhances utilization of land, which is in short supply in high-demand areas, and improves the quality and safety of existing housing stock.

[19] In the meantime, the new government plan allocates NIS 19 million to the Investment and Development Authority for Industry and Economy in order to promote industrialization of the construction industry, and NIS 30 million for a program that encourages employment and training of local workers for the construction industry.

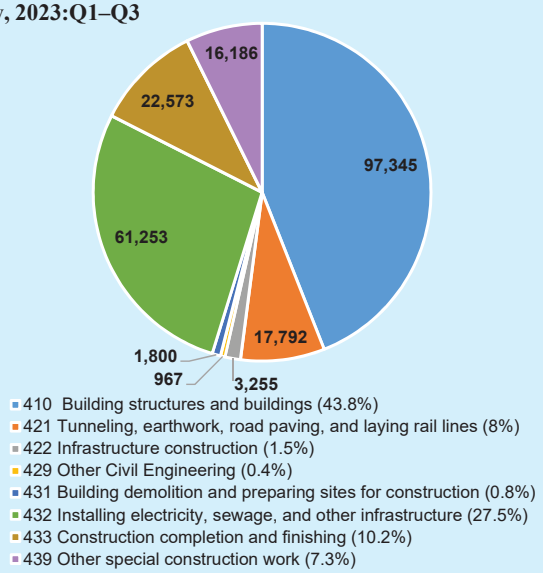
Box 8.1
Characteristics of Israelis Employed in Construction

According to the Central Bureau of Statistics Labor Force Surveys, approximately 220,000 Israelis were employed in construction in the first three quarters of 2023, on average. As shown in this analysis, only some of them carried out tasks directly at construction sites, mainly in structural construction works and completion and finishing works.[1]

The construction sector is composed of three main industries: Division 41, "Construction of Buildings," of which only part is directly associated with residential and nonresidential building; Division 42, "Civil Engineering," which belongs to the field of infrastructure; and Division 43—"Specialized Construction Activities," aggregating most tasks related to structural construction works, such as construction of foundations, working with concrete, bricklaying and stone setting, roof covering, sealing and insulation, and scaffolding, and also finishing works such as plastering and painting, flooring and tiling, glass, carpentry, and frames. The divisions are divided into sub-industries. Figure 1 parses the Israeli workers by sub-industries.

The Israelis employed in structural construction works are concentrated in Sub- Industry 4101, Building Contracting, and 439, Other Specialized Construction Activities. Most of those employed in finishing works are classified under Sub-Industry 433, Building Completion and Finishing. Examination of the distribution of persons employed in these industries by occupation shows that only 30,000 are engaged in structural construction works and 31,000 others, including on-site forepersons, perform finishing works. Some 40,000 Israelis are engaged in renovation of buildings and not in construction (Sub-Industry 4105). Around 60,000 Israelis work in Sub-Industry 432, Electrical, Plumbing and Other Construction Installation Activities, which includes installation of sundry systems including electricity, communications, water, sewerage, air-conditioning and refrigeration, control and warning systems, etc.—and only some of them work at residential construction sites.

Figure 1
Distribution of Israeli Employees in the Construction Industry by Subindustry, 2023:Q1–Q3



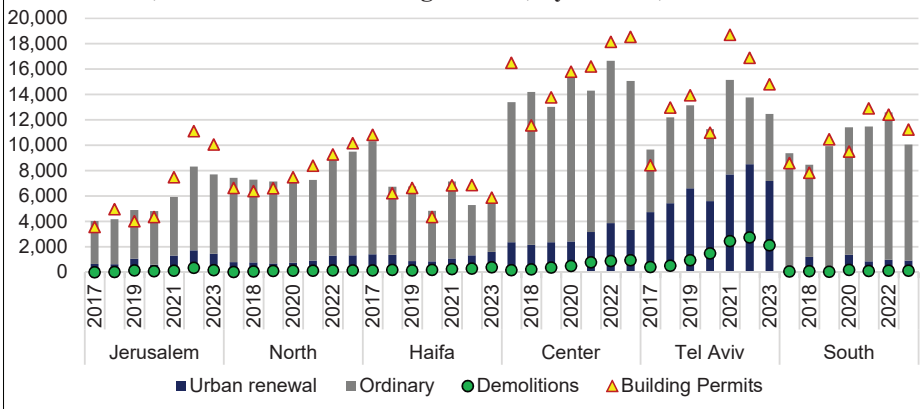
SOURCE: Based on Central Bureau of Statistics Labor Force Survey.

