Chapter 5

The Labor Market

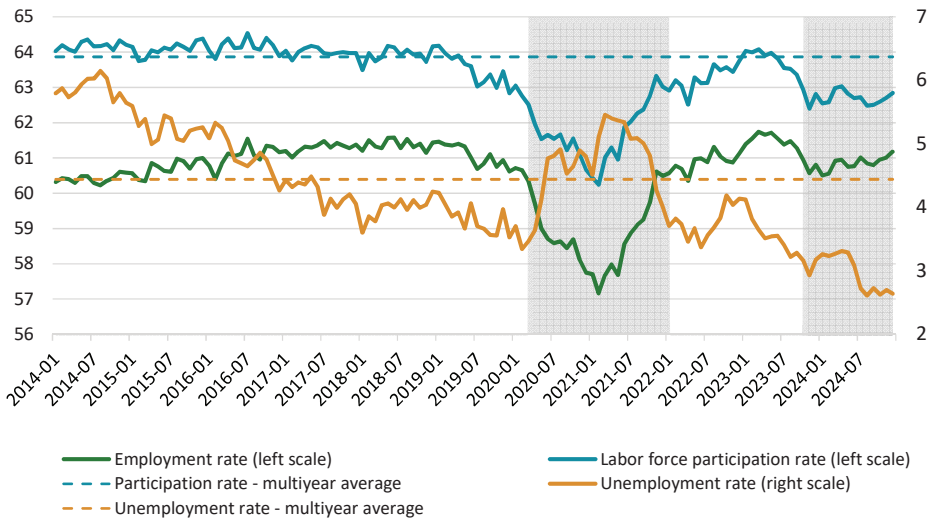
- In 2024, the labor market was affected by the ongoing consequences of the Swords of Iron War. The impact was primarily concentrated on the labor supply, which contracted significantly at the beginning of the war and remained low until the end of the year.
- The main factors contributing to the weakness of the labor supply in 2024 included a decrease in the number of non-Israeli workers, extensive military reserve call-ups, the evacuation of residents from conflict zones, and casualties of the war.
- The supply of non-Israeli workers dropped sharply compared to prewar levels, significantly affecting industries that rely on these workers. By the end of 2024, their numbers were about one-third lower than before the war.
- Labor force participation rates declined across all demographic groups, but the contraction was particularly pronounced among military-age men and young women.
- The number of employed Israelis increased moderately. Employment increased in the public sector (excluding regular and reserve military service) and declined in the business sector.
- Constraints on labor supply alongside high demand for workers were reflected in low unemployment, indicating a tight labor market. Real wages increased in the business sector, while remaining largely unchanged in the public sector (excluding regular and reserve military service).
- The trend of adopting generative artificial intelligence technologies strengthened this year in the Israeli economy, as part of a global trend. This process is expected to bring about significant changes in the labor market in the coming years. To prepare the labor market for these changes, it is important to promote policies that enable affected workers to adapt.

1. MAIN DEVELOPMENTS

The impact on the labor market in 2024 was primarily driven by the labor supply, which contracted significantly at the beginning of the war and remained low until the end of the year.

The labor market in 2024 continued to be significantly impacted by the ongoing consequences of the Swords of Iron War. At the onset of the war, the primary impact was manifested in a sharp decline in the demand for workers and a surge in the number of individuals absent from work due to economic reasons, alongside absences resulting from Home Front Command restrictions on workplaces and educational institutions.[1,2] As the intensity of the conflict decreased during the year, the impact was focused on the labor supply, which remained low until the end of the year (Figure 5.1, Table 5.1).

Figure 5.1 | Employment, Unemployment (normal definition), and Labor Force Participation Rates, 2014–2024 (aged 15 and up, seasonally adjusted, percent)



Note: The multiyear average is calculated for the years 2014–2019, 2022, and 2023 excluding the fourth quarter.
SOURCE: Based on Central Bureau of Statistics.

Key factors contributing to the reduction in labor supply included a significant decrease in the number of non-Israeli workers, extensive military reserve call-ups that diverted labor from the business sector to the public sector[3], the evacuation

1 Economic reasons for absences include a reduction in work hours or a temporary cessation of up to 30 days, primarily reflecting employer-initiated unpaid leave.

2 For further analysis, see the special report by the Bank of Israel Research Department on the economic cost of work absences during the Swords of Iron War. https://www.boi.org.il/en/communication-and-publications/press-releases/a09-11-23/

3 There are two methods for delineating economic activity between the business and public sectors. One defines state-budgeted activities as the governmental sector, with the remainder classified as the private sector. The other categorizes industries primarily funded directly or indirectly by the state as public service industries, with the rest assigned to the business sector. Since the distinction between these definitions does not significantly affect the results of the analysis, we consistently use the terms "business sector" and "public sector" throughout the chapter, regardless of the definition applied.

of residents from conflict zones, some of whom were relocated far from their workplaces, and casualties of the war. The decline in labor force participation affected all demographic groups, with a notable impact on men of military reserve age and young women.

Table 5.1 | Main Labor Market Indicators[a]

	Level[b]	Annual rate of change (percent)					Change relative to 2023 (percent)[c]	Change relative to the prewar period (percent)[c,d]
	2024	2016-19	2020-21	2022	2023-I-III	2023-IV	2024	2024
Population	9,972	2.0	1.7	2.0	3.2	2.8	1.3	2.0
Working-age population	7,180	2.0	1.9	2.1	2.5	2.4	1.9	2.5
Labor force	4,504	1.8	0.5	4.5	3.6	1.0	0.6	**0.4**
Labor force participation rate, 15+ (level, percent)	62.7	63.9	61.8	63.3	63.9	62.5	62.7	**62.7**
Number of employed persons[e,f]	4,582	2.0	-0.5	6.3	3.7	-1.4	-0.3	-0.6
Israelis	4,371	2.1	-0.1	5.8	3.7	2.1	1.1	**1.0**
Employed full time	2,854	2.4	0.3	4.9	1.0	4.8	1.1	2.2
Employed part time	1,174	1.4	-1.5	14.7	12.1	-26.9	5.1	-2.7
Temporary absentees	342	2.8	28.0	-12.4	-0.5	113.2	-10.7	13.5
For economic reasons (level, thousand)[g]	39	13.6	242.2	16.6	43.8	227.6	39.0	39.0
Due to reserve military service (level, thousand)[g]	52	1.7	1.9	1.9	6.5	147.3	51.7	51.7
For other reasons (level, thousand)[g]	4	21.2	5.9	2.2	11.6	119.4	4.2	4.2
Employees in the public service industries	1,655	2.4	1.7	3.4	3.7	4.3	3.6	4.7
Employees in the business sector industries[e,f]	2,926	1.8	-1.7	7.9	3.7	-4.3	-2.4	-3.4
Israelis	2,716	2.0	-1.2	7.3	3.6	0.9	-0.4	**-0.6**
Nonresidents[e]	172	-2.0	-11.8	6.2	6.9	-4.8	13.4	12.1
Palestinians[e]	38	5.0	3.7	21.7	2.1	-93.5	-68.1	-75.5
Weekly labor input in the business sector[e,f]	121,263	2.0	-1.5	9.1	2.7	-9.6	-2.6	-4.9
Israelis	97,791	2.1	-1.5	8.7	2.4	-5.9	-1.5	-2.9
Nonresidents[e]	8,003	-2.8	-11.2	6.2	6.5	-5.8	14.1	12.5
Palestinians[e]	1,608	5.9	2.2	23.8	1.5	-92.9	-67.6	-74.6
Weekly work hours per Israeli employee in the business sector	36	0.1	-0.5	1.4	-1.1	-6.7	-1.1	**-2.8**
Job vacancy rate in the business sector (level, percent)	4.4	3.7	3.5	4.8	3.9	3.4	4.4	**4.4**
Nominal wage per employee post[f,h]	13,524	3.0	4.8	2.4	5.7	8.3	5.0	**6.1**
Real wage per employee post (2023 average prices)[h,i]	13,090	2.7	4.4	-1.9	1.1	4.8	1.9	**2.7**
In the government sector[f,i]	12,322	1.3	1.4	-3.1	3.3	5.6	0.3	**0.7**
In the private sector[h,i]	14,714	3.1	5.1	-0.9	0.0	3.7	2.4	**3.4**
Real minimum wage	5,630	3.5	-0.4	-4.2	-1.1	1.7	2.3	**2.4**
Unit labor cost in the business sector[e,h]		1.0	-0.5	3.7	1.3	3.5	5.6	**6.2**
Narrow unemployment rate (level, percent)[j]	3.0	4.2	4.7	3.8	3.5	3.2	3.0	**3.0**
Broad unemployment rate (level, percent)[g,j]	3.8	4.2	10.9	4.1	3.8	8.1	3.8	3.8

