Labour market tightness and inflation in the aftermath of Covid-19: the case of Israel*

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Abstract

This study examines the impact of Israel's labour market recovery from the Covid-19 crisis on inflation. The Covid-19 crisis significantly impacted the labour market, with a peak unemployment rate of 36% in April 2020. In response, the government implemented a full furlough programme and a safety net programme. By the end of 2021, the labour market had fully recovered, with employment and unemployment rates returning to pre-Covid-19 levels. Tight labour markets transmit inflation via wage increases, pushing inflation through the income and cost channels. However, we find that the effect of wages on inflation is not dominant for two main reasons. First, the concentration of wage increases was in industries that do not serve domestic private consumption. Second, public wages remained stagnant due to public sector wage negotiations and delays in reaching agreements.

Keywords: inflation, wages, Covid-19, labour market, slack, furlough programme, Israel.

JEL classification: E31, J64.

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1. Introduction

The Covid-19 pandemic has had a profound impact on economies around the world, and Israel is no exception. In parallel, the induced response to the pandemic as well as major geopolitical events have pushed the global economy towards a high-inflation regime. In this context, one area of particular interest is the relationship between wages and inflation, which can provide insight into the degree of second-round effects and the persistence of inflation.

In this paper, we will examine the wage-prices relationship in Israel during and after the Covid-19 pandemic. We will use standard and non-standard macro data to analyse trends in inflation and wage growth, and we will discuss the implications of our findings for the Israeli economy and for policymakers in other countries.

In our analysis, we will consider the role of government policies and industrial composition changes in shaping the relationship between wages and inflation in Israel during this period. Overall, our goal is to provide a comprehensive picture of the degree to which the labour market had a role in the acceleration of inflation in Israel during and after the Covid-19 pandemic.

Economists have discussed the possibility of a wage-price spiral in the past year, whereby rising wages lead to higher prices. According to Blanchard (1986), the phenomenon is caused by workers' attempts to keep or increase their real wages and firms' attempts to keep or increase their markup on prices over wages. Historically, Alvarez et al (2022) find that only a small fraction of global wage-price spiral episodes (defined as episodes in which at least three out of four consecutive quarters saw accelerating prices and rising nominal wages) since the early 1960s were followed by a sustained acceleration in prices and wages. Similarly, Battistini et al (2022) find that in the euro area, wage shares and GDP deflators have remained muted compared with the 1970s, and second-round effects of rising energy prices on inflation have been mostly absent on average since 1999. However, a high and persistent inflation rate increases the likelihood that higher wages and profit margins will result in second-round effects. Whether such a spiral occurs in the upcoming years depends upon the state and structure of the labour market and the persistence of elevated inflation (Boissay et al (2022)). Although the current evidence the authors provide is mixed regarding a broad acceleration in wage growth, if inflation persists, households may demand higher wages and firms may increase prices to protect profits. BIS (2022) discusses how the recent increase in inflation has led to a focus on the factors driving inflation and how it can become entrenched. Traditional models of inflation often focus on the relationship between inflation and economic activity, but a more comprehensive analysis should also consider the role of relative price changes and the wage-price formation process. In particular, during times of high inflation, workers may demand higher wages to keep up with the rising cost of living, and employers may be willing to pay these higher wages in order to attract and retain workers. On the other side, higher wages may generate more domestic demand for consumption goods and higher marginal costs of production – both of which put pressure on inflation.

The Covid-19 pandemic has introduced a new level of complexity to the relationship between inflation and wages. On the one hand, the sharp economic downturn and high levels of unemployment have put downward pressure on wages.

At the same time, the governments' response to the pandemic – including measures such as monetary and fiscal stimulus – has the potential to drive up inflation. As such, it is important to carefully examine the relationship between inflation and wages in the context of the Covid-19 pandemic.

Another issue that arose during this period relates to measurement. The non-homogeneous nature of the effect of the pandemic shock and its aftermath on the economy makes it difficult to draw conclusions from aggregate data. In particular, the entry and exit of employees from the labour market, as well as workers changing jobs between sectors, distorted the signal conveyed by commonly used variables such as the average wage, labour productivity and unemployment. Furthermore, policy responses in such circumstances may be more challenging than depicted in the typical playbook. Blunt policy easing or tightening may not be optimal when the economy is experiencing sectoral shifts.

Our analysis of the data reveals several key findings about the relationship between wages and inflation in Israel during and after the Covid-19 pandemic. First, we find that inflation in Israel increased significantly after the pandemic, but to a smaller extent than in other OECD economies. Second, we show that, to date, the labour market has not played a major role in the acceleration of inflation. However, there are risks that in the near future it may generate second-round effects.

The remainder of this paper is organised as follows. In the next section, we will provide a brief overview of developments in wages and inflation in Israel following the outbreak of the pandemic. In Section 2, we will present the methods used by the Bank of Israel in real time to measure economic slack and the state of aggregate wage growth during the major shifts caused by the pandemic. In Section 3, we will provide an overview of the results of our analysis. Finally, in Section 4 we will conclude our findings and provide some guidance and lessons for policymakers.

