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High Prices in Israel? Caveat Emptor

Beware of International Comparisons

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Abstract

One topic that continues to stay at the forefront of the public discourse in Israel is the issue of high prices. What gets submerged in this discourse is (1) to whom and (2) to what is the price of a given good compared. Three approaches are outlined here. The OECD method compares the price of a good in an individual country to its average price in the OECD countries – but it is based on exchange rates, which distort the picture of relative prices among countries and bias the OECD comparisons. Given the difficulty in accurately determining actual price gaps between individual countries and averages of country groupings, such as the OECD, two alternative measures are detailed here. The first calculates the gap between the price of a specific consumption category and the overall price level in each country and then compares this gap to the average gap in the OECD to ascertain if the price is extraordinarily high or low vis-à-vis other domestic prices in comparison with the OECD average. The second alternative relates prices to wages and compares the number of goods that can be bought with the median wage in each country to the OECD average. Though none of these methods is free of drawbacks, they all nonetheless point to a number of consumption categories where Israeli prices appear to be exceptionally high and policy attention is needed.

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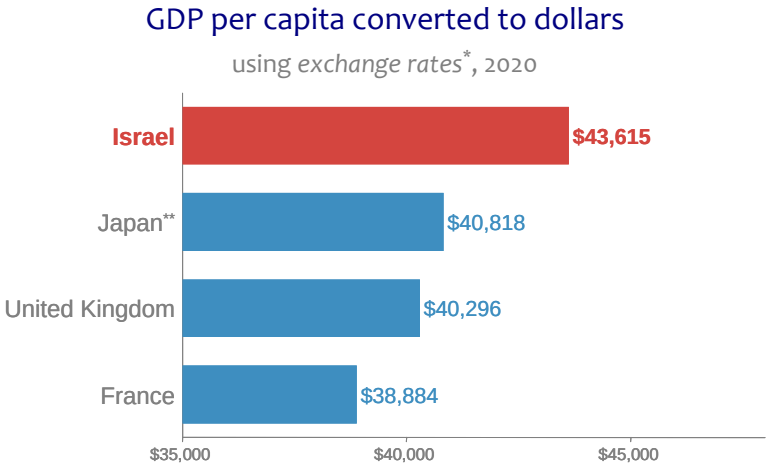
Introduction

Cross-country comparisons can be a tricky and often misleading business – sometimes intentionally so. On June 13, 2021, the final day of his twelve year term as Prime Minister, Benjamin Netanyahu stood at the Knesset podium and repeated his oft-stated claim that "Israel's per capita income surpasses that of the UK, Japan and France."

And in fact, when Israel's GDP per capita – the common measure used to indicate national living standards – of 150,474 shekels in 2020 is converted into US dollars using the country's official exchange rate, Netanyahu's claim would appear to be correct (Figure 1). After all, such a conversion to dollars for each of the countries on the basis of exchange rates yields per capita incomes of $43,615 (Israel), $40,818 (Japan), $40,296 (UK), and $38,884 (France).

Figure 1



* in current prices and current exchange rates.
** 2019.

Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: OECD

On the face of it, exchange rates can be assumed to reflect relative price levels across countries. For example, if a basket of goods costs 12 shekels in Israel and the same basket costs $4 in the States, then an exchange rate of 3 shekels would accurately reflect the basket's relative prices between the two countries. Such a relationship – commonly referred to as purchasing price parity – underlies the use of official exchange rates to convert GDPs from all countries into one currency.

This assumption can differ greatly from reality. Exchange rates may rise or fall for reasons that are entirely unrelated to relative prices across markets. For example, considerable foreign investments in Israel in recent years led the Bank of Israel to purchase considerable amounts of

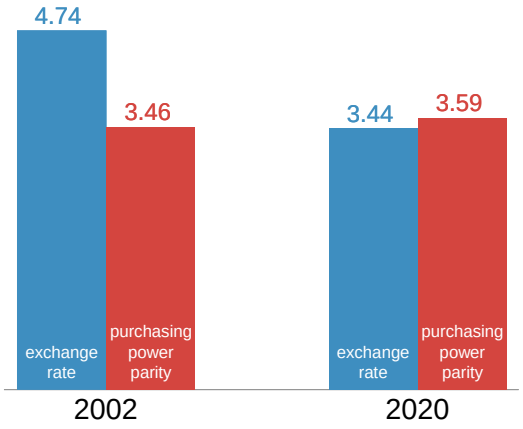
foreign currency to prevent the exchange rate from falling too much. During the height of the major 2002 Intifada-related recession, many concerned investors pulled money out of Israel and drove the shekel-dollar exchange rate to a peak of 4.99 (in June 2002). During all of 2002, the country's exchange rate averaged 4.74 shekels per dollar – far higher than the actual ratio of Israeli prices to American ones that year. How do we know this?