[a] Original data, unless otherwise noted.
[b] 2024 average, in thousands or percent.
[c] Unless otherwise noted in the specific row.
[d] Seasonally adjsuted data (in bold) are calculated relative to the first three quarters of 2023. In the absence of seasonally adjusted series, the calculation is based on original data compared to the first three quarters of 2023 and the fourth quarter of 2022.
[e] National Accounts data.
[f] Including foreign workers and Palestinians.
[g] The figure under 2016–2018 is for 2018 only.
[h] Seasonally adjusted data.
[i] Israelis only.
[j] "Narrow" unemployment (the official definition for unemployment) includes unemployed people who actively searched for work and were available to work. Broad unemployment also includes those
SOURCE: Based on Central Bureau of Statistics.

The decline in labor supply, coupled with a reduction in work hours per employee, led to a decline in labor input. Labor supply constraints due to the war, alongside resilient demand for workers—as reflected by a high number of job vacancies and low unemployment—indicate a tight labor market, creating conditions for wage pressures. Since a significant portion of the reduction in labor supply was due to the decrease in the number of Palestinian workers, the unemployment rate for Israelis fell

to historically low levels. Nominal wages increased across the economy, particularly in the business sector. This increase was widespread across all industries, and aligned with the vacancy rates in various sectors. The unit labor cost of business output rose because labor productivity grew at a slower rate than wages. The pace of real wage growth in the economy was similar to the long-term rate. In the business sector, real wages rose above the long-term trend, while in the public sector, they eroded back to 2019 levels. The wage increases in the public sector, agreed upon in a 2023 agreement, did not close the gap with the business sector, and this gap widened in 2024. This expansion is expected to continue over the next two years, following a 2024 agreement that includes temporary wage cuts for public sector employees.

2. LABOR SUPPLY

The key factors in the decline of the labor supply were a reduction in the number of non-Israeli workers, extensive military reserve call-ups, the evacuation of residents from conflict zones, and war casualties.

With the outbreak of the Swords of Iron War the labor supply decreased significantly compared to its prewar level, and it remained low until the end of 2024. Key factors contributing to this decline included a reduction in the number of non-Israeli workers, extensive military reserve call-ups, the evacuation of residents from conflict zones, and war casualties.

The labor force participation rate fell from 63.9 percent in the first three quarters of 2023 (seasonally adjusted) to 62.7 percent in 2024.[4] A regression on labor market participation for 2018–2024 indicates unusual effects in 2024 relative to other years[5]: a significant decline in the labor supply of young military-age men[6] (up to age 34) and young women (up to age 24) relative to the comparison group in the regression—ages 35–44. Living in the southern district was associated with a lower likelihood of labor market participation, partly reflecting employment difficulties in conflict areas. Examining various individual characteristics shows that this year, the participation of non-Haredi Jewish men declined significantly, but the participation rate of Haredi (ultra-Orthodox) men also declined. Regression results indicate a decrease in the

[4] Had the participation rate in 2024 remained at the level of the first three quarters of 2023 (63.9 percent), the number of participants would have been about 82,000 higher.

[5] We estimated a Logit regression for the years 2018–2024, which included a dummy variable for each year (except 2018), demographic variables at the individual level, and controls for geographic areas. Additionally, we created an interaction term for each variable with each year, including 2024. The interaction coefficient for the variable with the year 2024 reflects the unique impact of this variable in 2024, beyond its regular effect.

[6] The analysis is based on data from the Central Bureau of Statistics Labor Force Survey. In the survey, reservists who were employed before being called up are recorded as employed but absent from work due to their reserve duty, while those who were not employed before being called up are recorded as unemployed. In most cases, it is not possible to determine from the survey whether unemployed individuals were called up or not, since they were not employed at the time and therefore did not list a reason for their absence from their jobs. Such reservists are classified as not participating in the labor force (not employed and didn't actively search for work in the past week). In contrast, in the national accounts data, all reservists are recorded as employed in the public sector, providing security services.

participation of non-Haredi Jewish women, especially compared to Arab women, who increased their labor market participation in absolute terms this year.

The labor supply was affected by the evacuation of residents in conflict zones in the north and south from their homes. By government decision, approximately 143,000 residents were evacuated since the beginning of the war, including 68,500 from the north and 74,600 from the south. About half returned home by the end of 2024, and the number of residents who remained evacuated by government decision stood at approximately 75,500.[7,8] In reality, the number of people who left their homes in conflict areas was higher. For these individuals, maintaining routine and employment was challenging, and it appears that some, especially those who relocated far from their workplaces, exited the labor market. The large number of war casualties—up to 25,000 by early 2025, with varying degrees of injury—also affected their labor supply and that of their family members.[9]

The number of non-Israeli workers plummeted at the beginning of the war, mainly due to the prohibition on the entry of Palestinian workers, and remained low until the end of the year.

Before the war, the number of non-Israeli workers in the economy was estimated at approximately 327,000, divided almost equally between foreign and Palestinian workers (Figure 5.2). Since the outbreak of the war, the number of non-Israeli workers plummeted. About 140,000 Palestinian workers stopped coming to work in Israel due to entry prohibitions, and approximately 13,000 foreign workers left the country. During 2024, the government promoted measures to increase the number of foreign workers, including bringing in workers from new countries and extending the work visas of those already in Israel. As a result, the number of foreign workers increased by 32,000 above their prewar numbers. However, this increase was insufficient to offset the severe shortage caused by the absence of Palestinian workers. By the end of the year, the number of non-Israeli workers was about one-third lower than before the war, with most of the decline occurring in the construction industry. (For more details, see Chapter 8 of this report.)