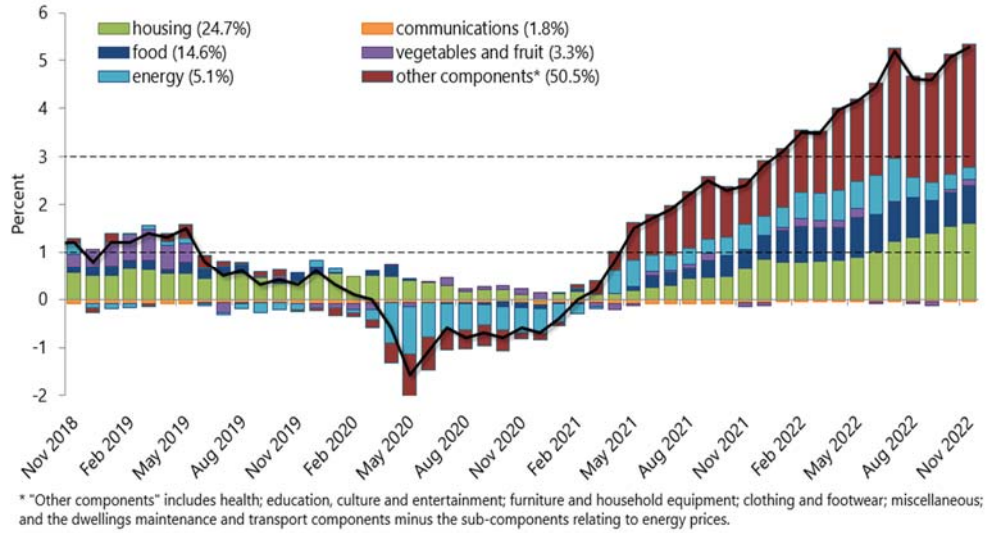
2. Recent developments

2.1 Inflation

The consumer price index declined by 0.7% in 2020, reflecting a significant decline in inflation compared with previous years (which had also recorded inflation lower than the target range of 1–3%), mainly as a result of the impact of the Covid-19 crisis on economic activity in Israel and abroad. The main forces driving down inflation in 2020 included declines in global energy and food prices, and in activity and demand in the economy – factors directly related to the Covid-19 crisis (Graph 1). Other factors that contributed to the decline in inflation were the moderate decline of home rental prices due to the crisis and the appreciation of the shekel. Despite the sharp drop in estimated one- and two-year inflation expectations during the year, estimated five-year forward expectations remained stable near the centre of the target range throughout the year – evidence that the inflation target maintained its credibility. The shekel appreciated by 5.5% in terms of the nominal effective exchange rate in 2020, thus moderating inflation even more.

The contribution of primary components to annual CPI inflation

Graph 1



* "Other components" includes health; education, culture and entertainment; furniture and household equipment; clothing and footwear; miscellaneous; and the dwellings maintenance and transport components minus the sub-components relating to energy prices.

Source: Central Bureau of Statistics.

In 2021, the consumer price index increased by 2.8%, within the price stability target range and close to its upper bound. This pace of inflation was the highest in the past decade, and was significantly higher than in 2020 when the Covid-19 pandemic began. The picture is similar for various measures used by central banks around the world of core inflation (eg excluding food and energy)[1]. The main upward forces on inflation were the recovery of domestic demand following the Covid-19 crisis and the increase in global inflation due to the recovery of global demand and interruptions in supply chains.[2] In contrast, the appreciation of the shekel worked to moderate inflation in Israel by lowering the shekel price of imported goods. Inflation in Israel was significantly lower than in other OECD countries in 2021, partly due to the aforementioned appreciation of the shekel.

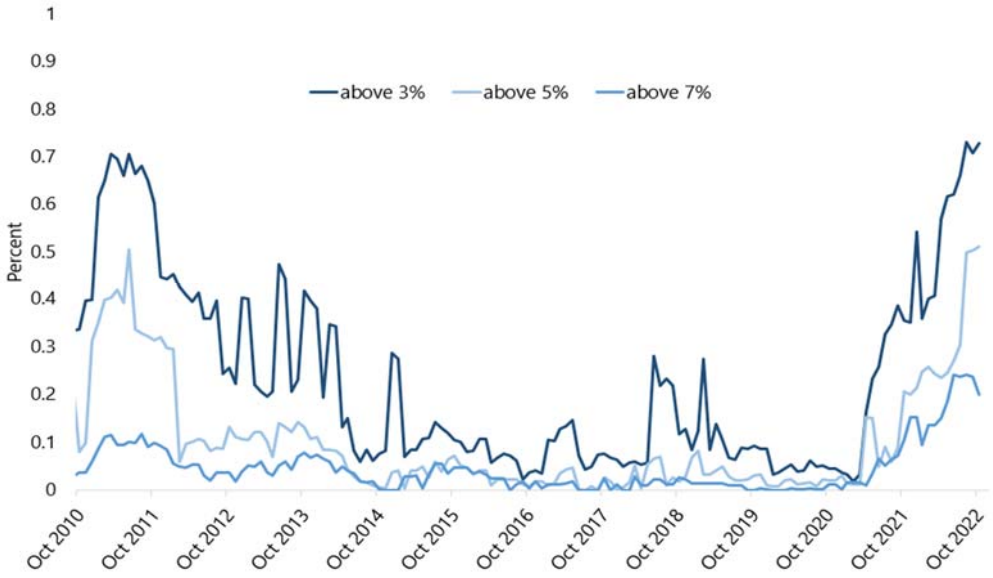
The year 2022 was marked by an even higher inflationary environment compared with previous years, due to rising energy and commodity prices worldwide following the outbreak of war in Ukraine and rising morbidity rates in China, among other factors, and a depreciation of the shekel. By the end of the year, the annual inflation rate rose well above the upper bound of the target and reached 5.3% in November, the highest rate in the past 10 years. Moreover, the inflation was widespread as approximately 70% of CPI articles increased by more than 3% (Graph 2). Nevertheless, the rate of inflation in Israel was significantly lower than the rate of inflation in most advanced economies (Graph 3), though less so when looking at core inflation measures. One-year inflation expectations in Israel, as well as medium-term (two- and three-year) expectations, were also above the target, but expectations for the longer term were anchored within the target range.

