

Rising Housing Prices and Their Impact on Households' Ability to Purchase a Home

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Kyrill Shraberman*

Abstract

Rising housing prices of the past decade have reduced the ability of the average Israeli household to purchase a home relative to the turn of the millennium. However, when buying ability is assessed in terms of total disposable household income – and not in terms of the number of monthly salaries needed to purchase an apartment, per the accepted method – the findings show a more moderate decline in purchasing ability, with the current ratio between disposable income and housing prices equaling the ratio seen during the mid-1990s. The reason for this is that total disposable household incomes rose more than wages did between 1998 and 2016, due mainly to a rise in the average number of income earners per household.

A home is one of the largest purchases that households make. As such, the amount of credit available to households is a useful indicator of a household's ability to purchase a home. The average degree of household leveraging (net credit as a percentage of GDP) has risen since 2009, and is only slightly lower than the leveraging level in 2000. This indicates that capital market accessibility softens the negative impact of the increased housing price to disposable income ratio.

Introduction

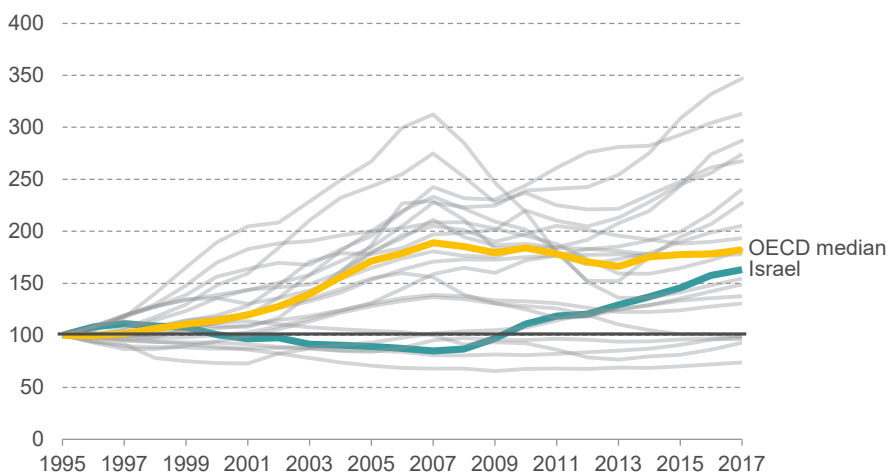
Since the second half of 2007, real housing prices in Israel have been trending upward (in annual terms). The consistency of this trend over the course of a decade, and the rate of increase, are unprecedented. However, relative to the changes that have occurred over time in the housing prices of other developed countries, the situation in Israel proves unexceptional.

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From the mid-1990s through to 2007, many developed countries experienced housing price increases. Throughout the period, real housing prices in Israel rose at an average annual rate of 2.3 percent, while the OECD median housing price rose at an average real rate of 2.7 percent per year (Figure 1). This trend began to change during the US financial crisis of 2008 – a crisis that was sparked, among other things, by an exceptional rise in housing prices followed by price drops in the US and other countries. Despite declining prices in the wake of the 2008 crisis, OECD housing prices were back to their pre-crisis levels by 2017; in some countries, housing prices exceeded their 2008 levels.

Figure 1. Real housing prices

Index year: 1995 = 100



Note: Grey lines show price ratios in the various OECD countries.

Source: Kyrill Shraberman, Taub Center | Data: OECD

Rising housing prices in Israel have generated a great deal of interest, both among the general public and among policy professionals. Numerous studies are devoted to this issue, analyzing it from a variety of angles. Gruber (2014) describes the changes in Israel's housing market and focuses on the practical measures required to address them. Other studies explore the issue of public housing and review developments in this segment of the housing market (Weinstein 2014; Gal and Madhala 2016). Recently published

studies refute the argument that Israel's rising housing prices constitute a housing bubble (Eckstein, Lifshitz, and Larom 2018), and discuss Israelis' preference for housing investment over other types of investment (Bank of Israel 2017, "Box 3"). Still other works analyze spatial disparities in the ability to purchase a home (Consumer Regulations) and inequality between household purchasing ability on the basis of macro data (Ben-Shahar, Gabriel, and Golan 2018).