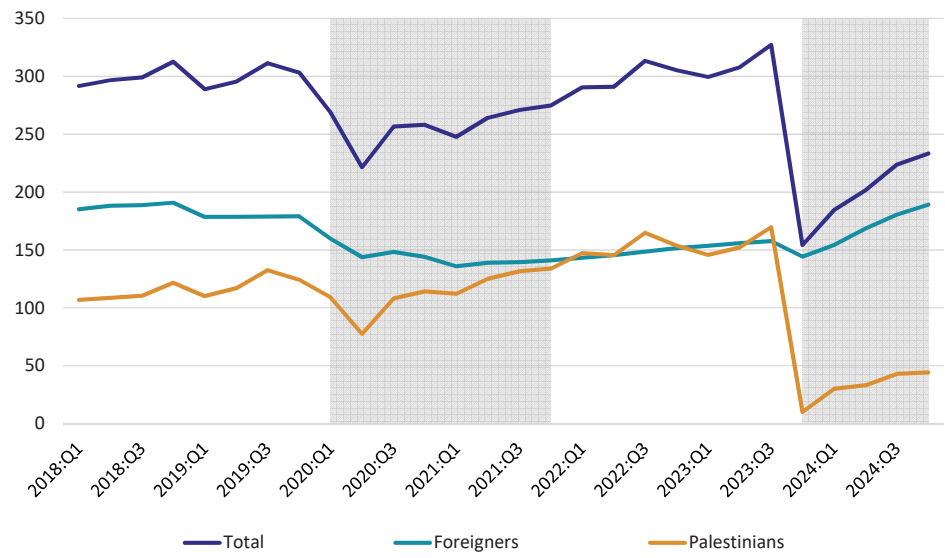
The labor supply of Israelis throughout the year was affected by the number of individuals absent from work for various reasons, the primary one being the mobilization of employees for military reserve duty (Figure 5.3).

[7] Based on the "Weekly Situation Report" from the Information and Knowledge Center dated January 23, 2025.

[8] We do not have detailed information on the age distribution of all evacuees. However, we know that among those evacuated from the north within a 3.5-kilometer range from the border, approximately 54 percent were aged 19–65. This is based on a publication by M. Lehrer and A. Weisblai, "Data Compilation in Preparation for the Day of Rehabilitation and Revival of Northern Settlements," Knesset Information and Research Center, May 27, 2024.

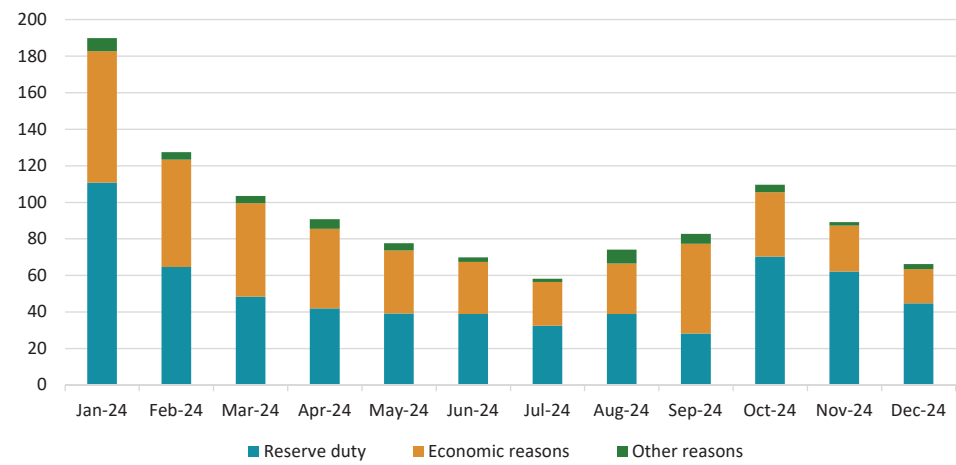
[9] By the end of 2024, the number of casualties included: 1,819 fatalities (of which 996 were nonmilitary), 100 hostages, and 23,407 injured with varying degrees of injury. This information is also based on the "Weekly Situation Report" from the Information and Knowledge Center dated January 23, 2025.

Figure 5.2 | Employment of Non-Israeli Workers, 2018–2024 (original data, thousand)



SOURCE: Based on Central Bureau of Statistics.

Figure 5.3 | Temporary Work Absentees During the War, by Main Reason
(thousand)



Note: Temporary absentees are workers who did not work during the past week. "Other reasons" are those not given a unique category in the Labor Force Survey. Economic reasons include a reduction in the volume of work or a temporary cessation of up to 30 days.

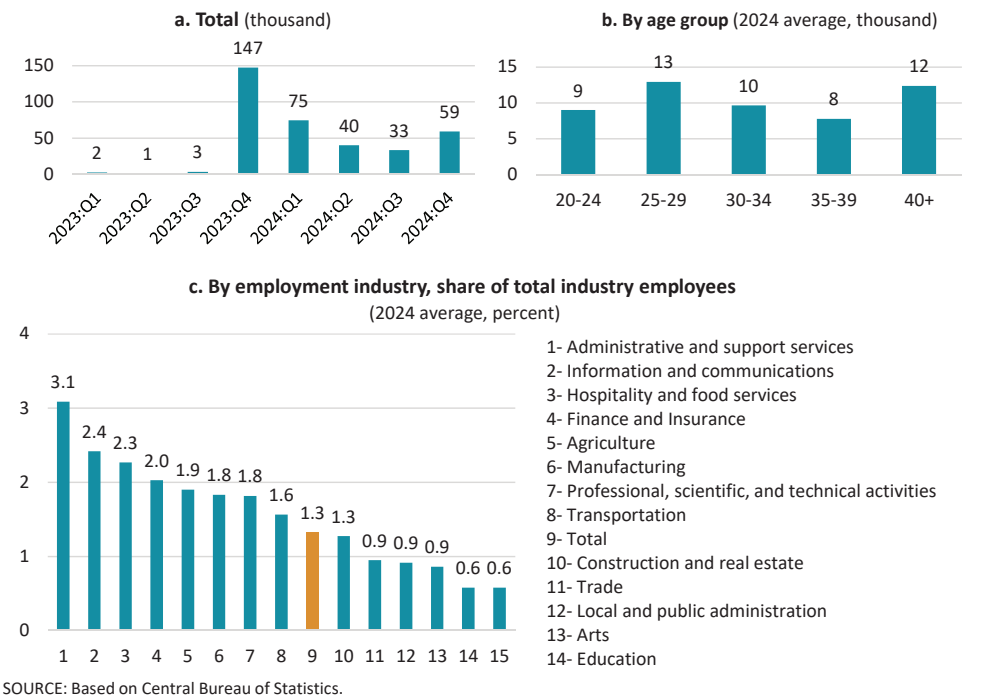
SOURCE: Based on Central Bureau of Statistics.

Throughout 2024, the number of employed reservists declined as the intensity of the conflict diminished. However, with the escalation of hostilities in the north, their numbers rose again.

The number of employed individuals called up for military reserve duty reached a peak of approximately 150,000 at the end of 2023, representing about 3.4 percent of the labor force aged 15 and over (in addition to those reservists who were not employed prior to being called up). The rest of this analysis focuses on reservists who were employed and absent from their workplaces due to their service. Throughout 2024, the number of employed reservists gradually declined as the intensity of the conflict diminished. However, with the escalation of hostilities in the north in October, their numbers rose again, reaching about 60,000 in the last quarter of 2024 (Figure 5.4a). The vast majority of reservists, approximately 88 percent, are men.