[1] For Israel there is no formal measure of core inflation that was found to better reflect sticky price inflation of medium term inflation pressures.

[2] A model based examination of the forces behind the Inflation increase in Israel is presented in Bank of Israel (2023b).

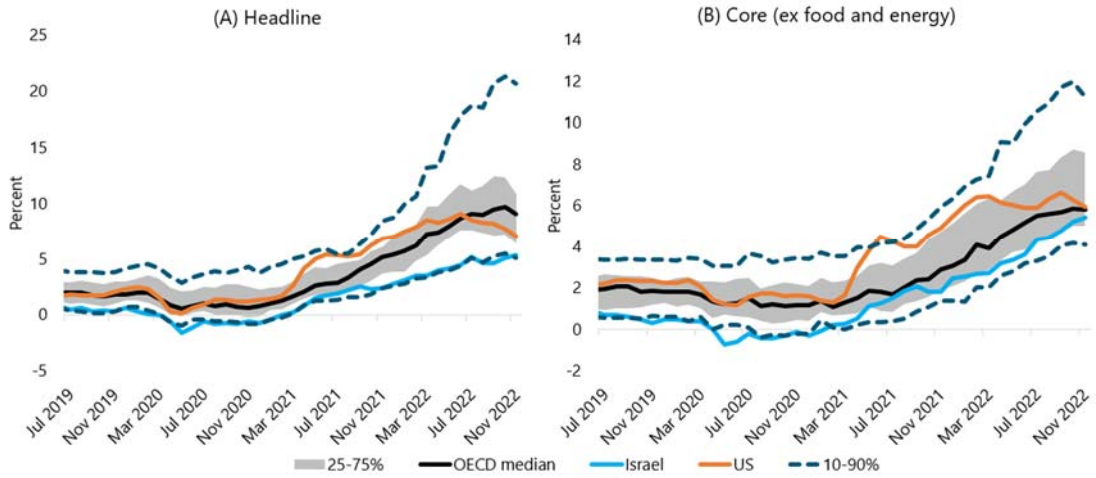
The weight of consumer price index items above the target

(118 items in total) Graph 2



Source: Central Bureau of Statistics.

Inflation in Israel, the United States and OECD countries Graph 3



Source: Central Bureau of Statistics.

In general, the trend of low inflation in 2019, followed by a decrease during the Covid-19 outbreak and then an increase in 2021–22, was common among many advanced economies (Graph 3). However, compared with other OECD countries, Israel's inflation trend exhibits some significant differences. As can be seen from the graph, Israel's inflation rate trend was similar to the OECD median inflation rate trend until September 2021. Since that date, there has been a growing difference between

Israel's trend and the OECD's trend, likely due to the weaker influence of energy and food prices in Israel. This explanation can be inferred directly from the core inflation rate, which showed the same trend for Israel and the OECD median. An important distinguishing feature is that in Israel natural gas prices from domestic suppliers, that are the main energy sources for electricity generation, were fixed on long-term contracts and thus not influenced by fluctuations in the spot market.

2.2 The labour market during and exiting Covid-19

In 2019, prior to the onset of the Covid-19 crisis, Israel was considered to be in a state of full employment. This was evidenced by several indicators, including high employment and vacancy rates, a low unemployment rate of 3.5%, and a nominal wage growth of 3.0%. After accounting for the low inflation rate at the time, this translated to a real wage growth of approximately 2.1%. This high rate of wage growth was observed across all income levels. Binyamini (2021) found that throughout the decade, most of the wage growth was a result of positive productivity shocks, while decreasing workers' bargaining power moderated wages.

The outbreak of Covid-19 had significant short-term effects on the labour market, as it did in most economies around the world. To address the sudden need for temporary layoffs, the government implemented a full furlough programme in mid-March 2020. This programme allowed employers to temporarily send workers on leave for at least 30 days while providing them with full unemployment benefits. In June 2020, a safety net programme was announced that promised unemployment benefits for furloughed workers until June 2021.[3] This programme was intended to prevent widespread layoffs and provide a financial safety net for affected workers.

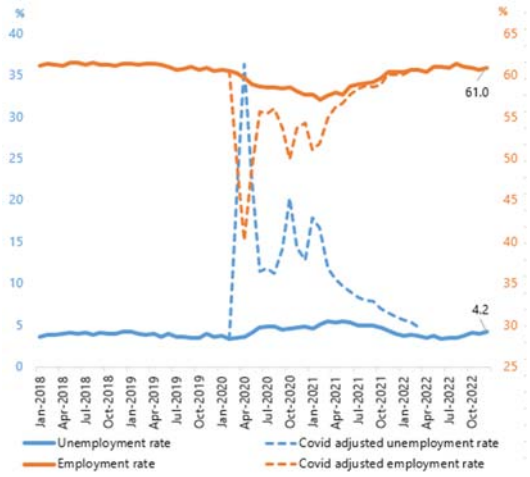
Due to the unique nature of the furlough programme, standard unemployment statistics were not adequate to capture the true extent of unemployment during the Covid-19 crisis. To better reflect the situation, new, expanded definitions of unemployment that included furloughed workers were introduced. This new unemployment rate peaked at 36% in April 2020, and subsequently fluctuated between 10 and 20% depending on the state of lockdowns (Graph 4.A). The reduction in employment was particularly pronounced in "contact industries" such as accommodation, entertainment and trade, which are characterised by relatively low wage levels. Additionally, within these industries and across other industries, furloughed workers tended to come from the lower end of the wage distribution.

