

# The Macro Picture of Israel's Economy in 2017

**Gilad Brand, Avi Weiss and Assaf Zimring**

A chapter from *The State of the Nation Report 2017*

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## Taub Center for Social Policy Studies in Israel

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 Internet edition

# The Macro Picture of Israel's Economy in 2017

Gilad Brand, Avi Weiss and Assaf Zimring\*

This introduction discusses three different but interrelated issues. The first section gives a macro picture of Israel's economy during the past year; the second section looks at changes in price levels and at the impact of these changes on real wages. The final section focuses on prices in a key sector that is high on the public agenda – the housing market.

## 1. Israel's macroeconomic status

The past year, 2017, has proven to be a good one from certain economic perspectives: the employment rate is the highest it has been for years and the unemployment rate is at a historic low. However, other areas show worrisome trends: per capita growth is low despite the favorable labor market picture, and labor productivity is not increasing at all.

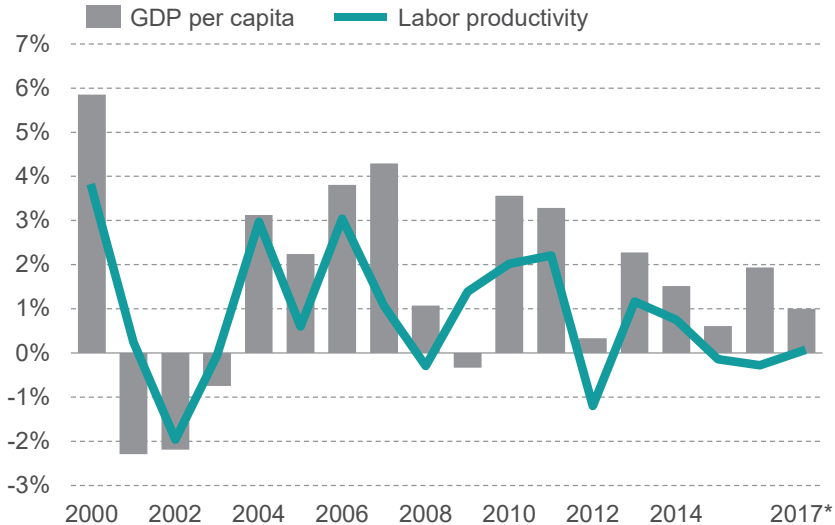
### Growth

The gross domestic product (GDP) is expected to grow in 2017 at a rate of 3.0 percent, reflecting a 1.0 percent increase in GDP per capita. These figures are lower than last year's growth (4.0 percent for GDP and 1.9 percent for GDP per capita), but are close to the average growth in recent years (Figure 1). Evidence suggests that the economy is nearing full employment. The current growth rate appears to reflect the economy's long-term growth potential, and not a transition from recession to boom.

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**Figure 1. Annual rate of growth: GDP per capita and labor productivity**



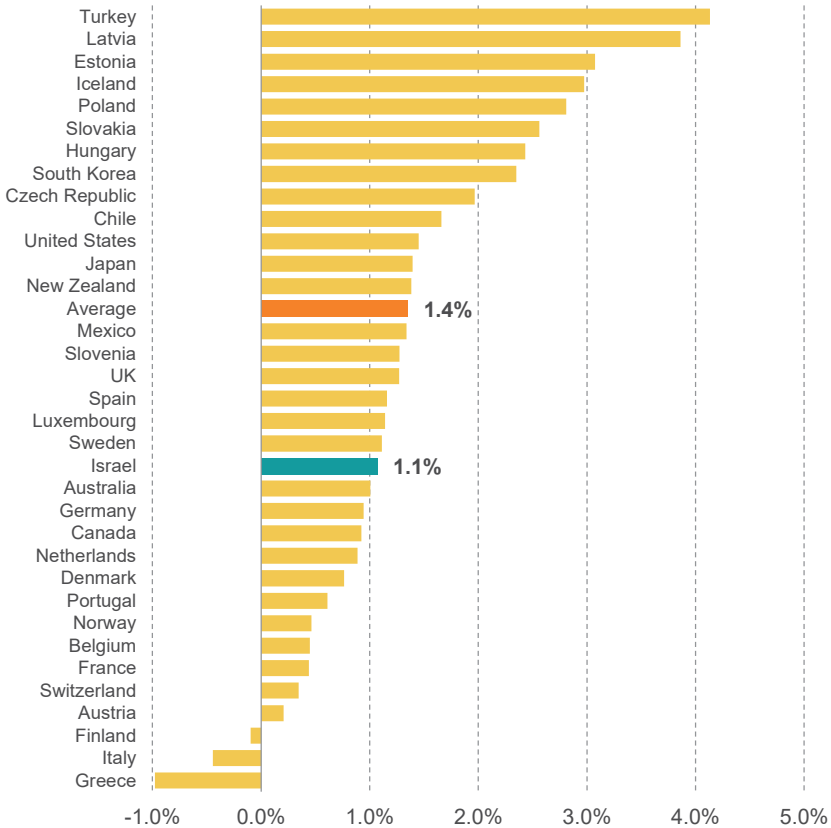
\* Early forecast for 2017. The impact of Israel's natural gas production was deducted from the data for 2013 and 2014.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: BOI website

The rise in GDP per capita is near the average for other developed countries, indicating that Israel's economy is not closing gaps with those countries (Figure 2). In 2017, as in all other recent years, the main barrier to more rapid growth was low productivity. Based on preliminary estimates for the year's first three quarters, productivity is not expected to improve. The low growth in Israel's labor productivity over the past few years is due, among other things, to the fact that new workers with relatively low skill levels, employed at low wages, have joined the labor market.<sup>1</sup> In light of this, productivity may be expected to rise only if the skills and earning ability of these new labor market participants improve.

<sup>1</sup> The past year's rise in employment was particularly great for those with low education levels (Flug, 2017).

**Figure 2. Average annual growth in GDP per capita, 2012-2017**



Notes: Early forecast for 2017. The impact of Israel's natural gas production was deducted from the data for 2013 and 2014. The data excludes Ireland whose rapid rate of growth during this time period is an outlier.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center  
 Data: IMF, World Economic Outlook (October 2017)

## The labor market

The labor market participation rate remained nearly unchanged this year, and it appears that the rate's impressive rise since the early 2000s has now peaked.<sup>2</sup> The employment rate, by contrast, once again rose compared to the

<sup>2</sup> However, the low Arab Israeli and Haredi (ultra-Orthodox) employment rates indicate considerable potential for further growth in employment over the long term.

previous year, due to a further drop in unemployment. There was also an increase in the job vacancy rate, contributing to the trend of labor market tightening.<sup>3</sup> The number of work hours per employed person remained virtually unchanged, after a steep two-year climb.

Alongside positive employment figures, the share of people of prime working age in the general population has continued to decline – a trend that is expected to intensify over the coming years.<sup>4</sup> Overall, the data indicate that the expansion of Israel's labor force supply is reaching its upper limit.

The labor market boom is also reflected in wage data. Real wages showed a precipitous 3.2 percent upsurge during the first three quarters of this year, versus a 2.8 percent increase over the same period last year. These wage increases are exceptional given the very low wage growth and slow productivity growth that characterized the preceding years. This trend is not due solely to labor market resilience; it also stems from a temporary improvement in Israel's terms of trade, which led to a drop in private consumption prices relative to the GDP deflator (PPI), as shown in Figure 3.<sup>5</sup>

### Figure 3. Average annual growth of wages

In real wages deflated by consumer prices and by producer prices (GDP deflator)



Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: BOI website

3 A tight labor market is one in which employers have trouble filling open positions. Labor market tightness is measured by the ratio between the job vacancy and employment rate.