In contrast to these studies, this chapter focuses on changes in the ability of households to purchase housing. This chapter endeavors to show that the most common measure of purchasing ability in the media and in public discourse, the number of average monthly salaries needed to buy an apartment (for purposes of this study, we will refer to this as the average wage index), is insufficiently accurate due to changes in Israel's labor market over the analysis period. Instead, this study measures home-purchasing ability by means of a similar, but more appropriate metric: the ratio between housing prices and household disposable income (heretofore referred to as the disposable household income index).¹ The findings show that this ratio declined over a lengthy period, but in recent years returned to its 1997 level — that is, the last few years have seen a drop in housing prices from the perspective of the average Israeli household.

First, the chapter analyzes changes in the average income of Israeli households and of different population groups, and shows the difference between the accepted index for measuring the ability to purchase a home and the proposed index. Second, another aspect of the ability to purchase housing — access to the capital market, as reflected in the level of household leveraging over time — is examined.

1. The ability to purchase a home: A comparative analysis

A households' ability to buy housing is usually calculated in terms of the ratio between the average (or median) apartment price and the average (or median) wage. More simply put: how many average monthly salaries are needed to buy the average apartment (see *Calcalist* 2017; Frenkel 2018). This average wage index is widely used, but has a number of drawbacks. Firstly, income from work is not necessarily a households' sole source of income. In

1 Disposable income is a households' financial income from all sources, after taxes and financial transfers are taken into account.

addition, many households have more than one income earner: in fact, due to significant changes in the labor market over the last 15 years, the average number of income earners in a household in Israel has increased. As a result, households have managed to keep their disposable income rising at a similar pace as the GDP, despite the fact that GDP has grown at a faster rate than the average income from work (Kimhi and Shraberman 2015: 39, Figure 12). Between 1998 and 2016, the average disposable household income grew by 2.3 percent annually, while the average monthly wage increased by just 1 percent. Given the problems inherent in using the average wage index, this chapter will assess household apartment-purchasing ability in terms of the ratio between the housing price index and the average disposable household income index.

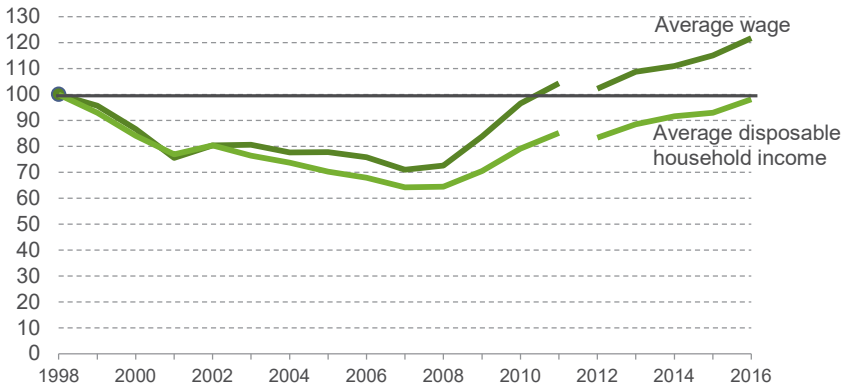
The trends indicated by both indices — the average wage index and the disposable household income proposed in this chapter — are shown in Figure 2 (the indices are indexed with 1998 set as 100). Until 2002, the indices developed at a similar rate, but a gap between the two began to emerge in 2003. The timing of the gap's appearance overlaps with changes in welfare payments instituted in 2002, which spurred increased labor force participation among those populations most affected by the benefit cutbacks (Eckstein, Lifshitz, and Larom 2018). At the same time, growing demand for workers (mainly highly-skilled workers, but others as well) also contributed to a rise in employment (Kimhi and Shraberman 2014).

The gap between the indices indicates that assessing apartment-purchasing ability based on household income is indeed justified. The higher the number of employed individuals within a family, the greater the importance of measuring purchasing ability based on the entire household's income, and not on the growth of the salary of any single individual within that household.