[1] Many of the 220,000 Israelis who are classified as construction workers are architects, engineers, managers, white-collar workers, sales staff, and employees of personnel companies, i.e, do not engage in work at construction sites.

The war underscored the need to upgrade old housing stocks that lack reinforced safe spaces in all parts of the country. The trend of building expansions within the urban-renewal framework continued in the first three quarters of 2023—particularly in the Tel Aviv District, where more than half of total building starts take place in urban renewal, and in the Central, Jerusalem, and Haifa districts, where one-fifth to one-fourth of total starts are of this kind (Figure 8.6). In the Southern and Northern districts, in contrast, urban renewal is rarely undertaken because low land value makes such projects unprofitable. The State Comptroller[20] noted the ongoing failure of National Outline Plan 38 to spearhead earthquake preparedness in the periphery.[21] Profitability can usually be enhanced by raising the ratio of dwellings in new condition to those in present condition (a multiplier); this is accomplished by high-rise buildings, which come with steep construction and maintenance costs. Such buildings are less suitable for towns in the periphery, where owners of old dwellings sometimes lack the needed resources. Therefore, buildings that are planned in these localities go up to nine stories.

The war underscored the need to upgrade the stock of old homes that lack reinforced safe spaces in all parts of the country. In the Southern and Northern districts, however, urban renewal is uncommon because it is not worthwhile for the developers.

Figure 8.6
Urban Renewal Building Starts, Ordinary Building Starts, Housing Demolitions, and Units with Building Permits, by District, 2017–2023



SOURCE: Based on Central Bureau of Statistics.

In its 2022 report, a joint committee for the promotion of urban renewal in the periphery recommended tools that would make urban-renewal areas in the periphery profitable. They include tax benefits, grants, guarantees, and loans for construction,

[20] State Comptroller's Report, National earthquake preparedness, national infrastructures and structures: Expanded follow-up audit, January 2024. [Hebrew]

[21] According to data from the Israel Authority for Urban Renewal and the Israel Mapping Center (IMC), some 6,700 structures in high-density building (approx. 96,000 dwelling units) in the urban localities of the Negev and Galilee that were not built to the earthquake resilience standard (Comprehensive Plan 413) and are suitable for urban renewal. Of them, around 1,900 buildings (36,000 apartments) are in localities of high seismic risk. According to the State Comptroller, fewer than 1 percent of buildings in the periphery that need reinforcement against earthquakes have been reinforced thus far.

and use of publicly zoned land adjacent to vacate-and-build areas for the benefit of urban-renewal areas. The Urban Renewal Authority found that the funding needed to boost profitability in order to carry out a typical vacate-and-build project in the periphery is, on average, NIS 200,000 per planned dwelling (existing and added). This sum is lower than the cost of reinforcing and protecting existing dwelling units only and the cost of government investment in new high-density dwellings in the periphery (by subsidizing development expenses). The Urban Renewal Authority recently announced a program in which urban renewal in towns defined as at high seismic risk would be subsidized[22] at a steep budget cost of NIS 10 billion.

Figure 8.6 substantiates the Central Bureau of Statistics finding that for construction in urban renewal, more time passes between issuance of building permits and the beginning of construction. The gap between the number of homes with permits and those for which construction began the same year is especially wide in the very districts where the share of housing starts in urban renewal is highest. This is because construction in an urban-renewal setting is a complex process, in which building is preceded by temporary accommodation of tenants in rental units and demolition of the old structure. The Urban Renewal Authority report for 2022 reinforces this finding by noting that the time between issuance of permit and tenanting in National Outline 38 plans is continuing to lengthen and came to forty-two months in 2022 as against thirty-three months on average in construction of all buildings completed (Table 8.1).

d. Long-term rental

The government has been promoting building for long-term rental since the middle of the previous decade. However, the profitability of long-term rental projects erodes at times of high interest rates.