4 The declining share of prime working age adults is due to the aging population. This trend has intensified in recent years because the cohorts born in the 1950s (baby boomers) are approaching retirement age and are larger than the younger cohorts.

5 The improved terms of trade are seen in rising export prices relative to import prices. This improvement stems from a drop in energy prices, a strengthening of the dollar relative to the euro, and a stronger shekel. See the relevant discussion in Bank of Israel (2017c).

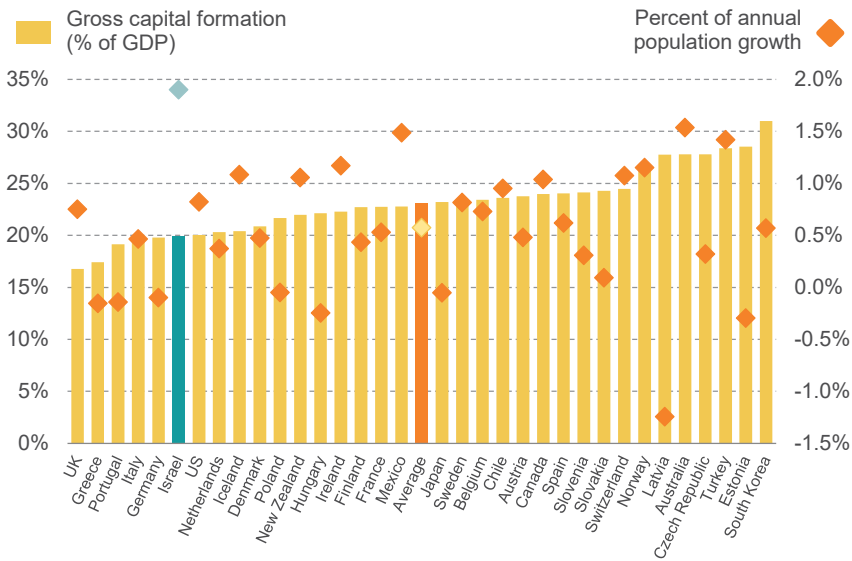
## Investments

As in previous years, the main obstacle to economic growth was low investment levels. Investment increased over the past two years due mainly to a large one-time investment by Intel, and to accelerated housing construction, but in other sectors investment hardly grew. Declining investment reduces the economy's production capacity, and thus usually ushers in lower growth in the future.

An international comparison shows that Israel's investment level is lower than that of most developed countries, even though a rapidly increasing population requires higher investment rates (Figure 4). Beyond individual investments, the present level of government infrastructure investment is low compared to that in other developed countries (BOI, 2014). Here, too, there has been a decline in recent years (BOI, 2017a).

**Figure 4. Rate of local investment in GDP and population growth rate, 2006-2015**

Annual average



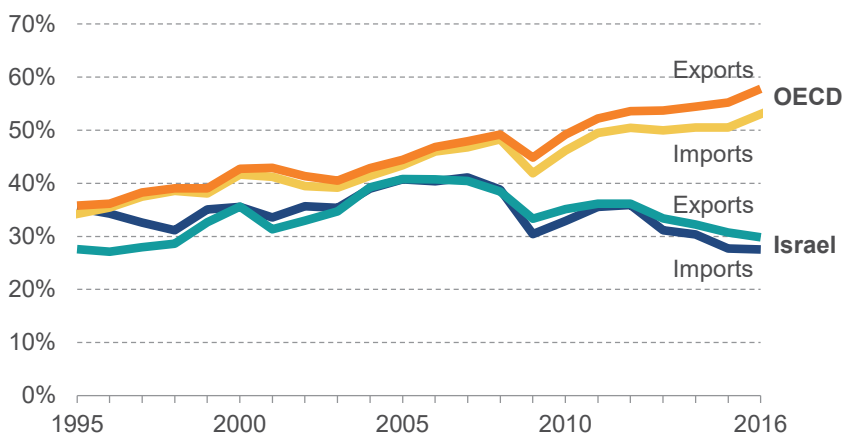
Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: World Bank

## Foreign trade and the exchange rate

For several years, against the background of reduced investment and exports, the growth in aggregate demand has relied on private consumption. This year, however, there was a reversal: aggregate demand growth relied less on consumption and more on exports. Export recovery was due to an improvement in the rate of world trade growth, following several years of a global slowdown. However, most of the recovery is taking place in developing countries, not among Israel's major trade partners, meaning that export growth in the coming years is not expected to return to the level of the years prior to the downturn.

Additionally, Israel's trade volume (as a percent of GDP) showed a steep decline over the past decade. This trend compromises the economy's ability to leverage its comparative advantages, and contributes to Israel's low productivity (Figure 5).

**Figure 5. Trade levels: Rate of imports and exports out of GDP**



Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: World Bank

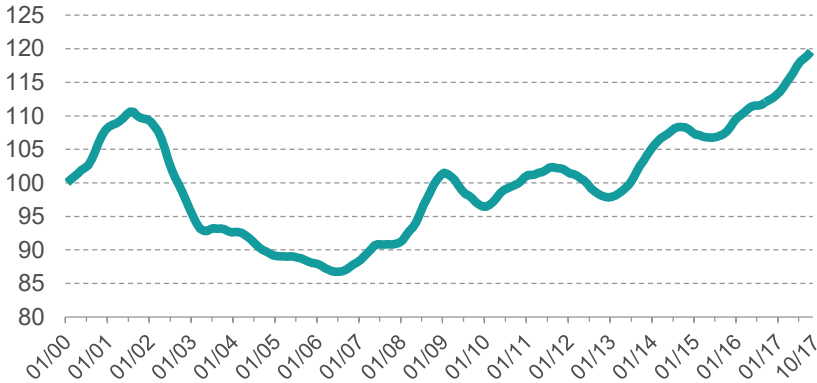
Natural gas discoveries and the expansionary monetary policy adopted by Israel's major trade partners caused further strengthening of the shekel, a trend that has prevailed since 2008 (Figure 6).<sup>6</sup> The shekel's appreciation erodes export profitability, as some exporter expenses are paid in shekels in the local market, while exporter revenues are set in foreign currency.

<sup>6</sup> In the euro zone, Israel's primary trade partner, interest was reduced to a negative level, and recent years have witnessed the establishment of a quantitative easing program that has broadened the monetary base. These measures have weakened the euro.