Toward the end of 2021, less than half a year after the labour safety net was withdrawn, the labour market had recovered, with adjusted employment and unemployment rates returning to pre-Covid-19 levels. Among the prime working age group (those between 25 and 64 years of age), the employment rate even surpassed pre-Covid-19 levels by significant amounts. Demand for labour by firms increased faster than supply, and vacancy rates reached new peaks exceeding pre-Covid-19 levels (Graph 4.B).

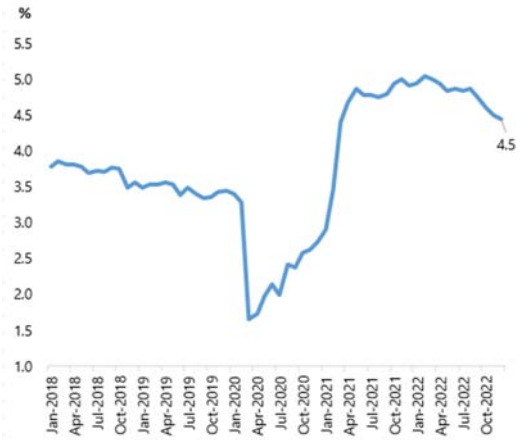
[3] At this point of time, the minimum duration of leave that entitled workers to unemployment benefits was shortened to 14 days.

Employment, Unemployment and Vacancies, 2018-22 Graph 4

A. The employment and unemployment rates, standard and Covid-19 adjusted



B. The job vacancy rate in the private sector



Source: Central Bureau of Statistics.

3. Measuring slack in real time

One important question the Bank of Israel's Monetary Committee faced was the extent to which the rapid recovery of the labour market had contributed to accelerating inflation. The analysis presented in the remaining part of this note, which also discusses the special data challenges faced, indicates that this effect was not dominant. It was certainly not as significant as other factors.

In general, price increases reflect either increases in firm input costs, as labor, or increases in firm markups. The main channel through which tight labour markets transmit to inflation is via increases in wages. Excess demand for labour generates pressures for wage increases, which push inflation through income and cost channels. In the income channel, an increase in the real wage (in the view of consumers) generates more demand for final goods, which pushes up prices either through increased markups or increases in input costs needed in order to meet the demand. According to the cost channel, higher wages (in the view of producers) raise marginal costs, which push up prices – directly through firm input costs.

The only formal wage data that is published in Israel on a timely basis is the average wage per employee post.[4] At the start of the Covid-19 pandemic the average wage skyrocketed by almost 20%. But this was only due to a composition effect, as low salary paid workers were furloughed and therefore removed from the average. The increase in average wages due to composition effects has no impact on inflation

[4] Formally, it is the total salary wage bill reported to the National Insurance Institute by employers, divided by the number of employee posts (in the same reporting period). This does not include self-employed individuals. Note that individuals may hold more than one employee post.

if wages on a personal basis did not increase (and therefore there is no income effect) or if position- or duty-specific wages did not increase (and therefore marginal costs of remaining producers stayed constant). It is easy to understand the data complexities that this distortion generated at the peak of the Covid-19 crises. But, to understand the relevance to 2022 analysis, one more step is needed. Since wage data are normally volatile, the preferred measure we usually follow is year-on-year average wage growth rate on a three-month moving average (month-on-month, or even quarter-on-quarter comparisons are too volatile to draw information from). Hence, even if the throughout most of 2022 do not contain a significant composition effect, data from the previous year (needed to calculate annual growth rates) do contain positive composition effects, and therefore simple year-on-year wage growth rates are downwardly biased, even in 2022.

The Bank of Israel has overcome this data analysis problem by two means: use of an estimate of composition-adjusted average wage index and comparison of wage levels to pre-Covid-19 expected trends. In the pre-Covid-19 expected trend approach, we calculate the log-linear trend of each wage series, starting a few years before Covid-19 and ending in 2019. Then the trend is extrapolated from 2019 to the last data points. This allows us to compare the level average wages reached at the end of the period covered by the data to trends reflecting normal developments absent the Covid-19 crises. The analysis is independent of biases in wage data that prevailed during Covid-19 and is calculated on the basis of a single data set. However, its main weakness is that it does not tell us when wage pressures were apparent: if we find that the wage level is above trend, it does not necessarily mean that current wage growth is fast.

The second calculation, the composition adjusted wage rate, tries by indirect means to reflect throughout the data the development of wages of constantly present workers (ie those that did not exit or enter the labour market during the sample period). Since wages are not reported on a personal and monthly basis, we needed to approximate the calculation by adding new sources of information on top of the aggregate average wage data that are publicly published. We use a combined data set of the labour force survey and employee annual incomes for 2019. For each observation in the survey (individual *i*, month *t*) we have standard labour force statistics on employment status ($L_{i,t}$ = 1 if employed) and his/her 2019 annual salary ($W_{i,2019}$) – if he/she was employed. In the first stage, we calculate for each month the average 2019 wage given the *current* month's employment state: $CE_t = \left(\sum_i L_{i,t} W_{i,2019}\right)/L_t$. CE_t is actually an estimate of the composition effect: since the wage level is fixed, resulting average changes are only due to changes in the composition of the labour market. In the final step, the standard average wage (W_t) is divided by the composition effect in order to reach the composition adjusted average wage ($W_t^{CA} = W_t/CE_t$).[5]

There are some pros and cons in this calculation. First, it theoretically allows us to follow the growth rate of wages throughout the Covid-19 crisis, and beyond, as it fixes the most inherent data problem. In addition, this composition adjusted wage is expected to be more related to inflation, certainly when considering the cost channel that is affected by marginal costs. In periods of macroeconomic slack, marginal costs are reduced if the same workers, doing the same jobs, receive lower wages; and vice

[5] For a broader discussion on composition adjustments, see Bank of Israel (2022a).

versa in the case of tight markets. The main downside of this calculation is that its indirectness generates inaccuracy. It is a mix of three data sets that are not naturally fully aligned. The indirectness makes the estimate less accurate as we get further away from 2019, since more and more young workers that first entered the labour market later than 2019 are not included in the composition effect (CE). This is because they did not have a salary in 2019, but they may have been steadily working throughout 2021–22.