The vulnerability of exchange rate movements to political and other events unrelated to relative prices led economists to calculate purchasing price parities that directly compare prices of goods and services across countries – and to use these, instead of exchange rates, for the purpose of international comparisons.[1] Thus, while the 2002 exchange rate may have appeared to suggest that the shekel cost of Israeli goods and services was 4.74 times the dollar cost in the United States, purchasing power parities (PPPs) indicated that the actual Israel-US price ratio was just 3.46 times (Figure 2). Consequently, when the shekel value of Israel's GDP per capita in 2002 was divided by the exchange rate rather than by the PPP, Israel appeared to be much poorer (in dollar terms) than it actually was at the time.

Figure 2

Comparison of exchange rates and purchasing power parities in Israel

relative to the US dollar, annual averages for 2002 and 2020



Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: OECD

The gap between Israel's exchange rate and its PPP narrowed considerably since 2002, with the exchange rate falling from 37% above the PPP in 2002 to 4% below the PPP in 2020.[2]

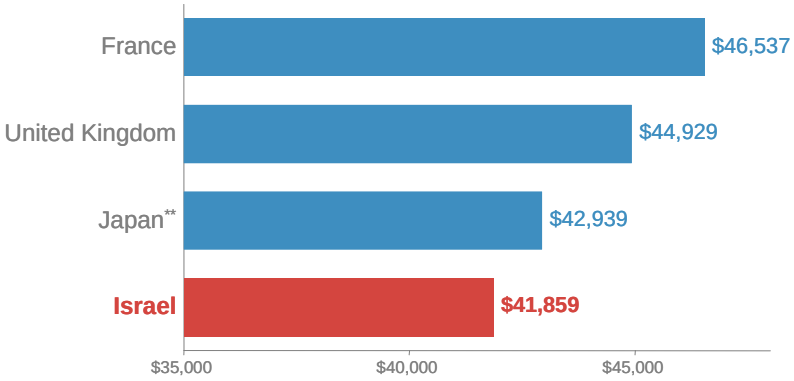
[1] Research by Kravis, Heston and Summers (1978) led to a book by the three authors in 1982 with a dataset that evolved into Summers and Heston (1988). Their seminal research paved the way for the Penn World Tables that have since been significantly expanded (Feenstra, Inklaar and Timmer, 2015). These methods were reproduced and implemented by the World Bank, the OECD and other major international organizations as the primary benchmarks for making international comparisons. Some drawbacks to the use of purchasing power parities are discussed in appendix 1.

[2] The fact that the shekel-dollar exchange rate fell sharply, by 24% between 2002 and 2008, may have contributed to the prevailing perception in Israel that the country had become substantially more expensive relative to other countries

As such, current conversions of Israel's GDP per capita to dollars using the exchange rate make Israel's living standards appear (in dollar terms) higher than they actually are.

Dissimilarities between exchange rates and PPPs are very common across the world and not unique to Israel. Thus, when the GDP per capita of countries is converted into dollars using the more accurate PPP, the Netanyahu comparison turns on its head (Figure 3). Israel's GDP per capita is actually below that of the other three countries.

Figure 3



* in current prices and current PPPs.
** 2019.

Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: OECD

A methodological problem with price comparisons

The use – and misuse – of PPP comparisons has become standard fare in the Israeli media, with articles commonly displaying price gaps between goods in Israel and those in the developed world in a host of categories. The Israeli Knesset's research arm prepared a study (Rotenberg 2018) for the Knesset's economic committee that made extensive use of the OECD's price comparison data. When comparing the OECD's most recent (2017) benchmark study of prices in individual categories of goods and services to its first published benchmark study in 2005, the price gaps between Israel and the OECD average have seemingly become more pronounced over time.