### Figure 6. The effective exchange rate in Israel (foreign currency basket)

Index year: 2000 = 100, 12-month moving average



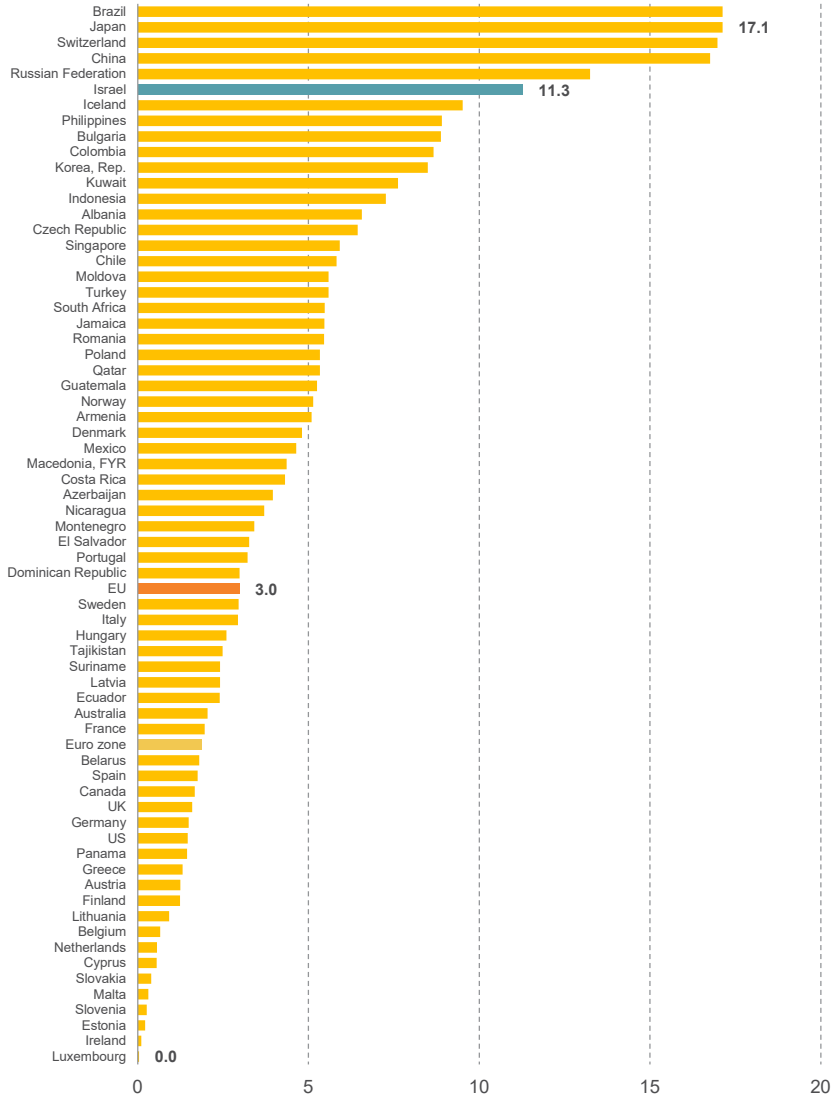
Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: BIS

Moreover, the appreciation of the shekel affects different sectors in different ways. High tech companies enjoy broader profit margins, and are thus less sensitive to currency fluctuations. For export firms that are by nature less tech-intensive with lower profit margins, however, a relatively minor change in the currency exchange rate can mean the difference between successful export activity and export unfeasibility.<sup>7</sup> Indeed, most sectors with a high degree of reliance on exports experienced a steady decline in employment levels, with the exception of the high tech services field. Thus, export industry's reliance on high tech has increased over the years (Brand, 2017).

For the past decade, the Bank of Israel has maintained a policy of purchasing foreign currency in an effort to weaken the shekel and limit damage to the economy. As a result, the Bank has amassed considerable quantities of foreign currency that make Israel a world leader in foreign currency reserves (Figure 7). Relevant economic research, including a Bank of Israel study (Sorezcky, 2013), shows that a policy of intervention in the foreign currency market can have some short-term impact. It is plausible that, over an extended period, the impact of such a policy would be limited in scope. Since export levels are relatively low and declining, it seems that encouraging imports by removing import barriers could be a more effective means of weakening the shekel and encouraging foreign trade.

<sup>7</sup> Bank of Israel (2017a) shows that lower-tech sectors are more strongly affected by exchange rate changes than high tech sectors.

**Figure 7. Total foreign exchange reserves (in import months), 2016**



Notes: Import months – the number of months that imports can be financed using foreign-exchange reserves. Saudi Arabia's foreign-exchange reserves are unusually high, and so were excluded from this comparison.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: World Bank

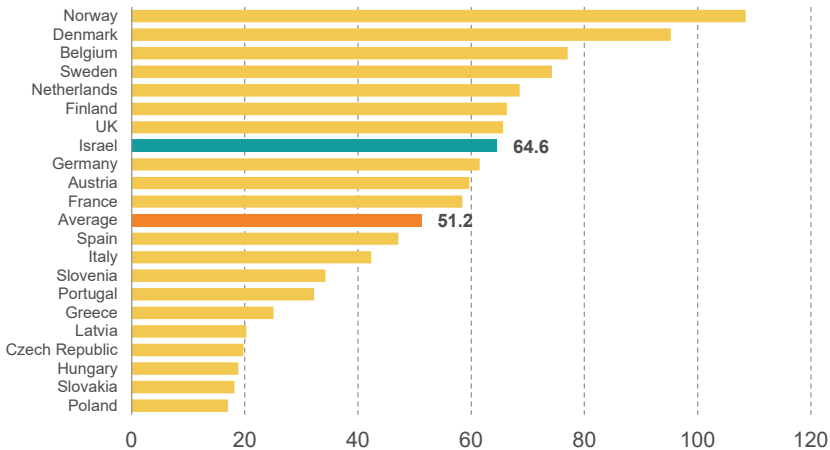
## A long-term view: Labor productivity and standard of living

Israel's current low investment levels are also reflected in worker productivity. Labor productivity in Israel, measured as the ratio of total GDP to labor input (aggregate work hours), is only 76 percent of the OECD average, and just 64 percent of the G7 average. Even more troubling is the fact that Israel has not managed to narrow these gaps over the years: labor productivity growth has been slow relative to other developed countries (Brand, 2017).

Israel's low productivity is inconsistent with the country's image as the Start-Up Nation. In fact, when looking at the country's business sector, productivity is even lower if data for the high tech sector are excluded. A comparison of this kind is provided in Figures 8a and 8b, which show the wage per average worker (representing productivity) in high tech industries compared with workers in the rest of the business sector. The data indicate that, while Israeli high tech workers' wages are high even compared to wealthier countries, the wage gaps between high tech and the rest of the business sector are exceptionally large in Israel relative to the comparison countries (Appendix Figure 1).

**Figure 8a. Average annual wage for workers in the high tech sector, 2013**

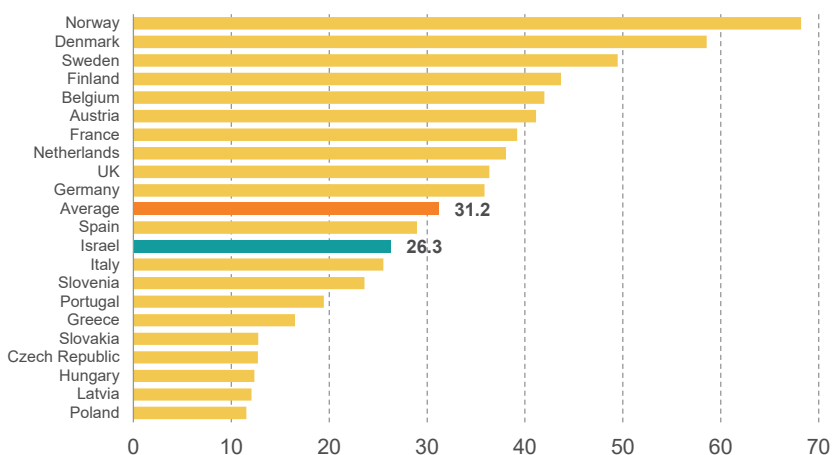
In current US dollars (thousand)



Notes: High tech includes pharmaceutical and chemical manufacturing, export of computers, electronic and optic equipment, computer programs and information services, research and development. The remaining business sector does not include water and electricity, agriculture, mining and quarrying.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: OECD STAN

**Figure 8b. Average annual wage for workers in the non-high tech business sector, 2013**  
In current US dollars (thousand)



Notes: High tech includes pharmaceutical and chemical manufacturing, export of computers, electronic and optic equipment, computer programs and information services, research and development. The remaining business sector does not include water and electricity, agriculture, mining and quarrying.