Figure 2 also shows that, in general, the ratio in both indices declined — that is, the ability to buy an apartment improved — between 1998 and 2007/2008. After that point, it became harder to buy an apartment (the ratio increased), both according to the average wage index and the disposable household income index. There are differences between the two indices, though. According to the average wage index, it became more difficult to buy an apartment from 2010 on than in 1998, and, in 2016, the ratio was 20 percent higher than in the base year. By contrast, the disposable household income index shows a much more moderate increase from 2008 on, and indicates that, in 2016, it was slightly easier to purchase a home than in 1998.

Figure 2. Ratio of housing prices to average wage and average disposable household income

Index year: 1998 = 100



Note: In 2012, the Central Bureau of Statistics (CBS) survey methodology changed, resulting in a break in the data series.

Source: Kyrill Shraberman, Taub Center | Data: CBS, *Household Expenditure Surveys*, central database

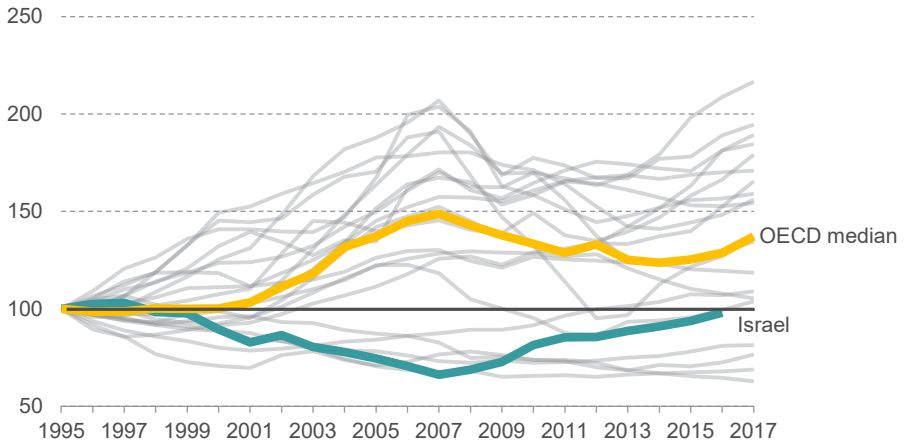
International comparisons

The disposable household income index can also be used to compare trends in apartment-purchasing ability in Israel to trends in other OECD countries. Figure 3 shows the ratio between housing prices and disposable household income in different developed countries since 1995. The figure shows that declining ability to purchase housing is common among quite a few countries, and that this trend emerged before the 2000s and persisted until the global financial crisis in late 2007. Since the crisis, the average OECD ratio fell slightly, but, in 2014, began to rise again and, by 2017, the median apartment-price to disposable-income ratio had nearly returned to its pre-crisis level, and, in a few countries, even surpassed that level.

Thus, the ability of households to buy apartments in 2017 declined in most of the OECD countries relative to 2005, even after the real estate bubble burst in 2008. In Israel, a similar picture emerges, though, with differences in the timing of the ups and downs. The main difference is that in Israel housing prices rose a decade later than in the other developed countries.²

² For an international comparison per the average wage index, i.e., the ratio between housing prices and average wage, see Appendix Figure 1.

Figure 3. Ratio of housing prices to disposable household income
 Index year: 1995 = 100, Israel and the OECD median, country averages