In 2016–23, there were 17,600 rental starts, of which 80 percent were in high-demand areas (Tel Aviv, Central, and Jerusalem districts). The rapid upturn in the interest rate that began in April 2022, however, derogated from the profitability of such projects. One reason for this was an amendment to the Encouragement of Capital Investments Law that prolonged the mandatory rental term to at least fifteen years (instead of at least five years previously) and set the minimum term of the rental contract at five years with an option for five more.[23] The number of applications for approval of building for rental declined in 2023 and requests to exit the rental track, thus relinquishing the benefits, were actually submitted.

The belief among market players that the interest rate may remain high to a relatively long term and is unlikely to retreat to the low levels that prevailed for years

[22] The plan encompasses 110 neighborhoods that were found suitable for vacate-and-build activity in eight cities: Kiryat Shemona, Hatzor Hagilelit, Safed, Tiberias, Bet She'an, Afula, Migdal Haemeq, and Eilat.

[23] The change was supposed to go into effect at the beginning of 2024 but was postponed by three months due to the war. When a minimal contract period is established, landlords are less able to raise the rent when one tenant is succeeded by another. (A contractual mechanism of rent adjustment with the same renter exists.)

until the onset of rate-hiking in April 2022 is deterring developers from participating in land auctions for rental projects. In 2021, the ILA managed to market land for the construction of 5,337 dwellings out of some 5,500 (a 97 percent success rate), and all projects are under way at the present writing.[24] In 2022–23, the results were much less auspicious. In 2022, the ILA managed to sell land for 2,520 rental dwellings out of 5,525 (a success rate of only 46 percent). Projects involving 1,092 dwellings are already under construction. In 2023, the ILA sold land for only 621 rental dwellings (in Ramat Gan and Herzliya) in auctions for 1,171 units (a 53 percent success rate); additional auctions for 3,343 dwellings, promulgated in the past two years, are intended to be closed in 2024.

Low success rates in marketing land for rental housing indicate that the decrease in land prices thus far has not countered the impact of interest rate increases, forcing the government to seek additional solutions.

In response to the worsening of economic conditions, developers sharply lowered their price bids for land. Thus, in 2021 winning bids exceeded real estate apraisal of land in most auctions, whereas in 2022–23 the winning bids in successful auctions were much lower than assessments. The extremely low success rates in land auctions for construction of rentals indicate that the decrease in land prices has not, thus far, countervailed the impact of the upturn in interest. Thus, the government is seeking solutions such as lowering the minimum price in the auctions. (In some auctions, it has already been lowered to only 15 percent of assessment, and in others no minimum price was set at all.) Additional solutions being promoted are increasing the share of dwellings designated for sale in rental projects, deferring the Value Added Tax component to the end of the project period—equivalent to lowering construction costs by 17 percent—spreading payments for land over a longer term, and subsidizing development costs in the periphery.

e. The early stages of "manufacturing" dwellings

Despite the constraints of the war, the planning and building committees approved building plans for 168,400 dwellings in 2023—a record number (Table 8.1) that exceeded the government's target of 125,000 per year by far. More than 40 percent of dwellings in the approved plans were associated with urban renewal and 50,600 were in Arab and Druze localities. Also approved in a rush process due to the war was a national safe-spaces town-building plan (TAMA 40/a/1/1) that allows the construction in old dwellings of reinforced safe spaces that could not be built until now due to space constraints[25], and the expedited construction of safe spaces without a building permit in buildings on ground level and up to two stories in height. Against this

[24] In auctions in the periphery, only part of dwellings are reserved for rental and others are designated for sale in order to make the project more profitable. Therefore, the number of dwellings under construction for rental only is smaller: 4,938.

[25] In effect, the plan is a countrywide extension of TAMA 40/a/1, approved in 2019 for localities up to nine kilometers from the northern border. The plan allows homeowners and public institutions that have no reinforced safe space to deviate from the detailed planning provisions that apply to their land, chiefly in regard to frontage lines, in order to build one. Because TAMA 40/a/1/1 includes detailed provisions, building permits may be issued on its basis.

background, the Banking Supervision Department announced leniencies for funding of construction of safe spaces.