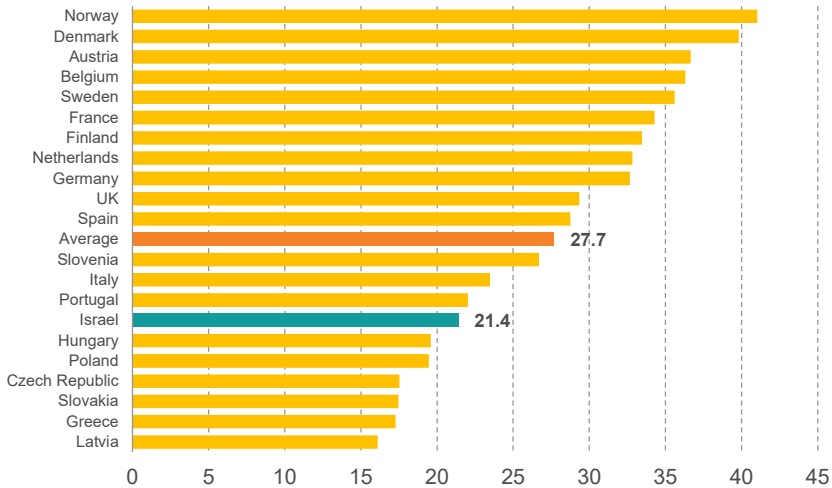
Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: OECD STAN

## 2. Local price levels

A major and much-discussed issue that affects the standard of living in Israel is the country's high price levels. The high cost of living, and the relatively low standard of living that results from it, affects most employed Israelis. As shown above, wages in sectors outside of high tech are relatively low compared to the average of the countries in the sample in current dollar terms (Figure 8b), but when wages are translated into purchasing power parity (PPP) terms, an even more troubling picture emerges (Figure 9). The annual income of an average employed person in PPP terms is lower than in most of the comparison countries, even countries that are poorer than Israel in terms of income in current prices.

**Figure 9. Average annual wage for workers in the non-high tech business sector**

In PPP dollars (thousand)



Notes: High tech includes pharmaceutical and chemical manufacturing, export of computers, electronic and optic equipment, computer programs and information services, research and development. The remaining business sector does not include water and electricity, agriculture, mining and quarrying.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: OECD STAN

The explanation for this exceptional finding lies in Israel's high prices. In poor countries, prices are generally lower, so per capita income in PPP terms is higher than in current dollars. These gaps decline as income levels rise, and, in wealthy countries, income in PPP terms is usually lower than income in dollars (because consumption prices are higher). Israel, however, deviates from these norms in that income in PPP terms is much lower than income in current dollars even though the average wage is relatively low.<sup>8</sup> Appendix Figure 2 shows that Israeli wages in PPP terms are lower than what might have been expected based on its income levels.<sup>9</sup> This means that Israeli private consumption prices are higher than expected given Israel's relatively low incomes.

8 While Israel's private consumption prices are particularly high, a cross-country comparison reveals that Israel's GDP prices do not diverge substantially from expected price levels given its per capita income.

9 A natural logarithm-based comparison of price levels results in a similar finding. In this comparison, the excess price level for 2016 was 18 percent – higher than in all other countries in the sample (and statistically significant).

A major factor behind Israel's relatively high prices in recent years is, remarkably, the relatively strong state of its economy, which has strengthened the shekel. The shekel's appreciation is causing local prices to climb in foreign currency terms, so the exchange rate plays a central role in the price comparisons presented in this study. Beyond that, exchange-rate dependence gives rise to a paradox: when the economy improves, local prices go up relative to other countries, deepening the perception that Israel's cost of living is rising.<sup>10</sup> In recent years, however, there has been evidence of increased local competition and a lower cost of living. The following subsection will explore this issue in greater detail.

As noted, the shekel's strengthening has occurred mainly over the past decade, a likely explanation for the period's high price levels.<sup>11</sup> However, the data indicate that Israeli prices have been higher than expected for many years. Figure 10 shows the difference between price levels in each of the OECD countries and Israel in two different periods: from 2000 to 2016, and from 1995 to 2007 (the comparison takes per capita income levels into account).<sup>12</sup> Economic theory assumes that the real exchange rate in an open

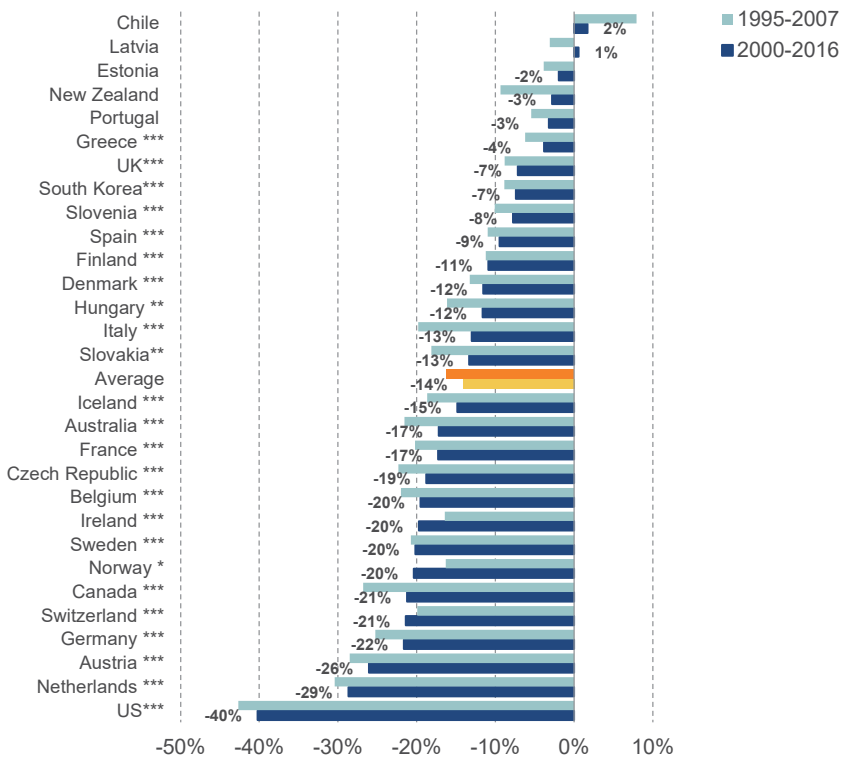
10 Although the shekel's appreciation is causing the prices of imported goods to drop, in reality the changes in the exchange rate are not reflected in aggregate price levels. Thus, the appreciation manifests itself mainly through a strengthening of the real exchange rate. In this sense, Israel is no different from other countries, and one of the reasons for this is that even imported goods have a non-tradable component (such as marketing and distribution) whose prices are determined in the local currency.

11 An examination of price levels is, in essence, an examination of the real exchange rate, which can be defined as the price ratio of an identical basket of goods in two different countries, in uniform currency terms. Thus, assessing permanent differences in price levels requires determining what exchange rate reflects the long-term equilibrium. Since this is difficult to do, the issue will be addressed by comparing relatively lengthy time periods, on the assumption that the real exchange rate is a stationary variable.