Figure 4 illustrates just how much prices in Israel appear to have jumped in relation to the OECD average between 2005 and 2017. The price gaps grew in every single category, from an increase of 3% in the transport price gap, through an increase of 68% in food price differences,

during this period. This sentiment was one of the primary contributors to massive social protests in 2011 that centered on the high cost of living in Israel.

and up to a near doubling of the price gap (97% increase) between Israel and the OECD average in housing, water, electricity, gas and other fuels.

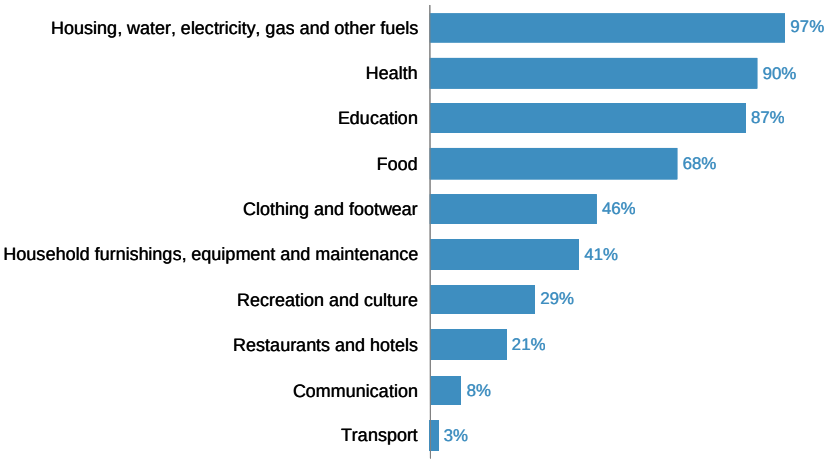
With such an apparent across the board leap in relative prices between Israel and the OECD average, one might expect that Israeli inflation rates during this period were higher, if not substantially higher, than those in most OECD countries. However, as indicated in Figure 5, this was not the case. In fact, the opposite was true. Annual inflation rates in Israel averaged 1.6%, below the majority of OECD countries – and in some cases, considerably below them.

How might it be possible to reconcile between the seemingly conflicting outcomes in the two figures? The findings in this study suggest that the price gaps between Israel and the OECD average in Figure 4 – and as reported in the Israeli media – tend to be misleading, sometimes severely so.

Figure 4

Change in price gaps between Israel and the OECD average between 2005 and 2017

OECD average determined on basis of exchange rates

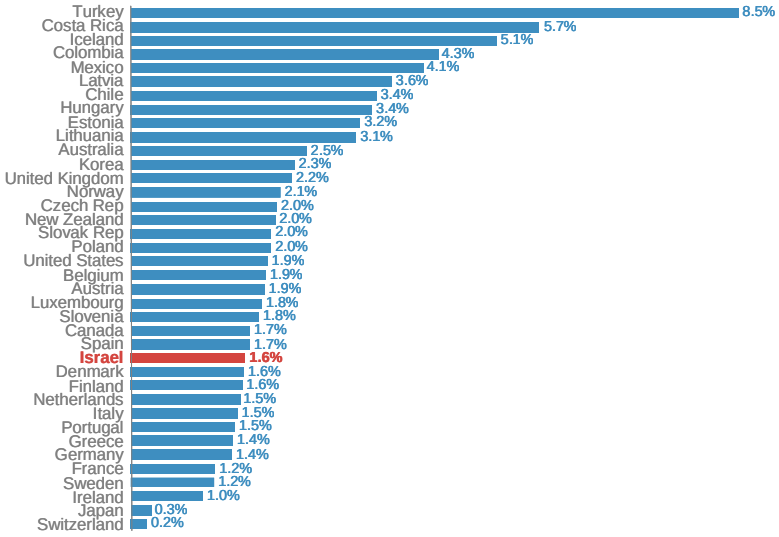


Source: Dan Ben-David and Ayal Kimhi, Shoresh Institution
Data: OECD

Figure 5

Average annual inflation rates

between 2005 and 2017



Source: Dan Ben-David and Ayal Kimhi, Shoresh Institution
Data: OECD

Table 1

Example: Cost of food basket in 2005 and 2017

Purchasing power parities in national currencies per US dollar (United States=100)