Most of the reservists are young, up to the age of 34 (Figure 5.4b). An examination of reservists by their employment industries shows a significant call-up of workers in the administrative and support services, information and communication, and hospitality and food services industries, where the proportion of reservists was considerably higher than the average across all industries (Figure 5.4c).

Figure 5.4 | Reservists Among Employees, 2023–2024 (original quarterly data)



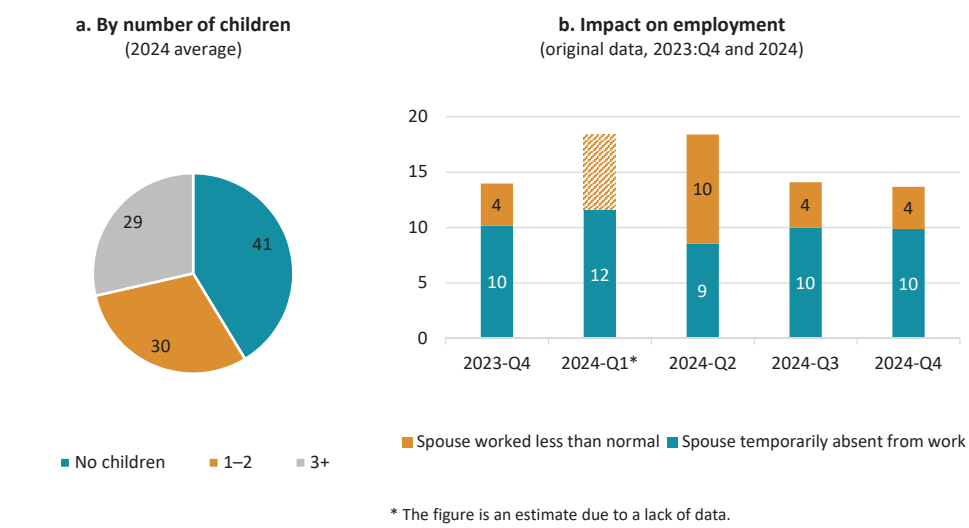
SOURCE: Based on Central Bureau of Statistics.

The mobilization of reservists shifted most of the childcare responsibilities to their spouses.

The mobilization of reservists shifted most of the childcare responsibilities to their spouses. The overwhelming majority of the wives of employed reservists (about 90 percent) are employed, and most families with a reservist have children (Figure 5.5a). Moreover, these are primarily young families with small children, most of

whom have at least one child under the age of five. As a result, some of the wives of reservists reduced their employment. About 10 percent of them (compared to 0.2 percent among other employed women), representing about 0.1 percent of the labor force, worked less than usual during 2024, and an average of 6 percent were temporarily absent from their workplaces (Figure 5.5b). Although these figures are not macroeconomic in scale, at the household level, this impact can result in significant short- and long-term costs.

Figure 5.5 | Spouses of Mobilized Reservist Employees (percent)



* The figure is an estimate due to a lack of data.

SOURCE: Based on Central Bureau of Statistics.

3. EMPLOYMENT AND JOB VACANCIES

The increase in the number of employed Israelis reflects growth in the public sector, while employment in the business sector contracted this year.

The number of employed individuals in the economy declined due to a sharp drop in the number of non-Israeli workers, resulting from the prohibition on Palestinian entry into the country since the beginning of the war. The number of employed Israelis increased by 1.1 percent in 2024, which was below the growth rate of the working-age population that year, indicating a decline in the employment rate (Table 5.1). However, by the end of the year, the employment rate had returned to its prewar level (Figure 5.1). The increase in the number of employed Israelis reflects growth in the public sector, while employment in the business sector contracted this year.

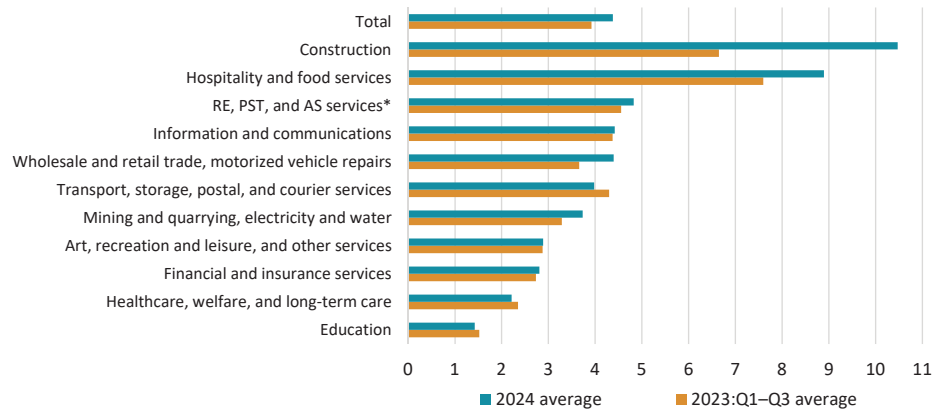
The number of employees declined sharply in the hospitality and food services industry, partly due to a decline in incoming tourism—a consequence of the security situation and reduced activity by foreign airlines—alongside an expansion of Israeli employment in the construction industry. In the absence of Palestinian workers, the government promoted incentives in this industry, such as monthly grants and

funding for vocational training, which contributed to an increase of approximately 27,000 Israeli construction workers during the year. (For more discussion, please see Chapter 8.)

Despite the rise in the number of employed Israelis, the total labor input (working hours) of Israelis declined, mainly due to the high number of temporary absences from work (primarily by reservists). Even without accounting for absentees, the number of working hours fell by 2.5 percent compared to the first three quarters of 2023. This decline in labor input reflects a supply constraint that is not aligned with the increasing demand for workers. The growing demand is reflected in a high job vacancy rate across various industries, particularly in the construction industry, where the vacancy rate nearly doubled compared to its prewar level (Figure 5.6).

The total labor input of Israelis declined, mainly due to the high number of temporary absences from work (primarily by reservists).

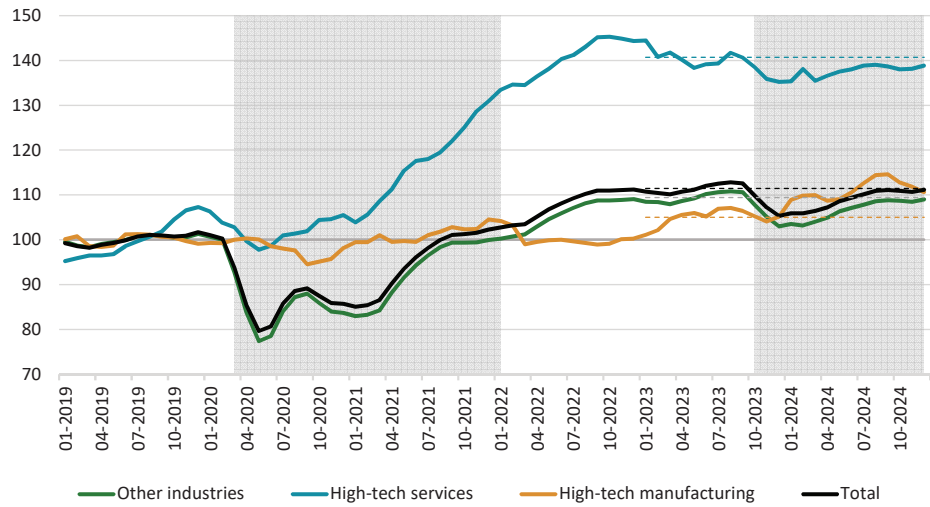
Figure 5.6 | Job Vacancy Rate, by Industry
(seasonally adjusted, share of all jobs in the industry, percent)



* Real estate, professional, scientific and technical, and administrative and support services.
Note: The job vacancy rate is defined as the ratio between the number of job vacancies and the total number of filled and vacant positions.
SOURCE: Based on Central Bureau of Statistics.