12 Formally, the following equation was estimated:  $p_{i,t} = \alpha_1 + \alpha_2 \cdot gdp\_capita_{i,t-1} + \delta_i + \gamma_t + \varepsilon_{i,t}$ , where  $p_{i,t}$  represents the natural logarithm of the private consumption price level (relative to the average for the countries in the sample) in country  $i$  in year  $t$ ,  $gdp\_capita$  represents the natural logarithm of the relative per capita GDP, and  $\gamma$  and  $\delta$  represent fixed effects for year and country. The standard deviations are standardized by time and country clusters (two-way clustered covariance). The estimate presupposes that the variables are stationary. Standard statistical testing raises doubts regarding this assumption's validity for Japan, Turkey, Mexico and Poland, so these countries were omitted from the sample. Luxembourg was also omitted because it is a small economy whose per capita income level is considerably higher than that of the other OECD countries. Of the countries excluded from the comparison, Japan stands out because its real exchange rate has been trending steadily downward for over two decades. An alternative means of conducting this comparison is to run a separate regression for each year and to rank the country price levels by each country's average deviation from the regression forecast. A comparison of this kind was presented in Brand (2015), and shows similar results.

economy tends to fluctuate around a fixed average, meaning that over time the impact of exchange rate volatility on the comparison outcomes is low.<sup>13</sup> However, as shown in the figure, Israel's price levels in both periods were found to be significantly higher than in most of the OECD countries in the sample, taking into consideration per capita income levels. This comparison leads to the conclusion that Israel's high price levels are nothing new and cannot be explained solely by the appreciation of the shekel in recent years.

**Figure 10. Percent difference between price levels in OECD countries and in Israel, adjusted for per capita income**



Notes: Significance levels for 2000-2016: \* p < 0.10; \*\* p < 0.05; \*\*\* p < 0.01.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: OECD STAN

13 The comparison is based on the Law of One Price hypothesis in its weak form, which states that the price ratio between two economies tends to return consistently to a fixed average. Economies that have experienced rapid growth may deviate from this law. Israel's real exchange rate appears to have developed in accordance with the Law of One Price hypothesis in its weak form (see the discussion in Bank of Israel, 2015).

## Development of prices and per capita income in Israel over time

Figure 10 shows the difference between price levels in OECD countries and Israel but it does not present other developments that took place during the comparison period. One way to overcome the exchange rate's central role in price level comparison is to perform a comparison that takes into account both the income side and the price side for the relevant countries.<sup>14</sup> Dividing the income level by the price level offsets the exchange rate's impact, and makes it possible to assess how Israel's standard of living developed over time in comparison with the standard of living in other developed countries.

The comparison results are displayed in Figure 11, and show that the early 1990s witnessed a major improvement in the Israeli standard of living compared with other OECD countries. During this period the economy grew relatively quickly, with a concurrent decline in consumption prices relative to other countries (in dollar terms), apparently due to an extensive reform implemented at the time targeted at abolishing trade barriers. The 2000s brought with them a relative decline in the standard of living, initially due to a deep recession, and later because prices climbed relative to other countries. The economy's resilience during the economic crisis of 2008 caused the trend to reverse once more, and Israel's standard of living again rose relative to other countries. Over the past three years, there has been still more improvement, due mainly to a slight drop in local price levels relative to the OECD countries.

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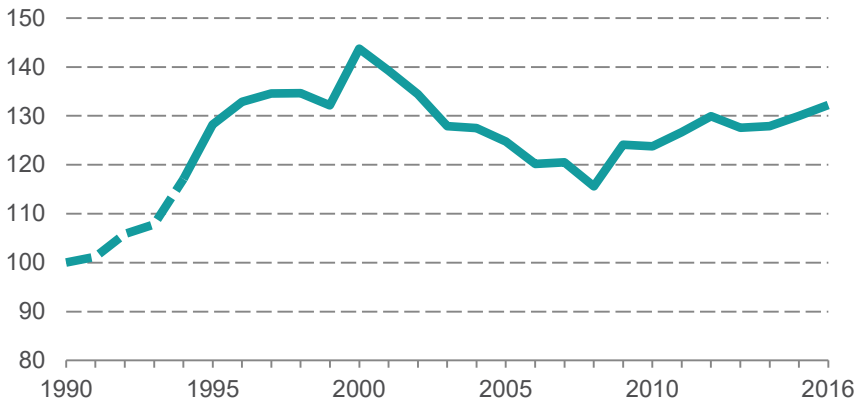
14 Formally, the metric displayed is defined as:

$(\text{income}_{\text{ISR}}/\text{income}_{\text{OECD}})/(\text{p}_{\text{ISR}}/\text{p}_{\text{OECD}})$ , where  $p$  represents private consumption prices and income represents per capita income (in current prices).



### Figure 11. Standard of living in Israel compared to the OECD average

The ratio between the change in GDP per capita and the change in CPI, compared to the OECD countries, Index year: 1990 = 100



Notes: The broken line from 1990 to 1995 denotes data for OECD countries without Slovakia, Slovenia, Latvia, Estonia, Chile, and the Czech Republic (data for these countries in these years are not available).

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: OECD

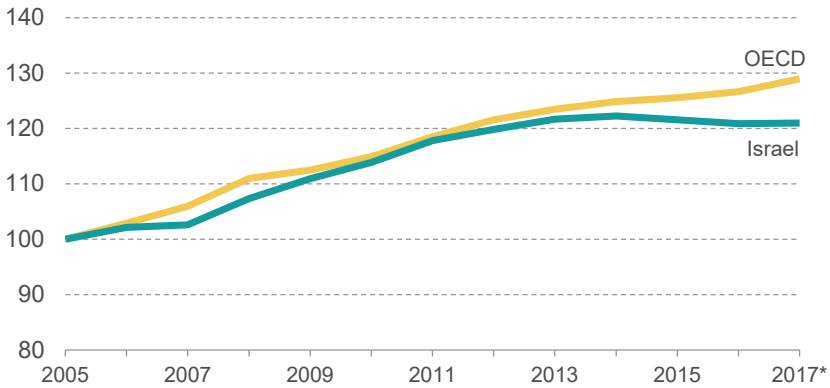
The past few years have witnessed a decline in inflation rates in Israel, steeper than in other countries (Figure 12). Negative or near zero inflation rates usually stem from an economic recession that brings with it a decline in income and private consumption. Trends of a different nature have become apparent in Israel in recent years: the level of private consumption per capita rose alongside a substantial increase in income from labor, while at the same time there was a drop in price levels. As a result, there was a substantial rise in private consumption levels (Figure 13), with no falloff in savings rates.<sup>15</sup> A look at the various consumer price indices shows a decline in the prices of food, clothing and footwear, home furnishing and maintenance, transportation, communications, and culture and entertainment (Figure 14). These items also showed a major increase in consumption levels (Figure 15).<sup>16</sup>

<sup>15</sup> Private consumption's share of GDP declined slightly over the past few years, although consumption increased more rapidly than did quantitative GDP growth. The reason for this is a decline in the CPI relative to the GDP deflator, which made it possible to increase consumption more than the quantitative growth in GDP while also increasing savings (see Bank of Israel, 2017c).

<sup>16</sup> This measurement refers only to private consumption, and therefore the changes may also reflect a transition from private consumption to public services (for example, in the education category).