4. Results

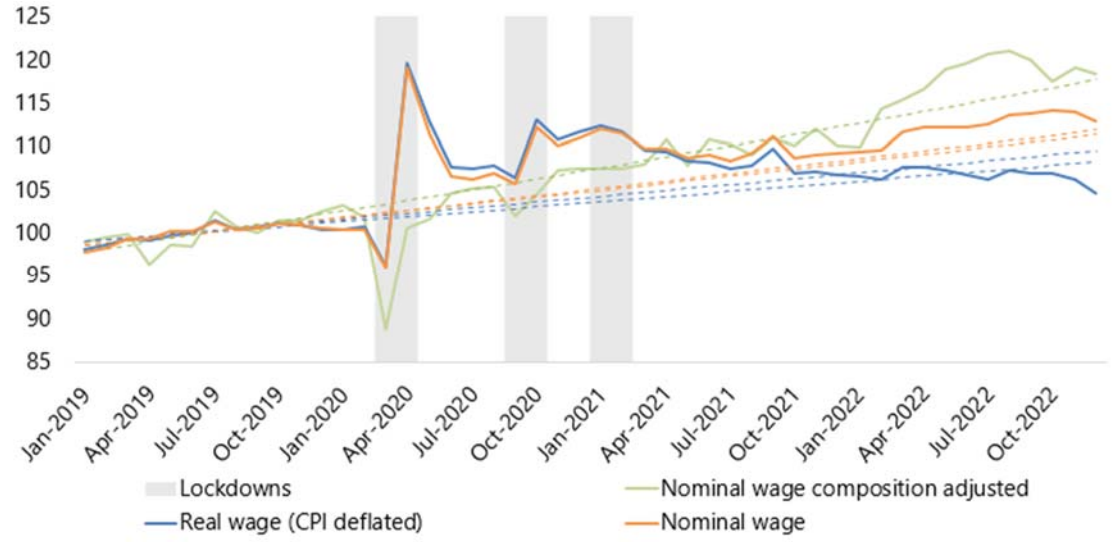
Graph 5 shows the informative wage data. As the graph shows, throughout the Covid-19 crisis (2020–21) the composition-adjusted economy-wide wage grew in accordance with the pre-Covid-19 trend,[6] ie during the crisis wage pressures were not different from past years. However, starting in 2022 we witness a faster increase in the growth rate of the composition-adjusted estimate. However, as stated above, care should be taken on this point as the composition adjustment becomes less accurate as we get further away from 2019. When looking at the economy-wide wage level, during most of 2022, it was some 2.5–3.0% above the pre-Covid trend (Graph 5, orange line). This might indicate there were some wage pressures on a macro level as labour markets were tight.[7] However, this does not seem to be part of a wage spiral from increasing inflation, as real wages (CPI deflated) are actually on a downward path and below pre-Covid trend at the end of the period (Graph 5, blue line). Moreover, when looking at the labour share, we can see it is on a downward path (Graph 6)[8]. The share reached a peak on the eve of the pandemic, and since then it has been reducing. This means that over and above labour market tightness, which operates to increase prices through wage demands, other factors affecting domestic prices through increased markups were more dominant causes of the share of wages in total income not rising and even continuing to drop.

[6] There are two *technical* one-month drops in the composition-adjusted wage (March 2020 and September 2020). This is due to the fact that the lockdowns that resulted in the furloughing of workers were imposed in the middle of those months (March and September), and many workers did work at the beginning of those months. The result is that during the month as a whole, there were more positions than are reflected in wage payments (some of which were halted mid-month due to the furloughs), so the calculated average wage declines greatly. The composition adjustment does not quantify this technical and temporary effect.

[7] OECD (2022) also shows in Figure 1.8 that labour markets were tight in most OECD countries as vacancy rates in 2022 were higher than pre-Covid-19 averages (2011–19).

[8] We note that compared to the average wage (nominal or real) the labor share is rather immune to composition effects.

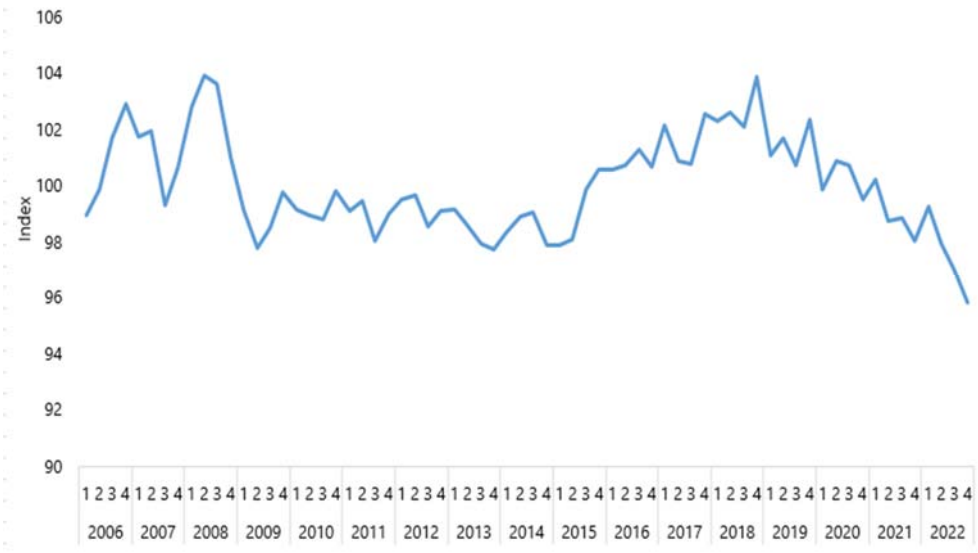
Average wage per employee real, nominal and composition adjusted — Graph 5