Overall, the demand for workers in the business sector declined sharply with the outbreak of the war. For most of the year, it remained low, recovering later in the year, and returning to its prewar level by the end of the year (Figure 5.7). In the high-tech manufacturing industries, the demand for workers increased more rapidly than in other industries, even surpassing prewar levels, partly due to the growing demand from the defense industry. In contrast, the demand for workers in high-tech services, which had grown rapidly following the COVID-19 crisis, declined at the start of the war and recovered during 2024, but by the end of the year, it was still slightly below prewar levels. In this industry, there was a relatively high rate of absentees due to military reserve duty, which contributed to a reduction in labor input within the industry.

Figure 5.7 | Demand for Workers in the Business Sector, 2019–2024 (sum of employees and job vacancies, moving 3-month average, seasonally adjusted, index: 2019=100)



Note: The broken lines indicate the average in the first three quarters of 2023.
SOURCE: Based on Central Bureau of Statistics.

4. UNEMPLOYMENT

The broad unemployment rate declined during 2024, to historically low levels by the end of the year.

The broad unemployment rate declined during 2024, primarily due to a reduction in the number of individuals absent from work for economic reasons, which had surged in the initial months of the war. As the intensity of the conflict decreased and restrictions on activities were eased, the rate of absentees for economic reasons declined. Among the entire working-age population, the broad definition unemployment rate reached historically low levels, similar to its prewar rate, and by the end of the year, it was even lower.

5. WAGES AND THE COST OF LABOR

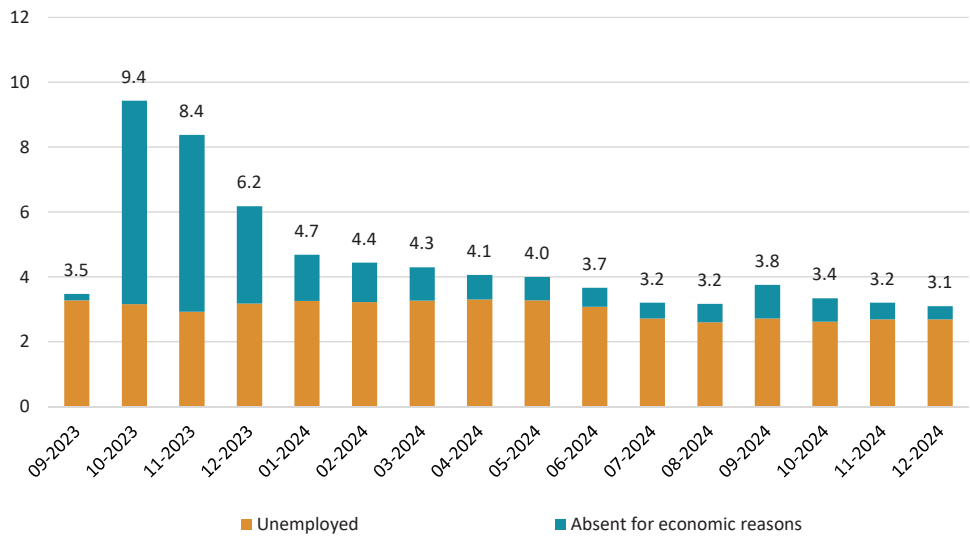
The impact on labor supply, the high ratio of job vacancies to unemployed individuals, and the low unemployment rate were reflected in an increase in nominal wages.

The impact on labor supply, the high ratio of job vacancies to unemployed individuals, and the low unemployment rate resulted in wage pressures. Nominal wages increased by 5 percent in 2024, continuing the upward trend of recent years, encompassing both the business and public sectors (Figure 5.9). In the business sector, wages for Israeli workers jumped 7 percent at the end of 2023 with the outbreak of the war due to compositional effects, but wages remained approximately at that level throughout 2024, even after these effects dissipated.

The increase in nominal wages encompassed all industries and was correlated with the job vacancy rate (a correlation coefficient of 0.33, Figure 5.10). This correlation was particularly strong in industries excluding construction and hospitality and food services. The exceptional shortage of workers in the construction and hospitality and

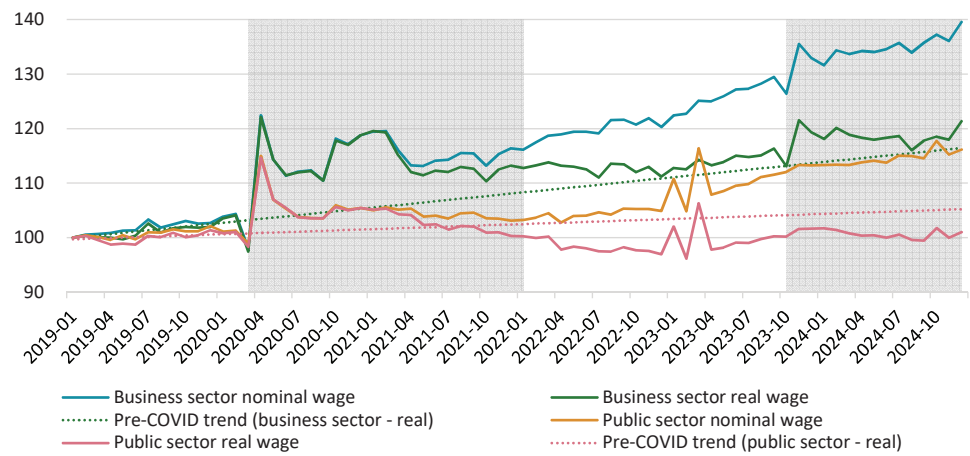
food services industries did not lead to a corresponding wage increase, likely because the shortage was primarily among Palestinian workers, for whom there are no direct substitutes among Israeli workers.

Figure 5.8 | Broad Unemployment, September 2023–December 2024



SOURCE: Based on Central Bureau of Statistics.

Figure 5.9 | Average Wage per Employee Post in the Business and Public Sectors*, Real and Nominal, 2019–2024 (Israeli employees, monthly, seasonally adjusted, index)



* Calculated for business sector industries and the public services.
Note: The real wage is denoted in average 2019 prices. The trend lines related to the pre-COVID trend (January 2018 to February 2020), and were significant influenced during the war (October-December 2023) by the change in the composition of positions.
SOURCE: Based on Central Bureau of Statistics.