**Figure 12. Private consumption prices in Israel relative to the OECD average**

Index year: 2005 = 100

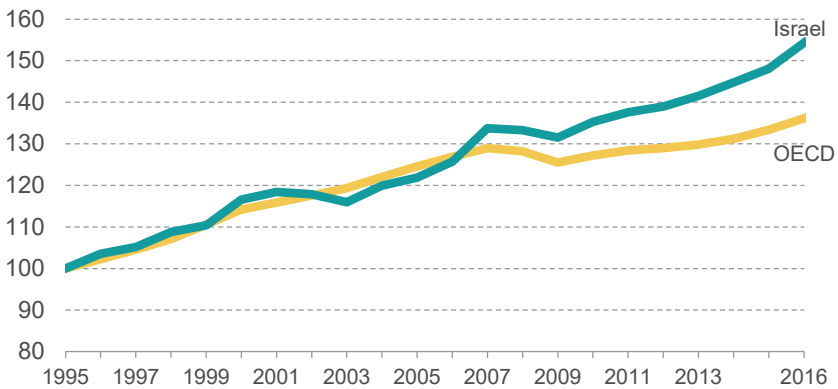


\* Estimate for 2017.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: OECD; World Bank

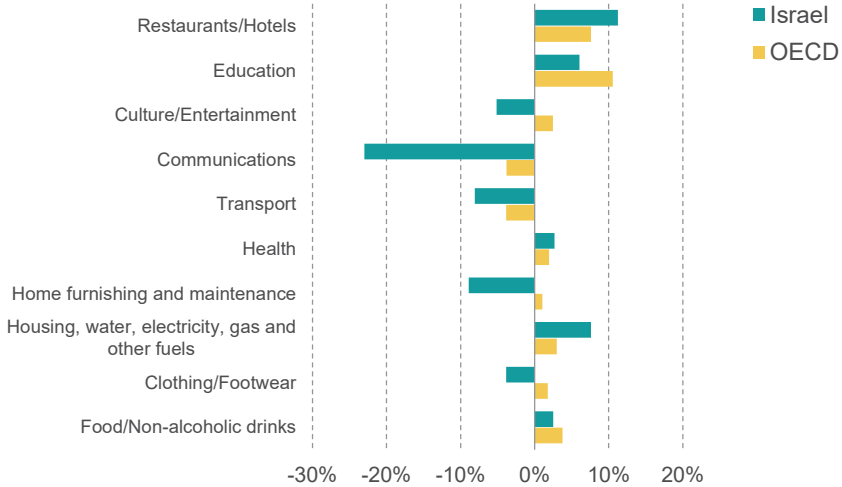
**Figure 13. Private per capita consumption, Israel compared to the OECD average**

Index year: 1995 = 100

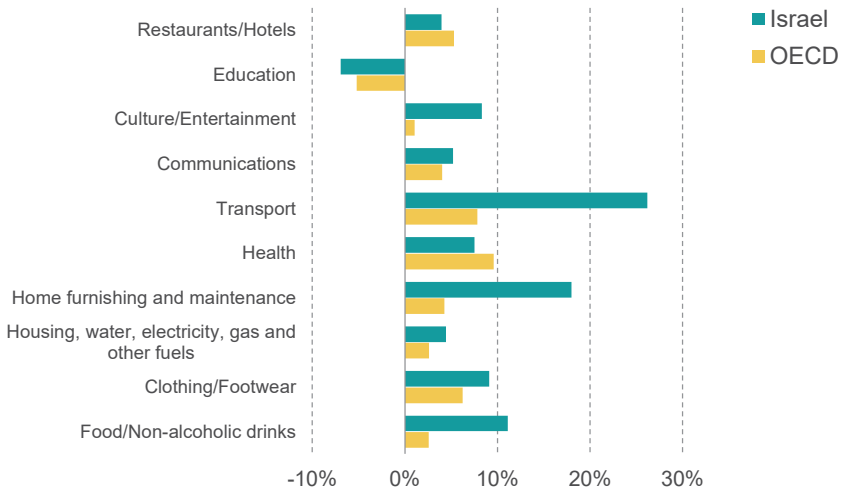


Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: OECD; World Bank

**Figure 14. Changes in the CPI (consumer price index), 2012-2016**  
 By consumption category, accumulated change over the period



**Figure 15. Change in per capita consumption, 2012-2016**  
 By consumption categories, accumulated change over the period



Notes for both figures: Data were available for 17 OECD countries: Austria, Belgium, Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, South Korea, Switzerland, and the UK. The weights of the various items included in the CPI are not updated regularly, making it likely that some of the quantity increases displayed in the figure also reflect a consumer switch to higher quality goods.

Source for both figures: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data for both: OECD

The price drop of recent years seems also to have resulted from government efforts to lower the cost of living and increase local competition. Falling prices in communications and culture and entertainment sectors, for example, are the outcome of intensified local competition following major reforms (Appendix Figure 3). Lower prices for clothing and footwear and for home furnishing and maintenance appear to stem from the continued impact of tariff reduction during the 1990s. The tariff reduction induced structural change in the economy, and this change caused prices to decline over more than two decades. Transportation prices have fallen as well due to lower public transport fares and the car purchase tax reform.<sup>17</sup>

Food prices have risen substantially over the past decade, compared to other countries. This uptick in prices was accompanied by increased profitability for food importers and manufacturers during that period (Bank of Israel, 2015; Ministry of Finance, 2015). However, the past few years have witnessed a certain stabilization of food prices; since 2014, there has even been some reduction in prices. This development seems to have resulted from measures taken by the government.

To summarize, Israel's standard of living, as reflected in the income to price ratio, has risen in recent years. This improvement also manifests itself in consumption levels, which have increased significantly and have been a major factor in GDP growth. The private consumption upsurge was made possible, in part, by measures taken by the government to bring prices down, as well as by an increase in per capita income.<sup>18</sup> The rise in income is due to an ongoing increase in employment levels, as well as rising wages over the past three years. These conditions made it possible to boost consumption levels without a decline in savings levels.

Despite these positive developments, a long-term view suggests that employment levels are reaching their peak and that the rise in wage levels is due to a temporary improvement in the terms of trade, and not to increased productivity. This raises concerns that the rise in private consumption will not persist, and that other sources will be needed to close the gap between Israel's standard of living and that of other developed countries.

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17 See Bank of Israel (2015).

18 The Monetary Policy Report for the first half of 2017 notes governmental efforts to boost local competition and to lower the cost of living as a major factor behind the past few years' restrained inflation. The report also states that, during Monetary Committee discussions, it was argued that the economy is in the process of adjusting prices to the level of Europe's developed markets (BOI, 2017b, p. 8).

### 3. The Israeli housing market

The price of an apartment in Israel has two components: the price of housing services, and the purchase price. The price of housing services represents the value that the dwellings provide, and is approximated by the rental price (for those living in rented apartments), or by a portion of the apartment price (for those living in apartments they own). The purchase price of an apartment reflects, in addition to the price of housing services, the value of apartment ownership. For certain households, owning an apartment has value in and of itself, as it promises stability, obviates the need to deal with a landlord, allows home decorating flexibility, and the like. Apartments are also financial assets: home ownership gives owners – both investors and households – a return, whether in the form of rising apartment prices, monthly rent that provides investors with income, or expenditure savings for households living in apartments they own. Thus, part of the apartment purchase price embodies the present value of the housing services that the apartment provides, while the remainder of the price reflects the apartment's characteristics as an asset, and, in particular, expectations of increases or decreases in housing prices relative to alternative investments.