	2005	2017	percent change
United States	$100	$100	0%
France	€ 97	€ 95	-2%
Israel	₪ 425	₪ 499	17%
Japan	¥ 23,900	¥ 17,000	-29%

Source: Dan Ben-David and Ayal Kimhi, Shoresh Institution
Data: OECD

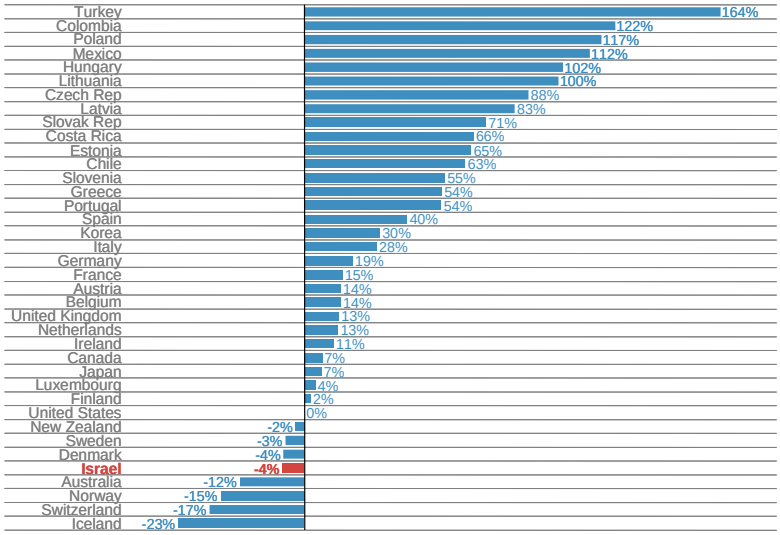
Bilateral comparisons between countries involve straightforward determination of prices in one country relative to prices in the other country. Take, for example, a basket of food in 2005 costing $100 in the US, 97 euros in France, 425 shekels in Israel and 23,900 yen in Japan (Table 1). By 2017, a $100 food basket cost 95 euros in France, 499 shekels in Israel and 17,000 yen in Japan. It's possible to use these purchasing price parities in each year to show that the gap in food prices between Israel and the US went up 17% while the France-US price gap declined by 2% and the Japan-US gap fell by 29%. But how does one calculate by how much the Israeli price changed in comparison with the average price in the three other countries when the French, Japanese and US prices are all in different currencies? Towards this end, all of the domestic currency prices need to be converted into one currency – usually the US dollar, though any other currency also suffices for this purpose – so that their average may be computed.

The OECD uses exchange rates to convert the consumption baskets of its member countries into dollars. Specifically, each of the basket prices in domestic currency is divided by the respective country's exchange rate. These amounts can then be used together to produce the OECD average for that year. While this procedure may make intuitive sense – after all, exchange rates are the way that most people would compare the price of a cup of coffee in one country to its price in another country, and they are certainly the relevant measure for importers and exporters – it incorporates the many exchange rate distortions, which in turn bias the calculation of relative prices across countries. Focusing on all of the OECD countries, Figure 6 provides a glimpse of

the degree of disparity between exchange rates and purchasing power parities of GDP in 2017, the most recent OECD benchmark year for cross-country comparisons of various goods and services.

Figure 6

Percent gap between exchange rates and purchasing power parities, 2017



Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: OECD

As such, the OECD method of incorporating the distortions inherent in exchange rates into its computations yields unreliable information that can bias – sometimes, considerably so – the estimates of price gaps between individual countries and the OECD average. That is why these calculations indicated substantially rising gaps between Israeli prices and the OECD average even though Israeli inflation rates were below those of most OECD countries.

While it's not possible to accurately compute the actual price gaps between individual countries and group averages, this paper details two alternative approaches for gauging price gaps between individual countries and the OECD average. Though each has its drawbacks and neither is a perfect substitute for the OECD method, each provides additional and different perspectives on the issue.