The planning and building committees approved a record number of dwellings in 2023; this, however, neither assures nor expedites the implementation of plans.

Approval of plans by planning committees, however, neither assures nor quickens the pace of implementation. From a multiyear perspective, the number of dwellings that receive building permits is only about half the number approved by the planning entities. Many delays occur in the stages between approval of plans and sale of land. They trace, *inter alia,* to the being contingent on a large share of approved plans on investments in infrastructure such as roads, interchanges, and facilities for waste treatment and cleansing of polluted soil, and to settling statutory issues. Another impediment is excessive planning in the periphery, particularly in the Southern District, where demand is lower than in the central areas. About one-third of dwellings approved in the past year are in the Southern and Northern districts. In a new program, the government is trying to incentivize construction of dwellings in the periphery and to lower their price. The plan allocates up to NIS 1.1 billion in 2024 to subsidize development expenses in ILA land auctions for high-density building in National Priority Areas, with emphasis on localities up to nine kilometers from the northern border.

Many delays come about at the lengthy stage of marketing land. As found in an analysis of ILA land releases in 2021–23 (Table 8.4), some auctions are closed three years after they are opened, possibly derogating from their success due to change in the developers' economic environment.[26] With the interest rate increases in 2022–23 in the background, winning bids in land auctions declined as did the success rates of the auctions, particularly those using the Target Price model. The impact of the war became apparent in auctions that were supposed to be closed in 2024 or were postponed to 2024 (closure of all auctions has been postponed since the eruption of the war) and builders were distinctly uninterested in taking part in the first auctions that were closed in January 2024.[27] It is true that the decline in winning bids in auctions closed in 2023 offset at least some of the increase in funding expenses for acquiring and holding land, but the decrease in demand for housing was translated into weaker demand for land as reflected in the low success rates.

[26] However, one cannot rule out the possibility that auctions that establish a lengthy interval between issuance and closing date are the same auctions in which the ILA finds difficulties; in many cases, these are auctions in which the auction booklet is released at great delay.

[27] In addition to auctions undertaken in the course of 2024, many auctions begun in recent years are expected to be closed this year. They pertain to the construction of nearly 50,000 dwellings—8,900 in 2021, 10,600 in 2022, and 30,500 in 2023.

Table 8.4
Israel Land Authority marketing for residential construction in tenders with at least 4 units: Total units discussed and successfully closed, and success rates*

Publication date and Tender type	Year of tender closing												Actual marketing
	Discussed in 2021			Discussed in 2022			Discussed in 2023			Discussed in 2024			
	Total	Successful	%	Total	Successful	%	Total	Successful	%	Total	Successful	%	
2021													
Ordinary and initiated	9,598	9,278	97%	7,989	7,456	93%	1,540	1,386	90%				18,120
Reduced price	5,024	4,911	98%	19,863	17,309	87%	608	608	100%				22,828
2022													
Ordinary and initiated				7,988	6,381	80%	2,991	2,911	97%				9,292
Reduced price				13,634	10,319	76%	10,246	4,829	47%				15,148
2023													
Ordinary and initiated							5,278	3,279	62%	3,784	306	8%	3,585
Reduced price							22,715	11,987	53%	1,224	-	0%	11,987
Total	14,622	14,189		49,474	41,465		43,378	25,000		5,008	306		80,960

* In addition to these tenders, the ILA markets land for low-density construction and land that is not subject to tenders.
SOURCE: Based on Israel Land Authority.

Box 8.2
Assimilating Innovation within the Construction Industry

- The capital stock per worker in the construction industry in Israel is low relative to other countries, indicating a lag in the level of industrialization and innovation in the industry. The main barriers to innovation include limited knowledge in the field, the need for coordination among many stakeholders, and inappropriate regulation.
- The availability of low-cost non-Israeli workers reduces the incentive for companies to assimilate innovation, although it exposes them to an unstable supply of labor.
- Industrialization and innovation in construction have positive externalities, such as reducing noise and pollution near buildings sites, which may justify government support for the assimilation of these processes.