Dashed lines are pre-Covid-19 trends. Index (2019 = 100), January 2019–December 2022, seasonally adjusted. Pre-Covid-19 trends are estimated according to data starting in 2016, 2017 or 2018, and ending in 2019. The range of trends (for a given variable) reflects the differences in the starting point of the estimation. For the composition adjusted data, there is just one trend, as these data are only available from 2018.

Sources: Central Bureau of Statistics; Bank of Israel calculations.

The labour share, Index: average 2010–19 = 100; seasonally adjusted, 2006–22 — Graph 6

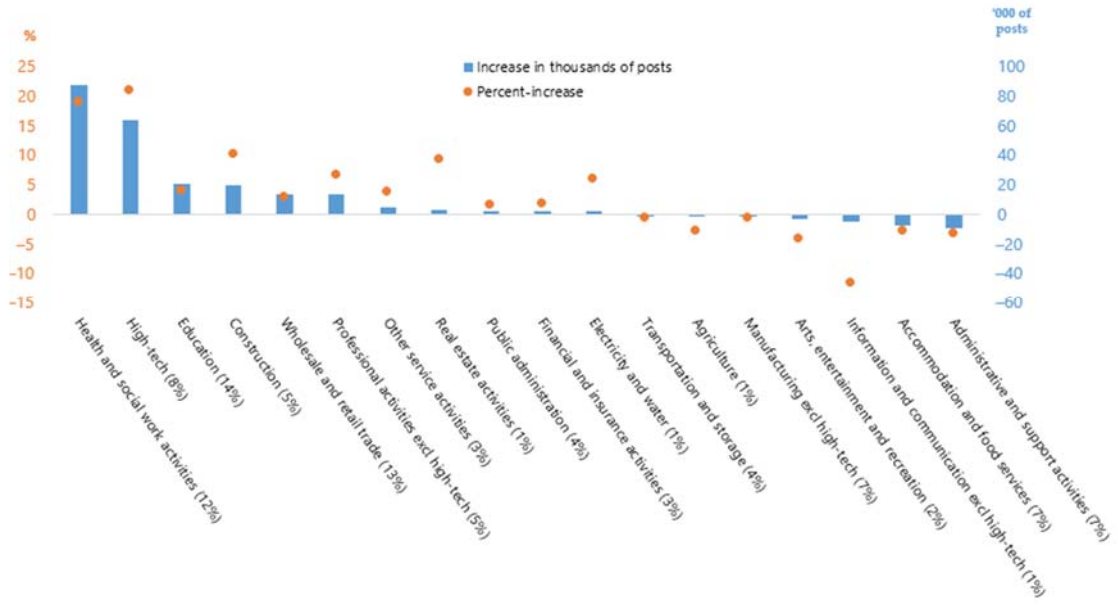


Source: Central Bureau of Statistics.

Looking more deeply at the data through industry and sector specific developments reveals two important phenomena that are important in order to analyse wage-inflation dynamics: the high-tech boom effect and public sector austerity.

The high-tech industry accounts for approximately 10% of Israel's employment, 15% of its GDP and 52% of exports – one of the highest in the OECD.[9] It is a very dynamic sector that includes both branches of multi-national firms (mainly research and development centres) and small startup companies. The productivity of the sector is very high, so that the average wage is more than double the economy-wide average wage. Throughout 2020–21, activity in the sector continued to grow and even accelerated due to high international demand for digital technology. Along with the health sector, the high-tech sector led the growth in employment and accounted for one third of employment growth in the country from 2019 to 2022 (Graph 7). Since this activity depends on high-end human capital that is naturally in short supply, wage increases in the high-tech sector led the economy-wide wage growth. While the overall private sector nominal wage surpassed its pre-Covid-19 trend by 2–3%, if the high-tech sector is excluded the average private sector wage is in line with the pre-Covid-19 trend (Graph 8).