Alternative 1: Cross-country comparisons of domestic price gaps

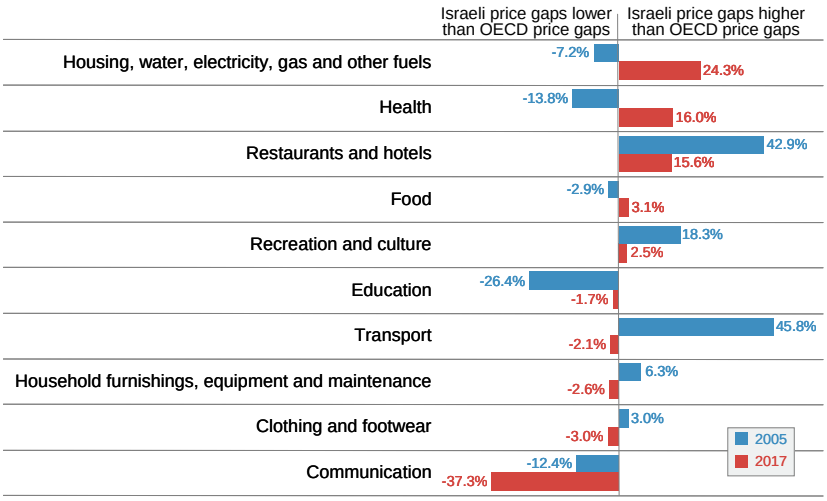
The OECD methodology of comparing prices in individual countries to the group average is detailed in Appendix 2. The alternative approach uses the same methodology as the OECD, but replacing exchange rates with the PPPs used to convert GDP per capita to one currency (Appendix

3). The drawback of this alternative method is that it does not directly compare prices in each country with the OECD average. Instead, it determines price gaps between a given basket of goods and the average price level in each country, averaging these gaps across all OECD countries.

In the case of Israel, for example, the outcomes are shown in Figure 7 for the OECD's first benchmark study in 2005, and for the most recent benchmark study in 2017. Two consumption categories stand out in particular in terms of becoming relatively more expensive during the period: housing and healthcare. For example, the gap between healthcare prices in Israel and the overall price level in 2005 was 14% lower than the average gap between healthcare prices and their respective overall price levels in the OECD. By 2017, the Israeli gap in relative healthcare prices became 16% higher than in the OECD. Note that this does not directly imply that Israeli healthcare prices were below the OECD average healthcare price in 2005, nor that they were higher in 2017. That kind of direct comparison is simply not possible without introducing the exchange rate biases inherent in the OECD methodology.

Figure 7

Price gaps between individual consumption categories and the national price level – a comparison between Israel and the OECD average in 2005 and 2017



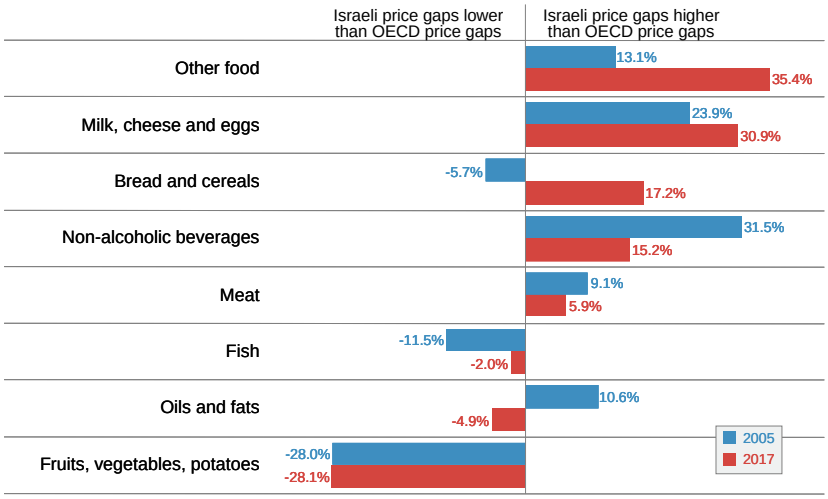
Source: Dan Ben-David and Ayal Kimhi, Shoresh Institution
Data: OECD

Figure 8 looks more closely at food prices by distinguishing between eight separate classifications that fall under this category. The relatively small gap between Israeli food prices overall and the price of Israel's overall price level relative to the average gaps in the OECD masks wide price discrepancies across the different food classifications. On the one hand, the Israeli

price of milk, cheese and eggs was, and continued to be, considerably higher than the overall price level in Israel when compared to the OECD: 24% greater in 2005 and 31% higher in 2017. On the other hand, the price of fruits, vegetables and potatoes was, and continued to be, far below the overall price level in comparison with the OECD: -28% in both 2005 and 2017.