Source: Kyrill Shraberman, Taub Center | Data: OECD

2. The ability to purchase housing by household characteristics

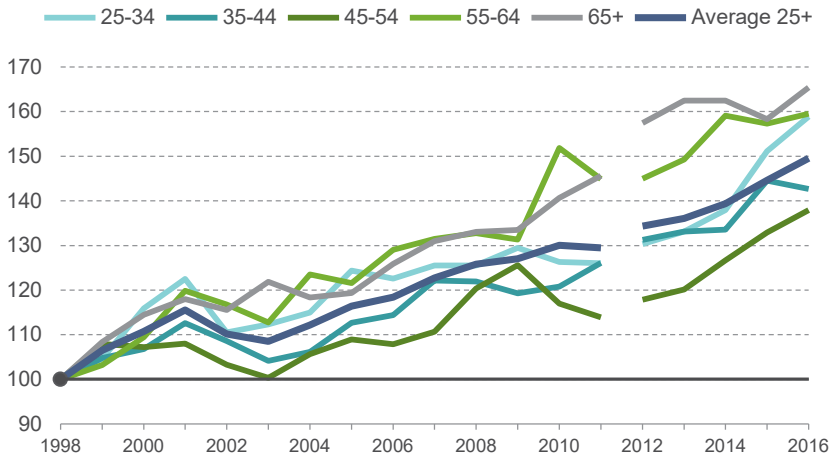
The average figures described above do not necessarily reflect changes in the ability to buy an apartment that occurred among all population groups, or in different geographic regions. To address this, this section examines changes in the disposable income of different groups relative to the change in average disposable income.³

An examination of disposable income by age of head of household between 1998 and 2016 (Figure 4) reveals that the income of households headed by young adults (ages 25-34) grew at a rate similar to that of the average disposable income, while the disposable income of households headed by individuals in the 35-54 age range (the 35-44 and 44-54 age groups

³ The housing needs of households vary greatly not only by household attributes, but also by changes in their financial status across the life cycle. However, the price of an average apartment can serve as a reference point both in terms of the calculations made by households and in terms of overall housing price trends. A later section of this study examines differences between housing prices in different geographic areas.

combined) rose at a lower rate. It thus appears that the ability of young adults to buy apartments was not compromised to a greater degree than that of the population as a whole.⁴

Figure 4. Disposable income by age of head of household
Index year: 1998 = 100, 2016 prices



Note: In 2012, the CBS survey methodology changed, resulting in a break in the data series.

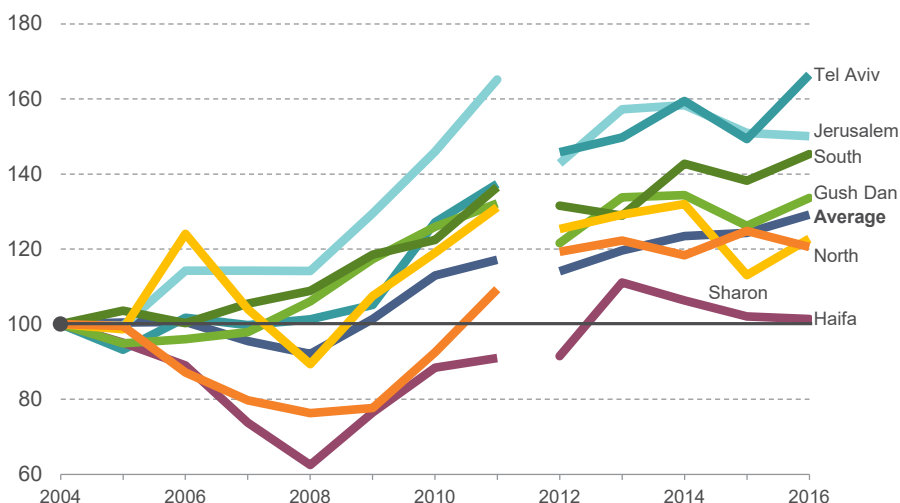
Source: Kyrill Shraberman, Taub Center | Data: CBS, *Household Expenditure Survey*

In addition to the breakdown by age group, it is interesting to assess apartment-purchasing ability by geographic area. In most cases, households prefer to remain in the same localities or areas of residence over time (Bleikh 2018). Thus, it is important to examine the changes that have occurred in households' ability to purchase housing in different regions. Figure 5 shows the ratio between the housing price index and the average disposable household income in major cities and several major regions. Due to data limitations, the comparison starts in 2004 and ends in 2016.

⁴ Total household income is affected by the number of income earners. Married households have higher total income than non-married households, and their ability to purchase housing is consequently greater. Since the ratio between the incomes of the two types of households did not change substantially between 1998 and 2016 (Appendix Figure 2), we may conclude that the apartment-purchasing ability trends for single people are similar to the trends for married people.