The pre- to post-Covid-19 increase in jobs by industry — Graph 7



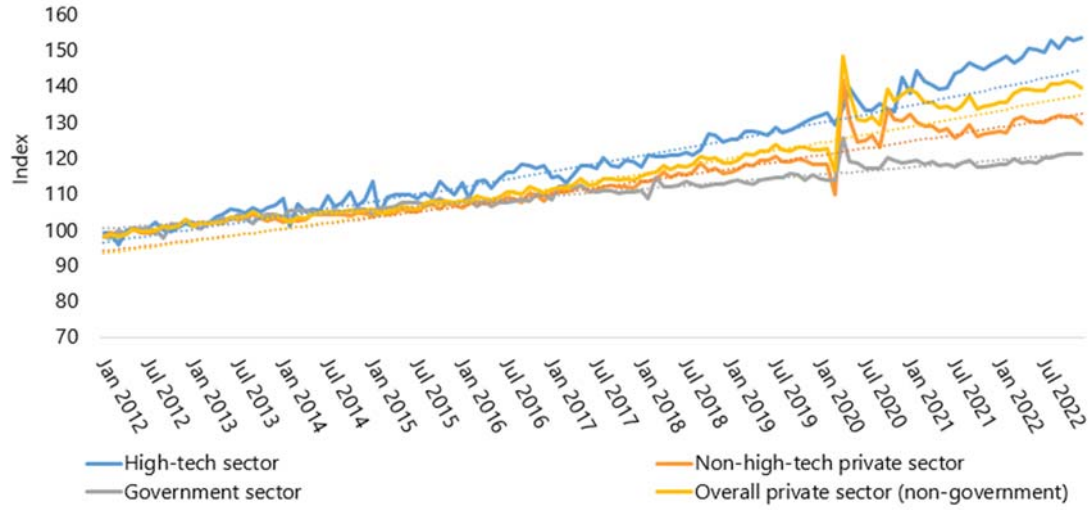
The share of each industry in employment appears in parenthesis. Pre-Covid-19 is October 2018 to September 2019, and post-Covid-19 data cover October 2021 to December 2022. High-tech sector includes both manufacturing and services industries that are defined as high-tech.

Source: Central Bureau of Statistics and Bank of Israel calculations.

[9] See Bank of Israel (2022b).

The average wage in the high-tech, private non-high-tech and government sectors

Graph 8



Dashed lines are pre-Covid-19 trends (based on 2016–19 data). Index 2012 = 100; Jan 2012 to December 2022 period is seasonally adjusted.

Source: Central Bureau of Statistics and Bank of Israel calculations.

Since the high-tech sector is very export oriented, its goods and services make up a very small proportion of the value chain in the production of local private consumption. Table 1 shows the industry distribution of the 2014 wage bill by two definitions, the normal economy-wide distribution and as primary inputs in the production of private consumption. It is based on input-output tables that allow us to decompose the value of each final use (for example, household consumption) between four primary inputs that were used to produce it – imports, taxes, labour compensation and other added value. The calculation takes into account the complete value chain of production (industries that buy intermediate goods from other industries), and not only the direct sales to households. We can see that while the high-tech sector accounts for 15% of the economy-wide wage bill, it is negligible in the value chain of private consumption. This means that its effect on domestic CPI inflation is most probably lower than its share in the economy because it does not pass through the cost channel.[10]

[10] High-tech sector wages may affect inflation through the income channel. However, also here it may be assumed that as high income earners, they have a lower than average Marginal Rate of Consumption meaning there affect through the income channel is also lower than average.

The industrial distribution of labour compensation (2014) and pre- to post-Covid-19 wage growth, in per cent

Table 1

Industry code	Industry name	Distribution of labour compensation*		Pre- to Post-Covid-19 annualised 3-year wage growth rate**
		Overall in the economy	As primary inputs in housholds consumption	
A	Agriculture	1.4	2.4	4.6
B–C High-tech	Manufacturing excl high-tech	8.1	9.4	4.2
D–E	Electricity and water	1.2	1.7	1.7
F	Construction	7.3	0.3	5.1
G	Wholesale and retail trade	10.6	26.9	3.2
H	Transportation and storage	4.3	6.4	3.2
I	Accommodation and food service	3.0	9.9	3.0
J ex high-tech	Information and communication excl high-tech	1.5	3.5	4.2
K	Financial and insurance activities	4.4	9.3	3.7
L	Real estate activities	1.0	2.9	3.7
M ex high-tech	Professional, scientific and technical activities excl hig	5.5	1.5	4.4
N	Administrative and support service activities	4.2	1.6	3.5
O	Public administration and defence	9.2	0.4	2.1
P	Education	9.9	6.3	3.2
Q	Health and social work activities	9.0	6.1	–0.1
R	Arts, entertainment and recreation	1.8	4.5	1.1
S–T	Other service activities	2.4	6.7	2.5
High-tech	**High-tech**	**15.2**	**0.2**	**5.6**
	Total	100.0	100.0	

* These calculations are based on input-output tables, the latest available data for which are for 2014.

** Average wage in latest three months (October–December 2022) compared with pre-Covid-19 (October–December 2019), in annualised terms.

Source: Central Bureau of Statistics Input-Output tables for 2014.

Table 1 also shows that construction sector wages are negligible in the primary inputs of private consumption (compared with 7% weight in the overall wage bill). Both of these industries' wage growths (latest compared with 2019) were the highest among the major industries. We take this concept one step further by calculating two weighted-average wage indexes that appear in Graph 9. The first average (green line in Graph 9) is based on constant 2014 economy-wide industrial weights in labour compensation as they appear in the first column in Table 1.[11] The second weighted-average (orange line in Graph 9) is based on the weight of each industry in household consumption primary inputs (as they appear in the second column of Table 1). This may be thought of as a cost-relevant wage index for private consumption. Both weighted-averages are compared, in Graph 9, to the regular average wage index (blue line).

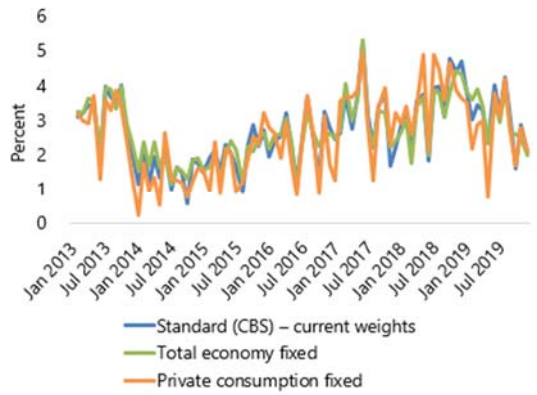
[11] That is, each industry's wage index (2014 = 100), is multiplied by the industry's weight in 2014 labour compensation (first column of Table 1).

