

Consumption response by Israeli renters to changing home prices

A micro data study, 2002-2015

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1 INTRODUCTION

Research question: In the period 2009 to 2015, can reduced growth in spending by Israeli renters be accounted for by housing wealth effect?

Prior to the 2008 Financial Crisis, the real estate market in Israel was somewhat range-bound (Delmendo 2016). Following a local economic slow down in Israel in the early 2000s (Atkinson 2015), the price of an average home had stayed in the area of six to eight-hundred thousand new Israeli shekels (NIS) (Delmendo 2016). Since 2008, prices have risen rapidly, surpassing one point four million NIS on average at the present (Delmendo 2016). In this study, I test an economic theory that suggests a differential response by homeowners and renters to unexpected changes in housing prices.

The housing wealth effect suggests that homes are an asset representing a store of wealth for their owners. Changes in wealth have effects on current and future spending. *Homeowners* will respond to an increase in the value of their home by increasing their current spending. The predicted response by *renters* is a decrease in current spending as they attempt to save for a now more expensive future home purchase. In the proposed study I employ multiple regression to construct a model of household consumption on the basis of observed consumption, income, home prices and stock market performance.¹ In this way I calculate the amount of the observed decreased in spending by renters that can be accounted for by rising home prices.

This study is motivated by an inflection point in consumer spending by renters detected after 2009.² Before this time, spending by both home-owning and renting households were rising in tandem. After this time, homeowners continued to increase their spending at the same yearly rate, but the yearly increase in

1. Proxy variable for wealth not held in the form of an occupied dwelling.

2. See Figure 2.

renters' spending halved. When we observe that the same time period corresponds to rising home prices that would signal a need for increased saving by renting households, there is an obvious reason to look into the housing wealth effect as a causal explanation.

During the period 2004 to 2009, the annual increase in spending by both owning and renting households was about four and a half percent. From 2009 to 2014, spending by home-owning households continued on the same course, but spending by renters began to grow by only two percent a year. A preliminary investigation shows that the timing of this decrease is coincident with the start of a dramatic price increase in the Israeli housing market. It remains for the full investigation to show the precise mathematical relationship during these years between home prices and consumption by renters.

Contribution to the literature: Research into the housing market is an interesting lens through which to view the current Israeli milieu. Soaring prices bestow paper gains on many ordinary homeowners. But it also makes home-ownership increasingly difficult for those late to the game.

Dissatisfaction with the housing situation was a major contributor to massive street demonstrations in the summer of 2011. These protests and the governmental response to them have been analyzed elsewhere (Schipper 2016; Alfasi and Fenster 2014; Alimi 2012; Grinberg 2013; Marom 2013; Schipper 2015a, 2015b). There have also been economic analyses which attempt to locate causes for the price increases, or advocate for policies predicted to lower price.³ Not all analysts see the bull market in Israel real estate as a problem in need of a solution, but may instead offer advice on how to profit from the situation.⁴ Housing prices are even blamed for the hundreds of thousands of Israelis who have forsaken the country to live abroad (Goldberg 2016). The contribution of this research to our understanding of Israeli society lies in its use of the housing wealth effect to quantify the effect of rising housing prices on decreases in consumer spending by renters.

The remainder of this proposal is divided as follows: section two is a literature review covering the housing wealth effect, the Israeli economy and the Israeli housing market. Section three discusses the methodology used in the study. Section four gives an overview of the data sources utilized. Section five offers a discussion of the preliminary and expected findings. Concluding remarks summarize the project and detail the importance of its contribution to the literature.

3. See section 2.2 Housing Market.

4. e.g. <http://www.globalpropertyguide.com/Middle-East/Israel>

2 LITERATURE REVIEW:

2.1 Economy

There are two facts about Israel's economy which are salient to our discussion of its housing market and consumption patterns. First, that Israel is an interest rate taker, i.e. its central bank, the Bank of Israel, has limited power to set its own interest rates, but instead receives these from the international capital markets. Second, that the government has limited budgetary scope for additional welfare largess.

The Israeli economy has undergone a transition from one of centralized-planning to one with a greater utilization of market-based approaches. The start of this transformation can be dated to mid-1985, when a National Unity Government introduced a successful reform program to end hyperinflation which threatened to cripple the economy. These reforms included the shrinking of the government budget and budget deficit, and a move toward a floating currency (Aharoni 1998). Post-reforms, domestic interest rates are largely set by the foreign-exchange market.