It appears that, the ability to purchase housing, i.e., the change in housing prices relative to disposable income, declined the most in Tel Aviv and Jerusalem and in the Southern district. In the Northern, Sharon, and Gush Dan districts (excluding Tel Aviv), the ability to buy housing declined to a degree similar to the national average. The ability to purchase housing in Haifa remained virtually unchanged from the beginning to the end of this period, due apparently to a sharp drop in the ratio between prices and income between 2004 and 2008. From 2008 on, the trends in Haifa resembled those observed in other areas.

Figure 5. Ratio of housing prices to disposable household income
Index year: 2004 = 100, by geographic area



Note: In 2012, the CBS survey methodology changed, resulting in a break in the data series.

Source: Kyrill Shraberman, Taub Center | Data: CBS, *Household Expenditure Survey*, central database

Trends in Israel's immigrant population

In Israel, another aspect of households' ability to purchase housing is related to the share of immigrants in the population.⁵ In the early 1990s, a wave of hundreds of thousands of immigrants from the former Soviet Union arrived

⁵ Immigrants are defined as households of Jews and others (by religion of head of household) who immigrated to Israel from 1990 onwards.

in Israel. In the first years following their arrival (and, for some, in later years as well), the immigrants were employed in moderate- and low-paying occupations (Berrebi, Shraberman, and Yarin 2017), meaning that immigrant households' average income was relatively low. Since 1998, immigrants have integrated in the labor force with great success, and their average disposable family income has risen at a faster rate than has the average Israeli disposable income: 2.9 percent between 1998 and 2016, versus an average annual change of 2.2 percent for native-born Israelis.⁶ This change narrowed the disposable income gaps between immigrant and Jewish, native-born Israeli households (Berrebi, Shraberman, and Yarin 2017). This indicates that the ability of immigrants to purchase housing diminished to a more limited degree than the average for the public at large.

3. Household leveraging

A home is one of the largest purchases a household can make, and the vast majority of home buyers are obliged to take out loans in order to fund the purchase. As such, a useful indicator of households' ability to buy apartments is the credit available to them, and their ability to repay loans. In the following section, this variable is represented by the average leveraging level of households in Israel — that is, the size of households' financial liabilities to creditors.⁷

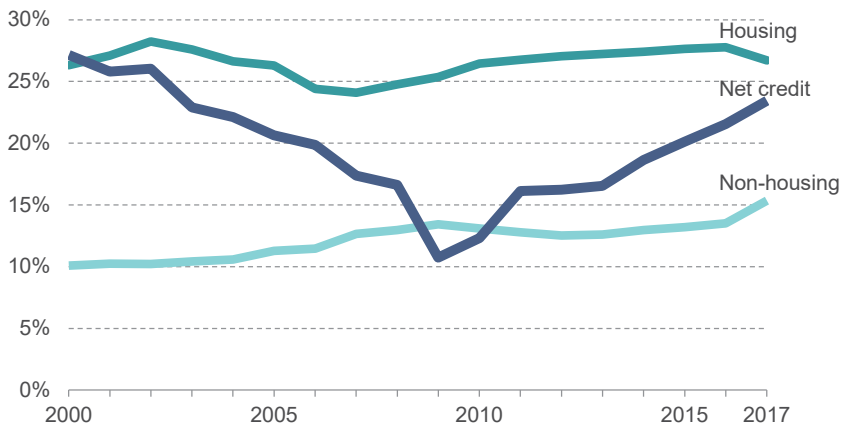
6 Due to data access constraints, immigrants could not be identified in the CBS *Household Expenditure Surveys* prior to 2003. To overcome this limitation, the rates of change in immigrant income are calculated as a remainder: the rate of change in income of non-immigrant households is deducted from the rate of change of the average income, and weighted by the relative share of this group in all households (immigrant and non-immigrant) in the expenditure total. It should be noted that the immigrant group (as defined for purposes of calculating the average rates of change) also includes households of foreign workers who have been in Israel for over a year, but their relative share of the total number of households present in Israel since 1990 is quite low.