Figure 8

Price gaps between individual food categories and the national price level – a comparison between Israel and the OECD average in 2005 and 2017



Source: Dan Ben-David and Ayal Kimhi, Shoresh Institution
Data: OECD

Alternative 2: Accounting for income differences across countries

While cross-country price comparisons are important, they only provide a partial cost-of-living picture. Just as a particular product may seem expensive to one person, and cheap to another, such is the case regarding how price comparisons across countries should be viewed. For example, even if the Israeli price and the OECD average price in the comparisons above were equal in 2017, this would still leave Israelis at a comparative disadvantage since Israel's living standards – as depicted by its GDP per capita – were 12% below the OECD average that year.[3]

This section provides a perspective with regard to the relative onus of purchasing goods in Israel as compared with the OECD in 2017, the year of the most recent OECD benchmark study. This is done by examining how many baskets of each good can be purchased with the median gross wages in each OECD country, and then computing the percent gap between the number of

[3] Geva and Kril (2015) and Brand (2015) examine the link between national PPPs and national living standards.

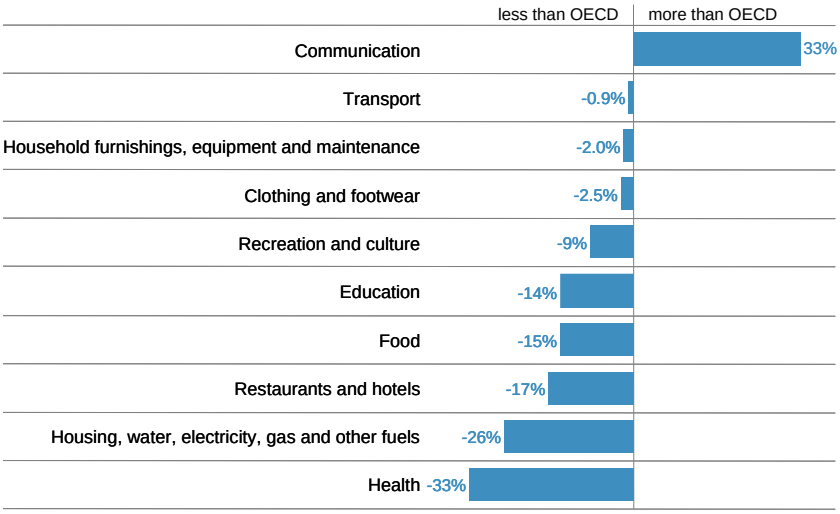
baskets that the median Israeli wage can purchase and the average number of baskets that median wages can purchase in the OECD.[4]

Figure 9 shows that while the median Israeli income can purchase 33% more communication baskets that the OECD average, it can purchase fewer baskets in each of the other categories. Herein lies the primary drawback of this method. The number of baskets that can be purchased is limited not only by the height of the basket price, but also by the height of the median wage in each country. It is entirely possible that the paucity of consumption baskets that an Israeli can buy may not be due to high Israeli prices but to low Israeli wages.

While the median wage in Israel is lower than the average median wage in the OECD (Figure 10) they are nonetheless much closer to that average than in the vast

Figure 9

Number of consumption baskets that can be purchased with median wage*, Israel relative to OECD average, 2017