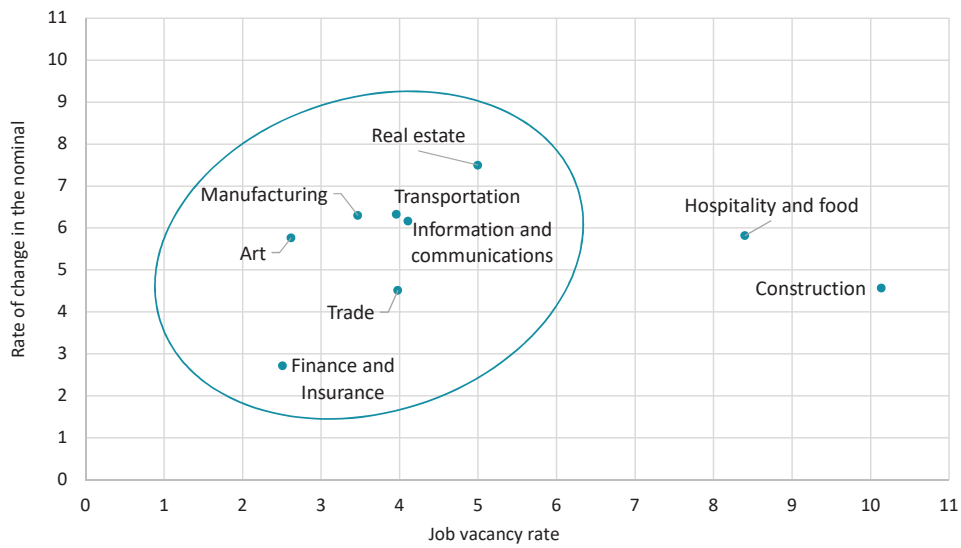
Despite the rapid increase in nominal wages, the growth rate of real wages was similar to the long-term trend, around 2 percent, partly due to unexpected inflation. Another reason for the restraint in real wage growth is that during wartime, due to high uncertainty, employees are less likely to renegotiate their wages or change jobs to improve their conditions. In the business sector, real wages rose above the long-term trend line, even though productivity per worker increased less. In contrast, in the public sector, real wages were significantly below the trend line, remaining at levels similar to those of 2019 (Figure 5.9).

The most recent agreement with the Histadrut (the General Federation of Labor in Israel) was signed in 2023 and included compensation for the cost-of-living increases during the COVID-19 period, averaging about 11 percent, as well as a reduction in the workweek.[10] One-time payments made in 2023 explain the temporary increases in public sector wages that year but did not close the gap between public and business sector wages, which has doubled over the past five years.[11] This gap is expected to widen further in the next two years, following an agreement signed this year between the Histadrut and the Ministry of Finance, which includes a temporary 2.3 percent wage cut for public sector employees from December 2024 to December 2025 and a 1.2 percent cut in 2026.

The tightness of the labor market was reflected in a rapid increase in the real unit labor cost, alongside a moderate increase in labor productivity.

The tightness of the labor market was reflected in an increase of more than 5 percent in the real unit labor cost this year. This is because labor productivity rose at a modest rate of 1.2 percent (Chapter 1), such that its increase did not fully compensate for the rising cost of labor. (For the labor market's effect on inflation, see Chapter 3.)

Figure 5.10 | Change in the Nominal Wage Relative to the Job Vacancy Rate, 2024 average
(percent)



SOURCE: Based on Central Bureau of Statistics.

[10] https://www.gov.il/he/pages/press_18072023 (in Hebrew).

[11] In 2019, the average monthly wage in the business sector was approximately 114 percent of the average monthly wage in the public sector. By 2024, this gap had widened to 133 percent.

BOX 5.1: THE EXPECTED EFFECT OF GENERATIVE ARTIFICIAL INTELLIGENCE ON EMPLOYEES: IMPLICATIONS FOR LABOR MARKET POLICY

- Generative artificial intelligence (generative AI) is expected to significantly change the labor market in the coming years. To prepare the labor market for these changes, it is important that the state ensure that the proper training is available—both for workers in jobs AI might replace and for those in roles where it will complement human labor.
- In the public sector, about two-thirds of employees work in occupations in which generative AI could serve as a complementary factor. Integrating AI across the public sector will require technological advancement and employee training. Along with updates to labor agreements and regulations, these steps can help make the sector more efficient.
- Generative AI is expected to create new demand in the high-tech industries, but also to reduce the need for many of the technological occupations, as it replaces many of their tasks. Employees in these fields will need to update their knowledge and adapt to the changing market demands.

1. INTRODUCTION

Generative artificial intelligence[1] technology is rapidly becoming integrated in many fields, and is expected to have a significant impact on the labor market. Generative AI carries out tasks related to repetitive thinking, and occupations that require such thinking are therefore expected to be significantly influenced by such technology. In contrast, the impact on workers in occupations that mainly involve physical or technical labor is expected to be more moderate, as long as generative AI is not integrated in a parallel manner in robots.

Generative AI may drive a redesign of the labor market in the coming years[2] and an increase in labor productivity[3], but it also may cause a reduction in employment in certain fields. The state must therefore implement policy measures to prepare the economy for such changes and help workers who are expected to be harmed by them. Such necessary measures include technological training programs, professional retraining, and solutions adapted to older workers.

This box assesses the extent of the population that will be affected by the adoption of new technologies, examines how they will be affected, and outlines the characteristics of workers who may be affected. It makes use of a methodology that defines an index for each occupation's exposure to generative AI and how it affects the profession.[4] This method presents each occupation as a group of tasks that comprise it, and assesses whether those tasks can be performed using generative AI. The index calculates the

[1] "Normal" artificial intelligence (AI) focuses on performing tasks that require human intelligence, such as identifying patterns and solving problems. Generative AI focuses on creating new content such as text, pictures, or music based on existing data. The difference is that normal AI processes existing data, while generative AI created new content based on existing data.

[2] There is evidence of a significant link between companies' exposure to artificial intelligence and changes in the type of training required for available positions at those companies (Acemoglu et al., 2022).

[3] See, for instance, OECD 2024.

[4] See Pizzinelli et al. (2023), and Felted, Raj and Seamans (2021; 2023). Another index to assess the expected impact of generative AI on employment was developed by Webb (2023). This latter index is based on information regarding patent registrations in the generative AI field. For application of the index to Israel see Debowy et al. (2024).

level of each occupation's expected exposure to generative AI by weighting the tasks according to the stated methodology.

Based on the index of exposure to generative AI, occupations have been divided into three groups:

1. "Substitutable" Occupations: These are occupations where a high percentage of tasks can be performed using generative AI, such as customer service representatives, general clerks, sales workers, and travel agents. The demand for workers in these occupations is expected to decline sharply as the use of generative AI expands.
2. "Complementary" Occupations: These occupations are characterized by a high percentage of tasks that require creative thinking, problem-solving, and strategic planning, such as engineers and scientists, or require unique human attributes like responsibility and judgment, such as lawyers and judges, or involve personal interaction, such as teachers and doctors. In these occupations, generative AI complements human work.
3. Occupations Not Significantly Affected ("Neutral"): These are primarily in the "blue-collar" fields, such as construction workers, agricultural workers, and unskilled laborers[5], as long as they are not replaced by generative AI integrated into robots.