#### Developments in the housing services market

As noted, the housing services equilibrium price is approximately expressed as the average monthly rent. According to the CBS housing price index, which reflects developments in this price, last year saw a continuation of the real rise in the average rent. This is the ninth consecutive year in which the housing price index increase exceeded the rise in the CPI excluding the housing component (Figure 16). Overall, since 2005, the housing price index climbed at a 41 percent higher rate than the CPI excluding housing. However, the disparity in the annual rate of increase between the housing price index and the general CPI excluding housing has been shrinking since mid-2016; during most of 2017, it stood at less than 2 percent.

**Figure 16. The difference between the rate of annual change in the housing price index and the CPI**



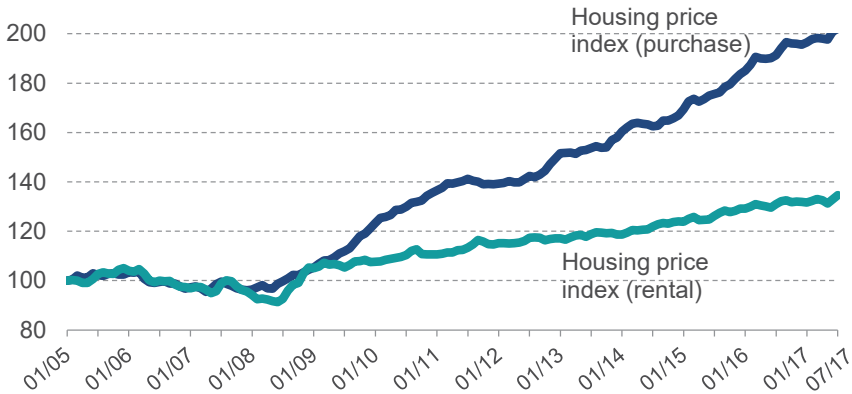
Notes: Each graph point represents the growth rate in housing prices in the preceding 12-month period reduced by the rate of growth of the CPI (excluding the housing component) in the same period.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: CBS, CPI

Rental rates are determined by the housing services supply and demand equilibrium. Demand for housing services reflects the willingness of households to pay each month for housing with specific characteristics, such as apartment size and location. The fact that the housing price index continues to rise at a faster rate than the general CPI suggests that demand has outpaced supply in this market. The main policy measure that could potentially improve the situation, without the adverse effects that frequently arise when prices are fixed by law, is an increase in the supply of housing units.

### Developments in the investment housing market

One of the most striking features of the Israeli housing market in recent years has been a gap between the rate of increase in rent levels and the rate of increase in apartment purchase prices. As seen in Figure 17, purchase prices are climbing much more rapidly than are housing rental prices, and the disparity between the two has been widening since 2009.

**Figure 17. Housing purchase and rental price indices****Real change in purchase and rental prices, Index year: January 2005 = 100**

Notes: Developments in housing purchase and rental prices, reduced by the CPI without the housing component.

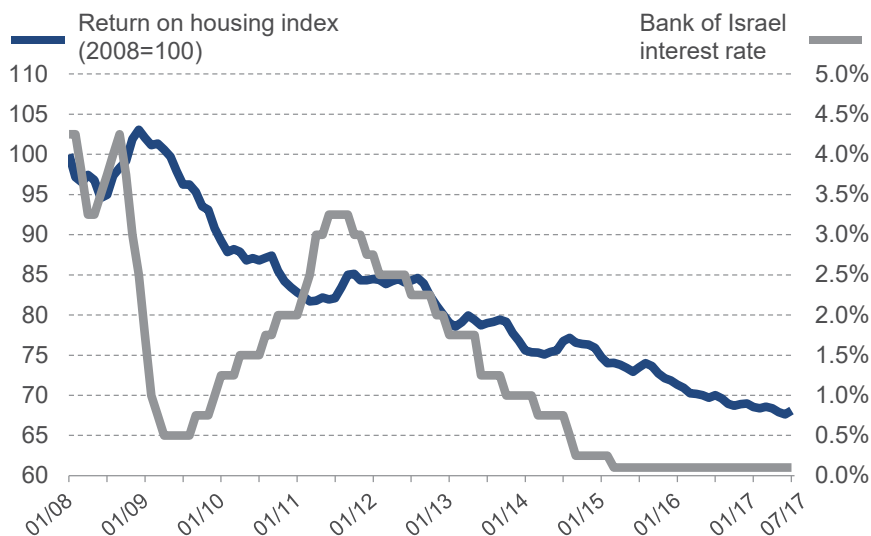
Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: CBS, CPI

Part of the gap between apartment prices and rent levels is due to falling interest rates, which have enabled households (or leveraged investors) to obtain cheaper mortgages, and made investment in apartments more profitable than other alternatives. However, although it is highly likely that changes in the interest rate set by the Bank of Israel had an effect on apartment prices, this is not the only possible explanation. In order for the interest rate to have an ongoing and direct impact in terms of rising apartment prices (and a lower return on apartment ownership), it has to decline continually, or be expected to decline. Figure 18 shows the Bank of Israel interest rate and the expected return on an apartment purchase, calculated as the ratio between the index of purchased housing and the index of rental housing. Between 2008 and 2015, there was a continuous decline in the interest rate (with short breaks only), and the return on purchased apartments also declined. Since March 2015, the Bank of Israel interest rate has remained set. Moreover, because it is close to zero (0.1 percent), no further meaningful decline can be anticipated.<sup>19</sup>

<sup>19</sup> There have recently been instances around the world where the current interest rate dropped below zero. Should this happen in Israel, however, it is hard to believe that the interest rate would fall much below zero.

Despite this, apartment prices rose during that period at a 17 percent higher rate than the general CPI excluding housing, and at an 8 percent higher rate than the housing price index, which reflects rent levels.

**Figure 18. Return on investment in housing and the Bank of Israel interest rate\***



\* The relation between the purchase price index and the rental price index.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center

Data: CBS, CPI; Bank of Israel, periodic series

Thus, given the continuing decline in the return on apartment ownership, what can explain the rate-of-increase gap between apartment prices and rent levels? This phenomenon cannot be explained by changes in the Bank of Israel interest rate since mid-2015, and so, the key seems to lie in household and investor expectations for further price increases — both in apartment prices and in average rent levels.

Policy has only a limited ability to affect expectations, and the policies adopted in recent years, whether implemented or not, do not seem to have substantially lowered expectations for additional price upswings. However, it is possible that a credible and binding government announcement of future actions to significantly increase the housing supply, in addition to the positive effects of such an increase, would limit price hikes stemming from investor and household expectations.



## Conclusion

As of late 2017, the state of Israel's economy is relatively good. Unemployment is low, labor participation rates are peaking, and recent years have even witnessed substantial wage increases, after a long period of wage stagnation. The improved wage and employment levels have led to an impressive rise in consumption during the past few years — that is, to a rise in the standard of living. However, major challenges loom over the economy's future. Large swaths of the labor market are characterized by low productivity and low wages, and although there has been some improvement recently, Israeli price levels are still among the highest in the OECD. Moreover, the past decade witnessed the development of a severe housing crisis, which policy makers do not seem to be doing enough to address. Also, anticipated demographic challenges may further hinder growth in the long term: a declining share of people of prime working age coupled with a rising share of population groups whose employment rates are relatively low and whose skills are unsuited to the modern labor market.