Background and Motivation

The assimilation of innovation in the construction industry will create added value based on the use of planning systems, construction methods, and machinery and equipment that are more efficient than those in use today. **Innovation in planning and management** includes the use of Building Information Modeling (BIM)[1] throughout the life of the project. This involves systems that integrate artificial intelligence, software and hardware systems for logistic management, the Internet of Things at building sites, etc. The use of innovative planning tools is often a prerequisite for the use of advanced construction technologies in the execution stages as well. The **innovation in execution** can be classified into two main categories: (1) Increased use of prefabricated structures or building parts; and (2) the use of advanced equipment and technologies, such as drones, sensors and 3D printing, among others.

The integration of innovation in construction in Israel is all the more important in light of indices showing that productivity in the Israeli construction industry is relatively low. Thus, as of 2018, labor

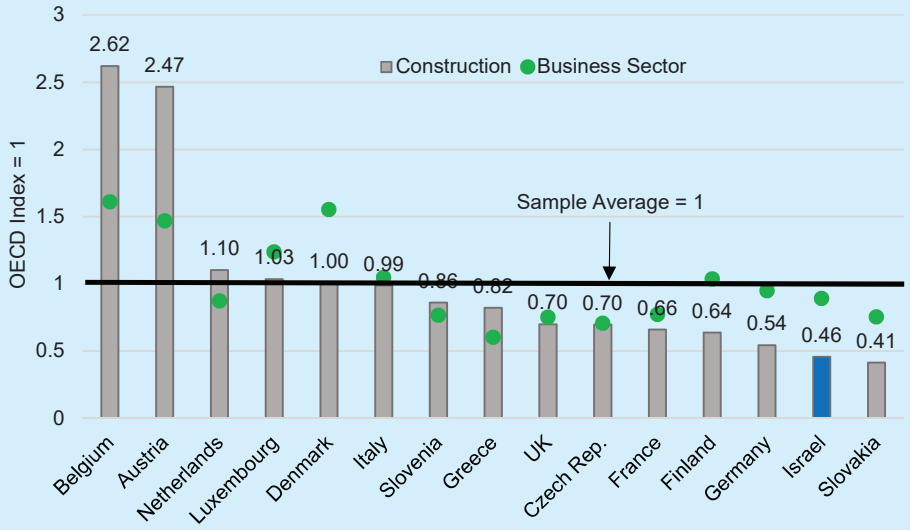
[1] Building Information Modeling is a system for the sharing, division and distribution of information between all of the parties involved in a construction or infrastructure project

productivity in the industry was, on average, about 15 percent lower than in the parallel industry in the OECD countries (Bank of Israel, 2023), which is above and beyond an overall lag vis-à-vis the overall business sector. An international comparison of labor productivity in the construction industry is liable to produce biased results due to measurement issues, particularly as a result of differences between countries in measuring land prices.

A more direct and alternative indication of the level of mechanization in the construction industry is obtained by comparing capital stock per worker in the industry in Israel to its level in the OECD countries (Figure 1). The comparison shows that capital stock per worker in the construction industry in Israel is 54 percent lower than its average level in the sample countries, while the lag for the total business sector is only 11 percent.

There is further evidence of the construction industry's lag in terms of the level of mechanization and innovation, and at the same time, reliance on cheap labor. Thus, the Bank of Israel (2016) showed that the basic skills of Israeli workers in the construction industry are particularly low compared to their counterparts in the OECD countries and that Israel is particularly dependent on unskilled workers. The Ministry of the Economy and Industry (2021) showed that the utilization of digital technologies in the construction industry is significantly lower in Israel than in reference countries.[2]

Figure 1
Capital Stock per Worker in the Construction Industry and in the Business Sector, Israel and Selected OECD Countries, 2018



Capital stock per worker in the industry is calculated by dividing the total captial stock in the industry by the number of employees in the industry.
SOURCE: Based on OECD.

[2] The analysis is based on the ICT survey data processed by the Strategy and Policy Planning Department in the Ministry of the Economy and Industry and its European counterpart at Eurostat, using the methodology and definitions of Gilad Be'ery and Ilai Esperanza, "The Digital Divide of the Israeli Business Sector," Ministry of the Economy and Industry (2021).