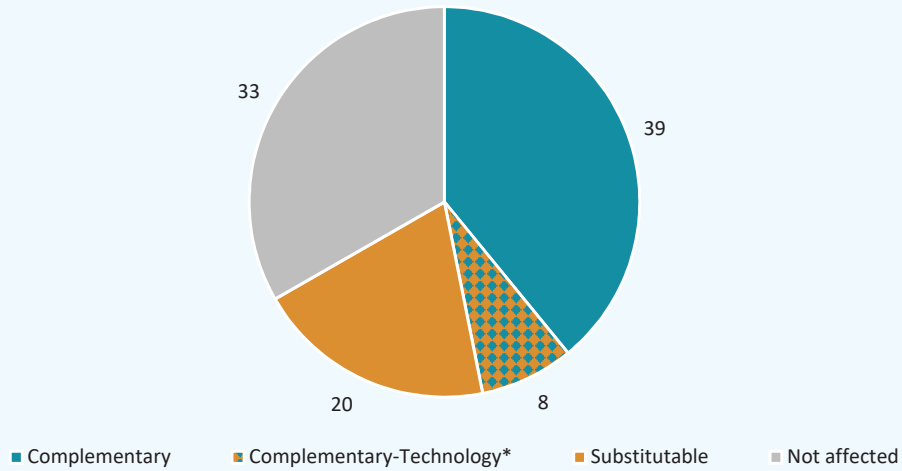
From the group of occupations originally defined as substitutable, technological occupations such as programmers and software testers should be excluded. The increasing use of generative AI is expected to actually increase the demand for these workers, but it will also require them to adapt their knowledge to changing market demands. Therefore, technological occupations initially considered substitutable may be closer to complementary occupations. The main challenge for these professionals is acquiring new knowledge in their field, rather than facing a high risk of job loss and the necessity to learn a new profession and find work in it.

2. CHARACTERISTICS OF EMPLOYEES EXPOSED TO GENERATIVE AI

To quantify the expected impact of adopting generative AI on the labor market in Israel, we used data from the Labor Force Survey for the years 2022–2023, which includes a representative sample of all employed individuals. Each worker included in the survey was assigned to one of the three occupation groups based on their exposure to generative AI: substitutable, complementary, or "neutral." Approximately 39 percent of all employees work in complementary occupations, with an additional 8 percent employed in the technological sector. About one-third of employees work in occupations that are not expected to be affected by the integration of generative AI. One-fifth of all currently employed individuals—those in substitutable occupations—may experience a significant decrease in demand for them due to the widespread adoption of generative AI (Figure 1).

[5] In the original index by Felten et al. 2023, this group is divided into two subgroups: (1) occupations where the few tasks that can be performed using generative AI render the worker redundant (substitutable); and (2) tasks where generative AI assists the worker in their job (complementary). We combined these two groups into one to align the index with policy needs, as occupations with low exposure (from both subgroups) will not require significant policy measures.

Figure 1 | Distribution of Employees in Israel by Expected Impact of Generative AI on their Occupation (percent)



* Those with occupations in the technological field, some of which are included in the substitutable occupations in the original index of exposure to generative AI. In this analysis, we excluded them from the substitutable category and defined them as complementary, because, as opposed to those with substitutable occupations, which are expected to experience a sharp decline in demand, those working in the technological field can actually expect a continued increase in demand.

SOURCE: Labor Force Surveys for 2022 and 2023, calculated on the basis of the index of exposure to generative AI.

Table 1 presents the characteristics of workers divided by their expected exposure to generative AI. The analysis indicates that women will be more exposed to the future impact of generative AI, as they constitute approximately 71 percent of those employed in occupations where demand is expected to decline due to the adoption of AI.

Since generative AI replaces humans in performing cognitive tasks, exposure to its impact increases with the level of education. In the "neutral" group, a significant portion of workers have lower educational attainment: about 40 percent of employees in these occupations do not have a high school diploma. In contrast, high education and salary levels support the claim that workers in the technological sector, originally classified as substitutable, bear more similarity to those in the complementary group.

There is a difference in expected exposure to generative AI between the private and public sectors (Figure 2). In the public sector, about two-thirds of employees work in complementary occupations, highlighting the need for adopting technology in government and training employees to acquire the necessary knowledge to use generative AI tools. Most of these employees work in education, where using new tools can reduce the time required for lesson preparation and administrative tasks. It is important to note the significance of basic skills for employees to acquire the knowledge needed to use AI tools. According to the international PIAAC survey, literacy, numeracy, and technology skills in Israel are below the OECD average, both in the general population and among teachers.[6] Improving these skills

[6] See, for example, Bank of Israel (2019). The analysis is based on data from the first wave of the PIAAC survey conducted in 2015. Preliminary analyses of the latest wave of the survey, conducted in 2022–2023, indicate similar findings.

will help better utilize AI tools. There is also a high rate of complementary positions in the healthcare field, where an increase in labor productivity through the use of generative AI may improve the system's efficiency. The relative homogeneity of workers in the complementary occupations in the public sector makes it easier to implement training programs, which will prepare the system for the broad integration of generative AI tools.

Table 1 | Characteristics of Employees by Level of Exposure to Generative AI

(based on the generative AI exposure index)

Characteristics	Complementary	Technological occupations (complementary)*	Substitutable	No effect	Total
Total (million)	1.4	0.3	0.7	1.2	3.6
Women (percent)	56	28	71	34	50
Average age	41.9	38.9	39.9	39.8	40.5
Arabs (percent)	14	2	10	28	17
Haredim (percent)	10	5	9	4	7
Non-*Haredi* Jews (percent)	76	93	81	68	76
Average monthly wage (2022, NIS)**	18,760	29,157	12,989	9,720	15,504
Employed in the public sector (percent)	41	13	16	10	23
Employed in the high-tech industries (percent)	8	75	5	3	11
Academic degree (percent)	28	19	12	3	16
Bachelor's degree (percent)	32	46	29	9	25
High school matriculation (percent)	16	16	31	33	25
No matriculation certificate (percent)	12	3	14	40	21
Nonacademic diploma (percent)	10	15	13	11	11

* Those with occupations in the technological field, some of which are included in the substitutable occupations in the original index of exposure to generative AI. In this analysis, we excluded them from the replacement field and defined them as complementary, because, as opposed to those with substitutable occupations, which are expected to experience a sharp decline in demand, those working in the technological field can actually expect a continued increase in demand.

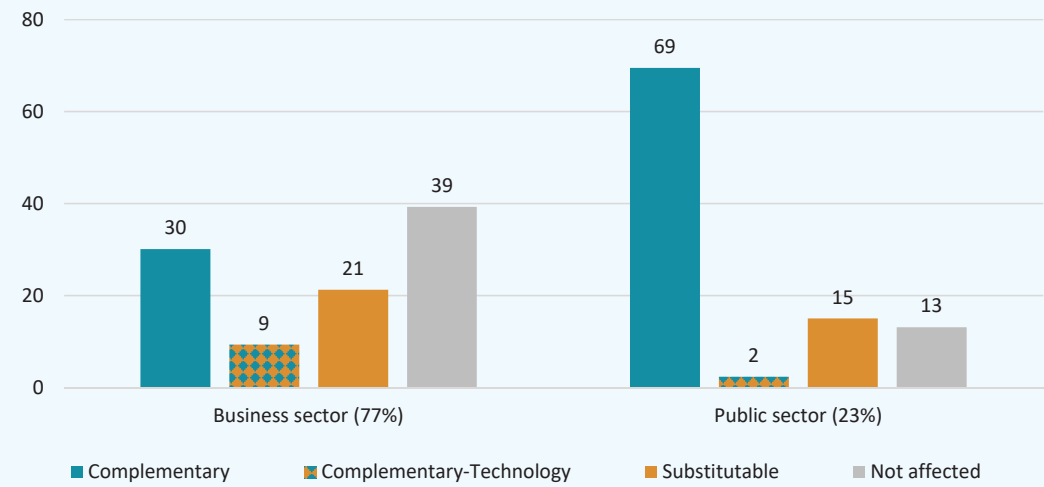
** Based on wage data reported by employers on Form 126, collated with the Labor Force Survey.