7 We must remember, however, that data on household financial liabilities include only those households taking out loans; this does not tell us the relative share of households whose mortgage applications were denied. Without these figures, there is no complete or precise answer to the question of what happened to credit accessibility. Also, there may be a mutual (endogenous) influence between housing prices and credit accessibility — an increase in housing prices may cause changes in bank policy (Glaeser, Gottlieb, and Gyourko 2013).

In order to understand developments with regard to Israeli household leveraging, it is important to examine the change in total credit extended to households as a percentage of GDP (Shraberman 2018). Figure 6 shows the data for three types of credit: housing credit, non-housing credit, and net credit (total liabilities minus total financial savings). On the face of it, only housing credit is relevant to this analysis, but since general loans are not earmarked for specific uses and can also be used towards purchasing a home, the comparison includes all types of credit.

Figure 6. Household financial leverage

Household liabilities as share of GDP, end of December each year



Note: Net credit is total financial liabilities less total financial assets.

Source: Kyrill Shraberman, Taub Center | Data: Bank of Israel; CBS

The ratio of housing credit to GDP declined slightly between 2000 and 2007, then started climbing again. Around 2013, the increase slowed, presumably due to a directive issued by the Supervisor of Banks to limit the granting of mortgages (Supervisor of Banks 2013). Overall, throughout the relevant period, the ratio rose by only 0.4 percentage points, from 26.3 percent of GDP in 2000 to 26.7 percent in 2017.

The ratio between non-housing credit and GDP increased from 10.1 percent in 2000 to 13.4 percent in 2009. From 2009 to 2013, the increase stopped, but the ratio climbed moderately again from 2013, and, by 2017, the credit level had reached 15.4 percent of GDP. The net credit to GDP ratio shows the most volatile trend. At the beginning of the period, the ratio fell

steeply, from 27.1 percent of GDP in 2000 to 10.7 percent in 2009. Mandatory pension contributions instituted in 2008 increased household assets, and appear to have intensified the downward trend between 2008 and 2009. From this point on, however, the trend reversed and the ratio rose continuously; by 2017, it had reached 23.4 percent of GDP.

This being the case, current household leveraging is, ultimately, low compared to the figures for 2000, despite a rise in the share of non-housing credit relative to GDP. Nevertheless, the data indicate a decline in households' abilities to repay financial liabilities relative to 2007, which could potentially make it hard for them to receive additional credit in the future. On the other hand, had the leveraging level remained low, this would have impinged on the ability of households to purchase housing, beyond the decreased apartment-purchasing capabilities inherent in the ratio between housing prices and current disposable income since 2007.⁸

Conclusion

This chapter examines changes in households' ability to purchase housing, in the wake of the past decade's rising housing prices. The analysis is based on changes in the ratio between housing prices and disposable household income (disposable household income index) — rather than the ratio between housing prices and the average salary (average wage index), as is common practice. This is because the comparison to disposable income better reflects a families' ability to purchase a home.

The data show that rising housing prices have taken their toll on the home purchasing market. Since the second half of 2007, the ratio between housing prices and disposable income has increased, meaning that it was harder to buy an apartment in 2016 than it was in 2007. In spite of this development, the ratio between the two indices in 2016 was slightly lower than that of the mid-1990s. This means that, because total disposable household income increased faster than wages did, the ability to buy housing did not decline as much as one might conclude if the average wage index had been used.

⁸ Declining interest rates between 2000 and 2017 undoubtedly contributed to household leveraging, through mortgage recycling and reduced interest costs. For more on the impact of a low interest environment on the ability to obtain housing credit, and on the relationship between housing prices and interest rates, see Glaeser, Gottlieb, and Gyourko 2013; Kaplan, Mitman, and Violante 2017.

Trends in housing price to disposable income ratio are not uniform across the population. For example, the income of households headed by individuals in the 35-54 age range rose less than the average disposable income; as a result, this age group had a harder time purchasing housing than other age groups. By contrast, households headed by individuals ages 55 and over had less difficulty purchasing housing than the overall average. For households headed by young adults (ages 25-34), home buying ability was similar to that of all households.