Studies conducted on this issue and an examination of widely used construction technologies indicate an inverse relationship between the level of mechanization and the duration of construction (Ministry of Housing, 2016). In the construction of high-rise buildings in Israel, the level of mechanization at building sites is high relative to the construction of buildings of up to nine floors. The potential for increased efficiency in high-rise construction lies in the introduction of advanced technologies at building sites and increased use of prefabricated building parts, while in low-rise construction, increased efficiency can be achieved both by raising the level of mechanization—based on the methods that are commonly used for high-rise buildings in Israel—and by means of investment in equipment at conventional building sites. Although the proportion of housing starts for buildings of up to nine floors within total housing starts dropped by about 10 percentage points during the previous decade, it remained significant in 2020–23, at about 65 percent.

Barriers to the assimilation of innovation in the construction industry and overcoming them in Israel and other countries

The studies that have examined the feasibility of promoting industrialization and adopting advanced technologies in the Israeli construction industry concluded that it would save production costs (mainly due to the reduction of labor inputs) and improve the quality of construction.[3] The slow integration of new technologies in the Israeli construction industry, despite their advantages, likely reflects the existence of various barriers to the implementation of innovation in construction in Israel, similar to those in the OECD countries (Demirkesen et al., 2022).

Uncertainty about the demand for innovative construction: Uncertainty of demand constitutes a barrier to the development of a mature market for innovative construction. The construction industry is fragmented and includes many companies and subcontractors along the value chain that need to synchronize the adoption of new methods among themselves. In particular, due to economies of scale in innovative construction, small and medium-sized companies refrain from adopting new methods (Demirkesen et al., 2022). Another reason is consumer concerns about industrial construction (even though it actually involves higher-quality construction). All of these may be contributing to instability in demand for innovative construction.

To overcome this barrier in Denmark, a consumer organization was established that makes information about the industry more accessible and provides assistance to overcome, among other things, the consumer barrier. In addition, countries are working to ensure demand for innovative construction methods at a level that will make the penetration of innovation feasible. For example, in the UK (Farmer 2016) and Denmark, the government supports demand by requiring a certain level of industrialization among construction companies involved in residential construction as part of public projects. This policy has

[3] Ministry of Housing (2016).

been found to be effective in promoting digitization in the sector.[4] Similar incentives can also be created in Israel.[5]

Availability of inexpensive labor and a lack of skilled labor: In Farmer (2016), a report on the construction industry in the UK, it is claimed that the availability of inexpensive labor reduces the need to implement new technologies in the present, even though it may lead to instability in the industry in the long term. This issue is particularly relevant in Israel where the industry is heavily dependent on the unstable supply of non-Israeli workers (see Figure 1). A shortage of skilled labor in the construction industry exists in most advanced economies and it hinders the implementation of new technologies that are primarily based on the digitization of planning and construction processes. Governments worldwide are promoting the training of skilled labor to remove this barrier: In the UK, comprehensive training programs have been launched; in the Netherlands, there are training programs for immigrants; and in Singapore, there is cooperation with foreign companies to train the local workforce.

Regulation and standards: The standardization processes in Israel with respect to building materials and new construction methods are prolonged and difficult.[6] The modification of existing regulation could help in the assimilation of new technologies in the industry. Regulation can also help in creating uniformity in standards in order to overcome the lack of synchronization in the market.

In a number of countries, modifications of regulation are being promoted, such as the obligation to use BIM in planning, primarily in public projects in the US, UK, Denmark, Sweden, and other countries (Panteli et al., 2020) and the merging of local standards and regulation with European standards in Germany. In Denmark and Sweden, regulation aimed at reducing the amount of waste and carbon emissions in the construction industry is being promoted, indirectly accelerating the transition to more advanced technologies.

Policy in Israel

Since 2016, Israel has implemented several measures to promote innovation and mechanization in the construction industry.[7] As part of Government Decision 1383 in February 2024, additional measures were adopted in the areas of workforce training and innovation subsidies. Table 1 presents most of the measures implemented during this period.

[4] European Construction Sector Observatory, Digitalization in the Construction Sector 2021.