Average wage by industrial weighting

Graph 9

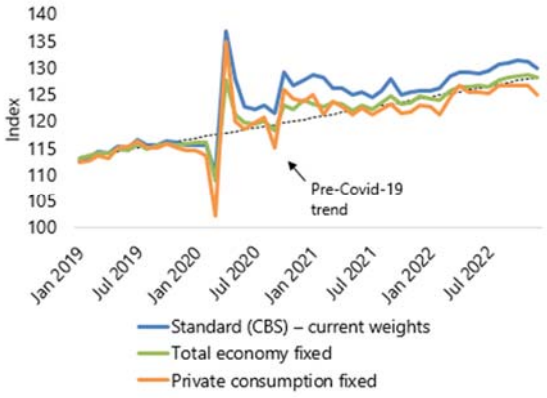
A. Pre-Covid-19 wage growth rate

yoy, 2013–19



B. Average wage index

Index 2014 = 100, 2019–22



Sources: Central Bureau of Statistics and Bank of Israel calculations

From panel A in Graph 9 we can see that up until the Covid-19 period, all three indexes developed in similar manners. In Panel B we can see their development after the break of Covid-19. First, the regular average wage rose to a higher level than the two weighted averages. This gap is the result of the composition effect, most of which is muted in the weighted averages, as they are based on constant industry weights. At the beginning of the Covid-19 period (2020 to mid-2021), the composition effect was due to restrictions that were mainly imposed on low-wage contact industries (as described above). In the later part (mid-2021 to 2022), the composition effect reflects the more than complete recovery in high-wage industries such as the high-tech and healthcare sectors. Comparing the consumption-weighted wage to the economy-wide weighted wage, shows that the wage index most relevant to the cost of consumption is indeed a little bit lower (by approximately 1%) than the economy-wide wage. This reflects lower cost pressures on consumption prices. This analysis is also supported by the fact the since 2019, and specifically in 2022, the GDP deflator increase more than the private consumption deflator did.

One of the reasons that the gap between the consumption-relevant wage index and the economy-wide index is small, is the fact that the latter includes a significant weight of public administration, such as public administration and defence (industry code O), which produce government consumption as opposed to private household consumption. The wage growth of the public administration sector was among the lowest in the main branches (Table 1), moderating the economy-wide weighted-average index.

This brings us to the final point on factors that reduced the labour market's effect on accelerating inflation. General government employee posts account for 19.6% of the economy.[12] Turning back to Graph 8, we can see that as of 2017, the growth rate

[12] The general government employee posts include all jobs working for general government institutions (government offices, public authorities, public schools and health institutes, national insurance etc). It is broader than the public administration industry (industry code O), as it also includes employee posts in other industries such as education and health.

of the average wage in the government sector was low, well below that in the private sector – even when excluding hi-tech from the private sector. A main force driving government sector wages are "framework agreements" between the government and the main labour union ("Histadrut") that directly affect a large proportion of the public sector. The last major agreement was in respect of the years 2013–17, with some small ad hoc supplements in 2018 and 2019. However, partly due to the long period of government instability that Israel experienced in the period 2020–22, no additional framework agreements have been signed in the years 2020-2022. Had such agreements been signed, they may have acted to accelerate wage growth. The result was that throughout this period, wage pressures from the government sector did not materialise. Had they occurred, more pressure on inflation might have been generated for two basic reasons: first, through additional private consumption by government workers, and second, through cross-industry wage pressures that could also affect the cost channel. Moreover, had these agreements included automatic inflation indexation (as was customary in past eras of high inflation), then rigid pass-through effects might have been generated.[13]

5. Conclusions and policy implications

This study has examined the relationship between wages and inflation in Israel during and after Covid-19. We find that the effect of wages on inflation was not dominant, due in part to the concentration of wage increases in industries that do not serve domestic private consumption and the very moderate growth of public sector wages due to delays in wage negotiations and agreements. Our analysis also considered the role of government policies and industrial composition changes in shaping the relationship between wages and inflation in Israel during this period, with a focus on the challenge of measuring slack in the labour market during times characterised by unprecedented composition effects.

Our analysis suggests that while the labour market may have played a role in the acceleration of inflation in Israel during and after the Covid-19 pandemic, the impact was limited due to the unique circumstances of the Israeli economy. We hope that our work will help policymakers understand the complex relationship between wages and inflation in the aftermath of Covid-19, how to overcome inherent measurement issues and identify potential implications. One direct lesson to be learned is the importance of using disaggregated data in times of major changes in the economic environment, as appearing during the COVID-19 period, that enable a better understanding of the dynamics of aggregate data. Optimally, such disaggregated data sets should be prepared before crises rather than in the midst of events.

Several risks and opportunities are associated with our research conclusions. On the one hand, our findings suggest that the impact of wages on inflation was limited during and after the Covid-19 pandemic, indicating that there may be less need for policymakers to focus on wage growth as a key driver of inflation. This could potentially create opportunities for policymakers to prioritise other economic

[13] In March 2023, after the period described in this note, a new agreement was signed. It seems that the agreement is moderate and supports the goal of bringing inflation back down to the stability target.

concerns, such as boosting employment or supporting industries that have been disproportionately affected by the pandemic. Conversely, such muted pressures for a second round of inflation, especially from the public sector, pose a risk of entrenching inflation in the future and increasing the disinflation sacrifice ratio.

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