A geographic analysis indicates that, between 2004 and 2017, the largest decline in purchasing ability took place in Tel Aviv, Jerusalem, and southern Israel, due to a more rapid increase in housing prices compared with the disposable income of households residing in those areas. In Haifa, by contrast, the ability to buy housing declined to a lesser degree than in other areas, housing prices in that city fell sharply between 2004 and 2008 (since then, the ability to purchase housing in Haifa has developed like the rest of the country).

Changes in the ratio of household financial liabilities to GDP show that, in 2017, household leveraging levels were higher than in 2007, but had yet to reach the levels observed in 2000, the start of the assessment period. Increased leveraging levels relative to the years that preceded the housing price upsurge seem to indicate capital market accessibility softens the negative impact of the increased housing price to disposable income ratio.

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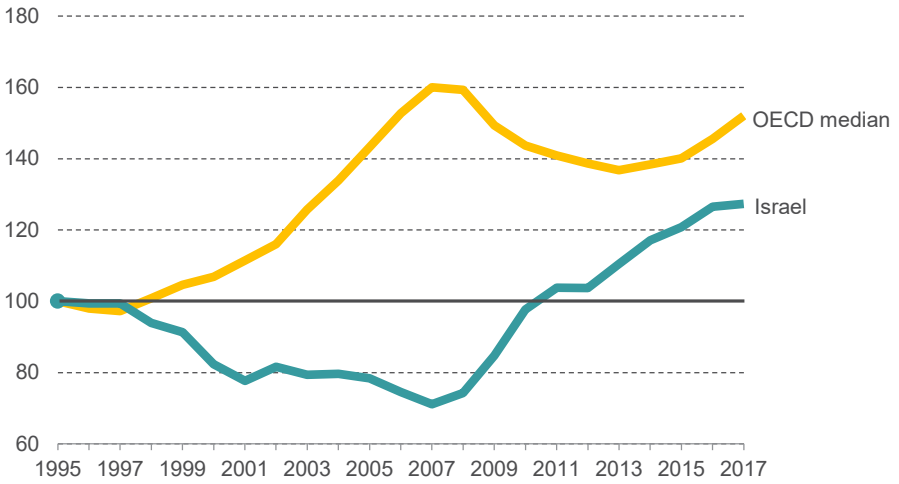
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Appendix

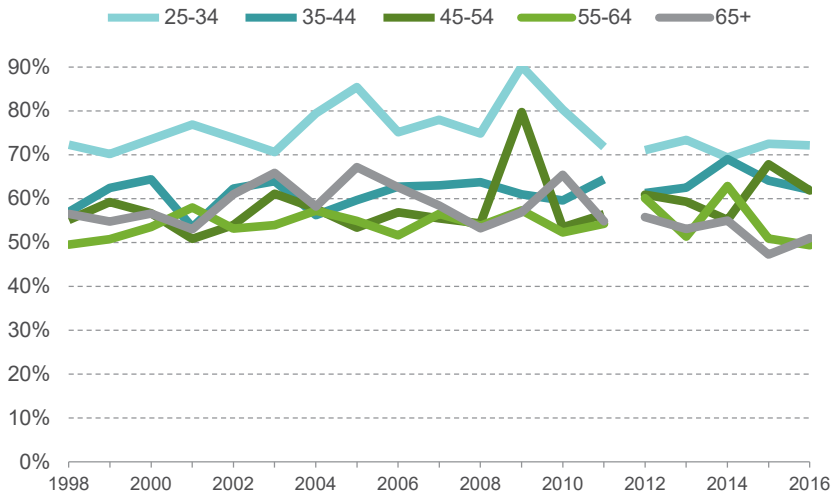
Appendix Figure 1. Ratio between housing prices and average annual wage

Index year: 1995 = 100



Source: Kyrill Shraberman, Taub Center | Data: OECD

Appendix Figure 2. Ratio of disposable income of unmarried individuals to married individuals



Note: In 2012, the CBS survey methodology changed, resulting in a break in the data series.

Source: Kyrill Shraberman, Taub Center | Data: CBS, *Household Expenditure Survey*