[5] There are projects to construct student dormitories, public housing, and senior living facilities that are built using modular construction, and it is possible to expand the use of this method to additional projects and domains.

[6] Zichik et al. (2022).

[7] Starting from Government Decision 1320 in 2016, "Industrialization and increasing labor productivity in the construction industry" which adopts the findings of the document published at the initiative of the Ministry of Housing – The Branch for Strategic Planning and Policy entitled, "Plan for mechanizing the construction industry in Israel – Summary", March 2016.

Table 1
Government measures to promote innovation in the construction industry in Israel

	Date of Implementation	Policy Objective
Promotion of "Plan and Build" complexes	Starting from 2016	Reduce uncertainty by ensuring demand[a]
Support for entrepreneurs[b] and contractors in dense urban construction (3 to 9 floors)	2017–2019	Reduce the cost of mechanization and innovation[c]
Partial funding of skilled workforce training and advanced technology training	2017–2019	Skilled workforce training
Various incentive programs to promote innovation and mechanization in the sector[d]	2019–2023	Reduce costs for integrating innovative technologies in construction
Establishment of an interministerial team to promote the implementation of BIM	2022	Promote the implementation of BIM for digitalization advancement
Creation of a ConTech community in collaboration with contractors	2017	Connect startups with construction industries and increase synchronization
Grants for training and employment of Israelis in construction	2024	Skilled workforce training
Subsidizing the implementation of innovative technologies in the construction industry[e]	2024	Reduce costs for integrating innovative technologies in the industry

[a] The "Plan and Build" method relies on a mechanism whereby the development and construction of residential complexes involving at least 1,000 units are planned and executed by the same entity, thus optimizing and shortening the planning and building process. It also includes requirements that promote mechanization and the implementation of innovative technologies in construction. Thus far, three complexes have been tendered using this method, with monitoring of execution and drawing of conclusions in a complex in Harish.

[b] The actual budget amounted to about NIS 70 million, with approximately 50 contractors receiving subsidies.

[c] In the context of evaluating the impact of mechanization grants distributed in the construction industry in the years 2017–2019, it was found that in 2021 the level of mechanization among the grant recipients was higher than in comparable companies in the industry ("Examination of the Impact of Mechanization Grants", Paz Economics and Engineering, 2021; the survey was commissioned by the Ministry of Housing).

[d] The Ministry of Housing in collaboration with the Israel Innovation Authority, the Ministry of the Economy and other ministries.

[e] NIS 19 million was allocated for the subsidization of innovation in construction.

Summary and Conclusions

Is there a need for a more active policy to promote the adoption of technologies and industrialization in the construction industry, or do the revealed preferences of construction companies reflect the optimum desired by the market? This question will be discussed from four angles:

Employment: The availability of inexpensive non-Israeli workers and a shortage of skilled workers may explain the low motivation of companies to invest in physical capital and innovation. However, dependence on non-Israeli workers is a source of instability in the industry, which should be taken into account in employment policy (for further details, see Box 5.1 in this report). The government has an important role to play in training skilled labor for the industry, which needs to be coordinated with the implementation of other policy measures in this domain.

Barriers: The government can remove barriers that reduce efficiency by eliminating the excessive regulation that hinders the adoption of innovation or by introducing new regulation in cases where it may increase coordination both among companies in the market and between companies and other entities such as local authorities (for example, standardization of planning processes). The government can also help alleviate consumer concerns by making information about innovative construction methods more accessible. Creating government demand for innovative construction, at least for a limited time, may also contribute to the development of a “mature” market for innovative construction, as has been done in other countries.

Subsidizing the implementation of innovation: A temporary subsidy to promote mechanization and innovation, especially among small and medium-sized companies, may be effective in promoting innovation. However, it is important to consider expanding the existing subsidy policy while recognizing the business incentive of companies to reduce costs and increase productivity through technology and coordinating these incentives with the policy for employing non-Israelis.

Externalities: Innovation in construction includes positive externalities not taken into account by construction companies: reduction in the amount of construction waste and noise, reduction of pollution near building sites, and improvement of safety on building sites. These justify the limited subsidization of innovation, alongside regulation that would internalize the externalities within the activities of the construction companies.

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