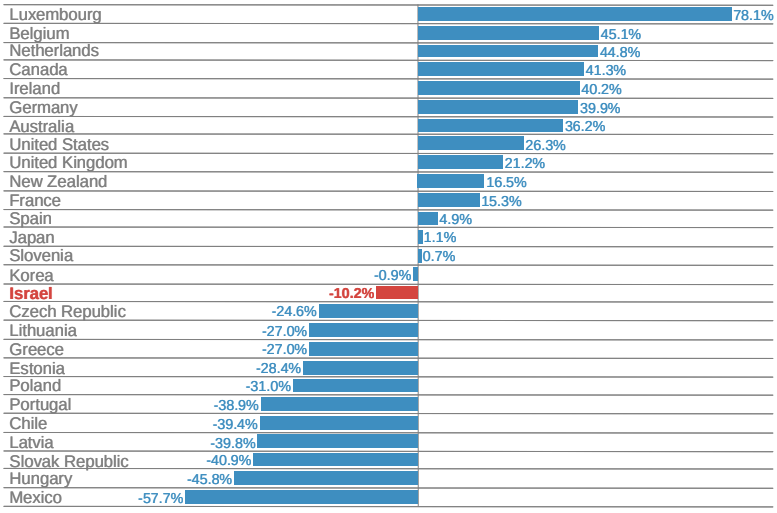


* Percent gap between Israel and OECD average in the number of consumption baskets that can be purchased with median wages per full-time and full-year equivalent employees..

Source: Dan Ben-David and Ayal Kimhi, Shoresh Institution
Data: OECD

Figure 10

Percent gap between each country's median wage* and the average OECD median wage, 2017



* Median wages per full-time and full-year equivalent employees.

Source: Dan Ben-David and Ayal Kimhi, Shoresh Institution
Data: OECD

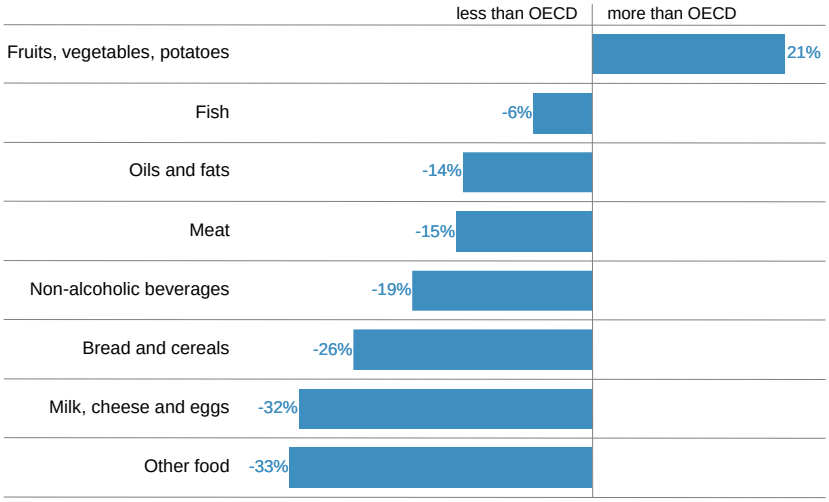
[4] Gross median wages per full-time and full-year equivalent employees.

majority of OECD countries. Consequently, the very large negative gaps between the number of health and housing baskets that can be purchased with the median Israeli wage is likely due to relatively high prices in these two categories rather than to particularly low Israeli wages.[5]

Turning to the various food categories, the median Israeli wage can purchase 21% more fruits and vegetables than the average OECD median wage (Figure 11). However, Israeli wages can purchase fewer food baskets in each of the other categories. In some of these categories – for example, dairy products and eggs, and bread and cereals – the number of Israeli baskets that can be purchased is far lower than can be explained by the lower median income in Israel.

Figure 11

Number of food baskets that can be purchased with median wage*, Israel relative to OECD average, 2017



* Percent gap between Israel and OECD average in the number of food baskets that can be purchased with median wages per full-time and full-year equivalent employees.

Source: Dan Ben-David and Ayal Kimhi, Shoresh Institution
Data: OECD

Summary

The OECD's methodology showing price gaps in each country relative to the OECD average may be relevant for importers and exporters conducting transactions on the basis of exchange rates. However, they are considerably less useful for gauging the actual price gaps between individual countries and the organization's average because of the inherent biases caused by exchange rate distortions. The extent of this bias with regard to Israel is evident in the organization's calculations showing across the board increases in price gaps between Israel and

[5] Negative gaps between Israel and the OECD average in the number of baskets may also be due to high median wage countries with relatively low prices more than offsetting low median wage countries with relatively high prices.

the OECD since 2005 – despite the fact that inflation rates in Israel were lower than in most OECD countries during this same period.