The current positive state of Israel's economy gives policy makers room to address the challenges facing the economy. This interlude should be utilized to implement policy informed by long-term trends and projections, to ensure balanced growth in the future and to achieve optimal realization of the economy's potential.

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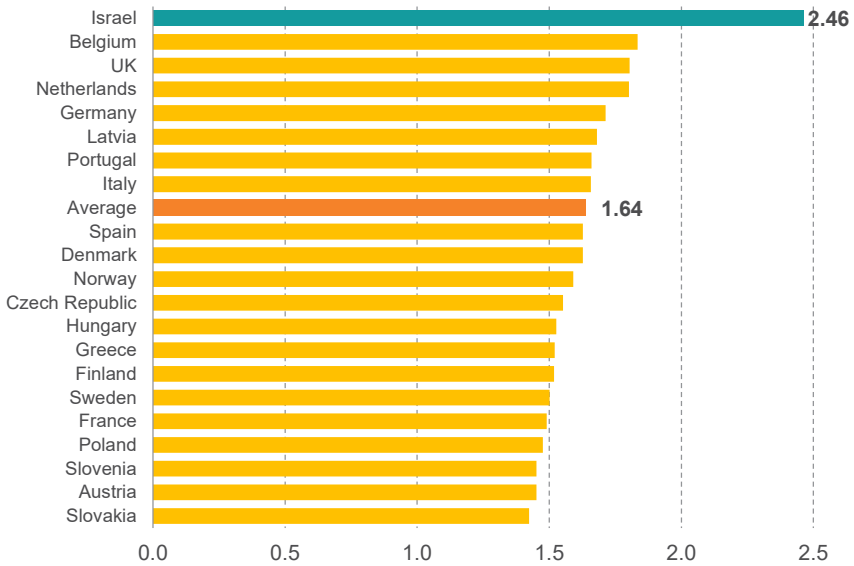
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## Appendix

**Appendix Figure 1. A comparison of wages in the high tech sector to the rest of the non-high tech business sector, 2013**



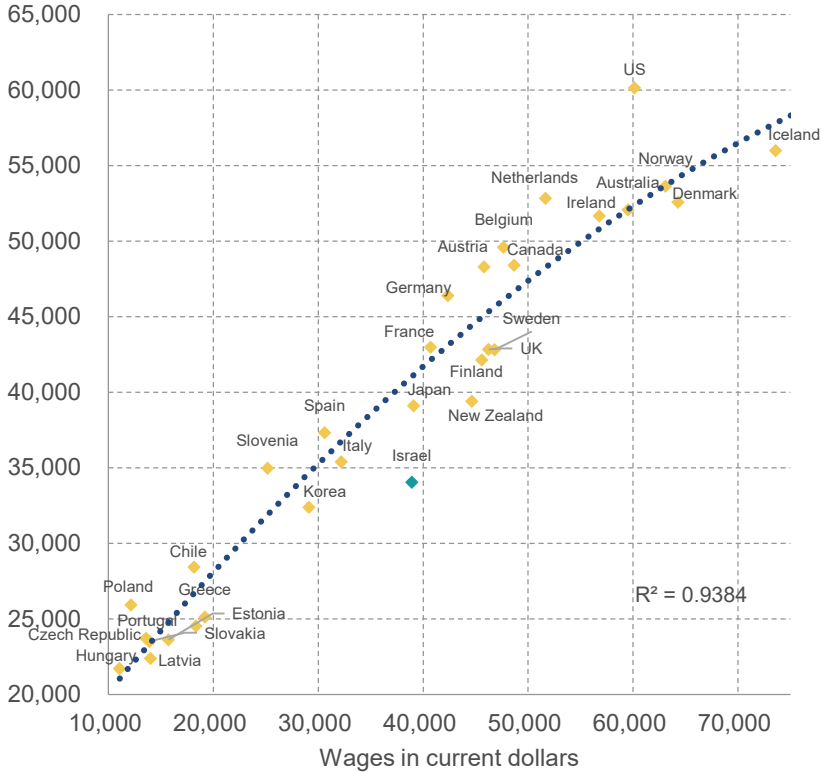
Notes: High tech includes pharmaceutical and chemical manufacturing, export of computers, electronic and optic equipment, computer programs and information services, research and development. The remaining business sector does not include water and electricity, agriculture, mining and quarrying.

Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: OECD STAN

## Appendix Figure 2. Wages in current PPP dollars, 2016

For a worker in full-time employment, private consumption prices

Wages in PPP dollars

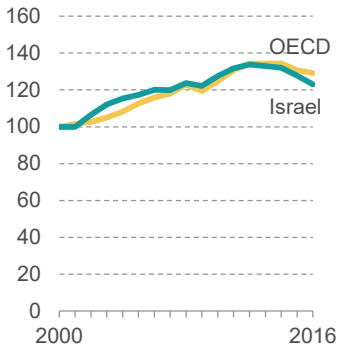


Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center

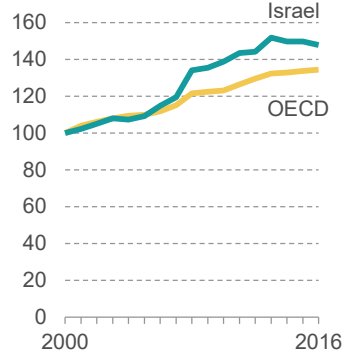
Data: CBS, Industry and Economic Branch Survey; OECD.Stat

**Appendix Figure 3. Trends in the CPI, selected categories**

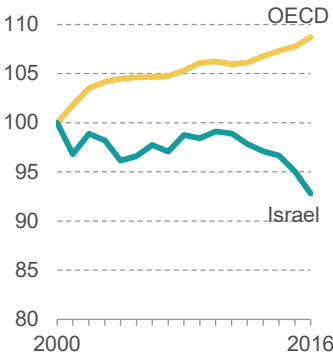
**Transportation**



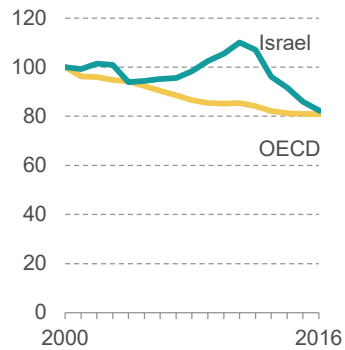
**Food and non-alcoholic drinks**



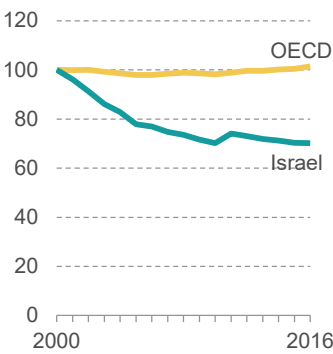
**Culture and entertainment**



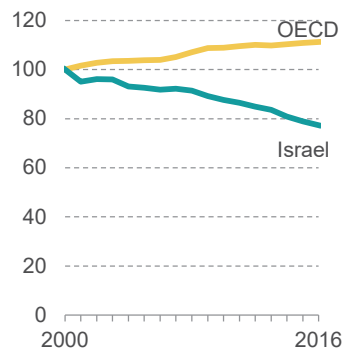
**Communications**



**Clothing and footwear**



**Home furnishing and maintenance**



Source: Gilad Brand, Avi Weiss and Assaf Zimring, Taub Center | Data: OECD.Stat