SOURCE: Labor Force Surveys for 2022 and 2023.

Despite the high proportion of employees in complementary occupations within the public sector, this sector accounts for only about a quarter of the total workforce. Therefore, most individuals in complementary occupations are actually employed in the private sector. The composition of the private sector workforce is more heterogeneous, with a wide variety of employers, necessitating the development of training programs tailored to each field. In the private sector, training requirements are dictated by changing business needs, and it is essential to ensure that markets for training are developed according to these needs. However, in situations where market failures prevent the development of necessary training—such as liquidity constraints faced by some workers who need the training—public solutions should be offered.

The differences between the two sectors are also expected to be reflected in employment responses. In the private sector, higher employment flexibility may accelerate the transition of workers in substitutable occupations to other roles (complementary or "neutral"). In contrast, in the public sector, the response depends, partly on collective agreements that determine the framework for changes in employment conditions and various regulations.

Figure 2 | Generative AI's Expected Impact on Employment in the Public and Business Sectors
(percent)



* Those with occupations in the technological field, some of which are included in the substitutable occupations in the original index of exposure to generative AI. In this analysis, we excluded them from the substitutable category and defined them as complementary, because, as opposed to those with substitutable occupations, which are expected to experience a sharp decline in demand, those working in the technological field can actually expect a continued increase in demand.

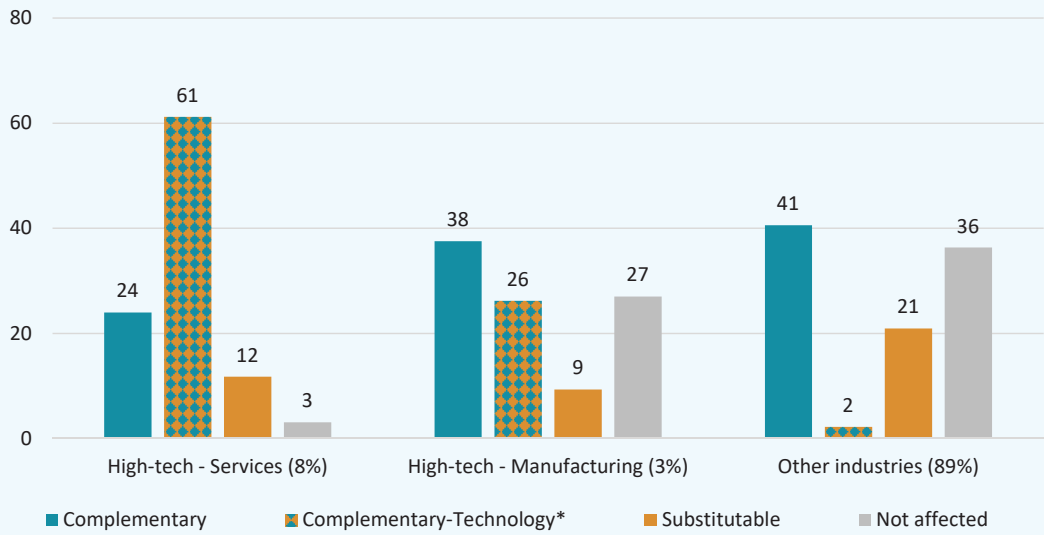
SOURCE: Labor Force Surveys for 2022 and 2023, calculated on the basis of the index of exposure to generative AI.

The industry structure of the economy is characterized by a high concentration of generative AI exposure in a limited number of industries. Nearly half of all individuals in complementary occupations are concentrated in the healthcare and education industries (17.5 percent out of 39 percent, excluding technology workers). About half of those employed in substitutable occupations are concentrated in three industries: commerce, professional and financial services, and insurance. Workers in the unique group of technological occupations are mostly employed in the high-tech industry, constituting 61 percent of employees in high-tech services and about a quarter in high-tech manufacturing (Figure 3).

An overview of the labor market shows that three-quarters of technology workers are employed in the high-tech industries. As these industries lead in technological innovation, there is likely to be an increase in demand for workers in this field.[7] These workers, who possess high skills and experience in technology, are expected to continue their employment while adapting their skills to changing market demands. In contrast, workers in substitutable occupations may face a sharp decline in demand for their roles, and many will need to undergo retraining to reenter the labor market. Part of the transition to a new equilibrium may occur through the hiring of new workers entering the labor market and the retirement of older workers.

[7] The expansion of generative AI use is expected to increase demand for occupations in the technology sector, such as information security and cybersecurity, and even create new occupations focused on generative AI, such as prompting specialists and AI programmers.

Figure 3 | High-Tech Industries' Exposure to Generative AI (percent)



* Those with occupations in the technological field, some of which are included in the substitutable occupations in the original index of exposure to generative AI. In this analysis, we excluded them from the substitutable category and defined them as complementary, because, as opposed to those with substitutable occupations, which are expected to experience a sharp decline in demand, those working in the technological field can actually expect a continued increase in demand.

SOURCE: Labor Force Surveys for 2022 and 2023, calculated on the basis of the index of exposure to generative AI.

In summary, with the widespread adoption of generative AI, the Israeli economy is facing significant changes. The transition period to a new equilibrium may last a considerable amount of time. It is important to plan policy measures that support workers who may be adversely affected by these changes. Government policy should focus on the two main groups of workers exposed to generative AI: those in substitutable occupations and those in complementary occupations. To ensure that workers in substitutable occupations remain in the labor market, it is essential to promote retraining programs that help them transition into fields with high demand, while avoiding assistance measures that undermine incentives to work. For workers in complementary occupations, the focus should be on developing skills that enable them to acquire knowledge in using generative AI tools. Encouraging the learning of new technologies, especially within the education system, is crucial to preparing for the demands of the changing labor market. The use of generative AI has significant positive potential, as it increases worker productivity and wages. It is therefore important to promote knowledge of generative AI across all population groups and age ranges to prevent the widening of social disparities.

REFERENCES

Acemoglu, D. et al. (2022). "Artificial Intelligence and Jobs: Evidence from Online Vacancies", Journal of Labor Economics, 40(1): S293–S340.

Bank of Israel (2019). Annual Report for 2018, Chapters 4 and 5.

Debowy, M., G. Epstein, B. Bental, A. Weiss, and A. Weinreb (2024). "Artificial Intelligence and the Israeli Labor Market", Taub Center for Social Policy Studies in Israel.

Felten, E., M. Raj, and R. Seamans (2021). "Occupational, Industry, and Geographic Exposure to Artificial Intelligence: A Novel Dataset and Its Potential Uses", Strategic Management Journal 42 (12): 2195–2217.

Felten, E., M. Raj, and R. Seamans (2023). "How Will Language Modelers Like ChatGPT Affect Occupations and Industries?", arXiv.org Working Paper, 2303.01157.

OECD, (2024). "Miracle or Myth? Assessing the Macroeconomic Productivity Gains from Artificial Intelligence", OECD Artificial Intelligence Papers.

Pizzinelli, C., A. Panton, M. M. Tavares, M. Cazzaniga, and L. Li. (2023). "Labor Market Exposure to AI: Cross-Country Differences and Distributional Implications", IMF Working Paper 2023/216, International Monetary Fund, Washington, DC.

Webb, M. (2020). The Impact of Artificial Intelligence on the Labor Market, Stanford University.