While it is not possible to accurately compute price gaps between individual countries and the OECD average, this paper highlights two alternatives that nonetheless shed some light on price differences in comparison with the OECD – albeit, each with drawbacks of its own. One of the consistent outcomes when comparing Israel to the OECD is that, regardless of the methodology, Israeli prices are especially low in communication, and in fruits and vegetables. At the other end of the spectrum, Israeli prices are particularly high in the areas of healthcare, housing and utilities, dairy products, bread and cereals and non-alcoholic beverages. As such, these are the key areas in which Israeli policies should focus on when addressing the issue of high prices in Israel.

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Appendix 1: Some outstanding issues unresolved in the determination of purchasing price parities

While PPPs of GDPs provide more accurate representations of national relative prices than do exchange rates, some important caveats are in order. It is very difficult to account for differences in the quality of a good or service between countries, or for changes in quality over time. Israel is a prime example of how education expenditures may be roughly similar to the developed world average, but the qualitative level of education received by Israeli children is considerably lower (Ben-David and Kimhi, 2021).

In addition, expenditures tend to vary considerably across income groups within countries. Low income groups tend to spend more than high income groups on some goods and services while spending less on other goods and services. The greater the income inequality within a country, the less representative the "national basket" of goods and services actually is.

While these weaknesses in the PPPs are not insignificant, exchange rate comparisons do nothing to correct for such measurement problems, while adding their own inherent distortions that further bias international comparisons of relative prices.

Appendix 2: The OECD method for calculating relative prices between individual countries and the average price for a group of countries on the basis of exchange rates

The purchasing power parity of good *x* in country *i* is defined as the domestic currency cost in country *i* of the same quantity of *x* costing $1 in the US. Since there are substantial differences in values of each currency vis-à-vis the US dollar, it should come as no surprise that purchasing price parities of a good can vary greatly as well. A cross-country average needs to normalize the PPPs of each country's good (which reflect the cost of the good in local currency relative to its dollar cost in US) by each nation's general price level relative to the US dollar.

The OECD does this normalization by dividing each PPP by the country's official exchange rate. The OECD methodology is as follows.

Define:

E_{ix} = total expenditure, denoted in domestic currency, on a given good x in country i.[6]

PPP_{ix} = purchasing power parity price of x in country i.[7]

ER_i = exchange rate between country i's currency and the US dollar.

PPP_i = purchasing power parity for GDP in country i

The OECD method determines the dollar value of the group's average amount spent on x as follows (assuming N member countries in the group) using exchange rates:

$$A_x = \frac{\sum_{i=1}^{N}\left(\frac{E_{ix}}{ER_i}\right)}{\sum_{i=1}^{N}\left(\frac{E_{ix}}{PPP_{ix}}\right)} = \frac{total\ \$\ amount\ spent\ on\ x\ by\ all\ countries\ in\ group}{total\ number\ of\ baskets\ (costing\ \$1\ in\ US)\ of\ x\ bought\ by\ group}$$

Similarly, the OECD determines the dollar value of good x in country i as follows, using exchange rates:

$$B_{ix} = \frac{PPP_{ix}}{ER_i}$$

Since A_x and B_{ix} are now denoted in the same currency, dollars, it is possible to divide each B_{ix} by A_x to get the price of x in country i relative to the average group price of x. The problem with the OECD method is that it incorporates the distortions inherent in exchange rates that then bias the calculated average price of good x in the OECD.

[6] These are the values in the OECD's table 1.1 of the benchmark studies.

[7] These are the values in the OECD's table 1.12 of the benchmark studies.

Appendix 3: An alternative method for calculating relative prices between individual countries and the average price for a group of countries on the basis of purchasing power parities

Replacing the exchange rate ER_i in A_x and B_{ix} (appendix 2) with PPP_i , the purchasing power parity for GDP in country *i*, yields a different kind of comparison with the OECD. While it may first appear to simply remove the exchange rate distortions, the use of the GDP PPP essentially reflects the average price level in each country. As such, the new B_{ix} reflects the price of good *x* in country *i* relative to the average price level in *i*. The new A_x represents the average price of *x* in the country grouping had the exchange rate been identical to the GDP PPP. When the new B_{ix} is divided by the new A_x, the outcome provides a comparison of how distant the price of *x* is from the overall price level relative to the average distance of the price of *x* from the overall price levels in all OECD countries.