Since a smaller government budget deficit was seen as an essential component of the successful reforms of 1985, there was reluctance to increase the deficit lest hyper-inflation return. The 2010 New Fiscal Rule codified this restriction against growing the budget deficit (*New Fiscal Rule* 2010; Bova et al. 2015). This means that increases in government spending on social programs, must be matched by cuts elsewhere, or by new tax revenue. The Rule does not regulate tax breaks in the same way that it does spending increases. I now examine how the current housing situation is effected by the budgetary constraint and the interest rate environment.

During the 2008 global financial crisis there was a world-wide exit from equities markets and a flight-to-safety into government debt. Israel experienced large capital inflows beginning at this time (Colombo 2014). During 2008 to 2014, purchases of Israeli government debt pushed down local interest rates, including mortgage rates. Concerned that an appreciating shekel would harm exports, the Bank of Israel increased the M1 money supply⁵ by 150% over the same period. Increased demand due to low interest rates and rising money supply since the crisis are the main causes of surging property values in Israel (Colombo 2014; Nagar and Segal 2014; Swirski and Hoffmann-Dishon 2016).

The limitations imposed by the New Fiscal Rule effect the housing market in the following ways. It may partially explain why one recent program to be implemented was an exemption from the 17% VAT on new

5. Physical money (paper and coin) + demand deposits + negotiable order of withdrawal accounts.

homes for first-time buyers, a tax-cut is not restricted in the same way as a new spending program. In the absence of supply increases, this policy increases demand for homes and supports high prices. Another new program, Mechir Lamistaken, or buyer's price, offers land discounts to developers of high-density housing based on competitive bidding for the lowest price per square meter to the buyer (Gallant 2016). This program might have the effect of reducing supply, as builders are afraid to undertake projects outside the program. It is another example of a revenue loss to the government (the land is sold at up to an 80% discount) that is allowable under the New Fiscal Rule, where new expenditures would not be. The third effect of the New Fiscal Rule is an inability by the government to increase spending on public housing.

These twin restrictions on growth in deficit spending, the legal ban encoded in the New Fiscal Rule, and the underlying inhibition stemming from the fear of a return to high inflation somewhat the choice of policy tools used to tackle the housing problem in the last five years. Having established the historical roots for the current conservative fiscal policy, loose monetary policy and their effects on the housing market, I turn now to a closer examination of the Israeli housing market.

2.2 Housing Market

The Israeli housing market can be described briefly as follows: all but a small minority of dwelling units are in multi-family structures (Borukhov, Ginsberg, and Werczberger 1978) and most households (70%) own the apartments in which they live. Of non-owners, 87% are renters, and the rest live in apartments owned by others but don't pay rent (Benchetrit and Czamanski 2009). Currently only around 7% of households, or 28% of renting households live in public housing (Bosso 2014; Carmon 2001). There are few private apartment complexes, and most renters live in an apartment whose private owner has only one or two rental apartments. At the margin, the lack of a long-term rental market is one factor pushing renters into market and increasing demand for housing (Swirski and Hoffmann-Dishon 2016).

The housing market in Israel reaches a market-clearing price at the point where its supply curve crosses its demand curve. This market-clearing price has experienced a rapid appreciation since 2008 and has been a source of distress for those who haven't yet bought into the market. As stated earlier, the most important factor in recent price increases is demand related, however, factors affecting supply are not unimportant. The most important factor to consider about the housing supply curve is the high amount of land that is held by the government. 93% of the land in Israel is state-owned. The Israel Land Authority directs the timing and location of a large share of new housing construction and influences its cost by controlling

the release of lands (Hananel 2013). A second important factor to consider is the planning authority held by local governments. Because the cost of services provide by municipalities to poor residents of high-density housing can be larger than the taxes received, localities can have an incentive to delay or refuse to provide permits to these kinds of projects, preferring instead to encourage the building of more expensive projects aimed at “stronger populations” (Sherman and Ben-Lulu 2014). The central government then must provide incentives to a city to secure their agreement for the building of affordable housing for low-income populations. This combines with market incentives to builders (who have a healthier profit margin on expensive apartments than cheap ones) to produce a market which is skewed toward serving families with higher housing budgets (Swirski and Hoffmann-Dishon 2015).

Housing policy, and the public construction of low-cost housing has been used as a tool to achieve three large priorities outlined by the first Prime Minister of Israel, security, absorption and a decent standard of living. Here I look at the legacy of public housing as a tool for immigrant absorption. Half of all the homes built in the years 1950 to 1999 were publicly constructed. This aided the absorption of large waves of immigrants through the early 1960s. This housing was later sold to its residents at subsidized prices. Public construction of housing was greatly curtailed with the shrinking of the government sector after 1985, with public construction accounting for only 20% of the homes built in 1985-1989, and only 1.7% of the government budget.⁶

In preparation for an anticipated large immigration from Ethiopia and the former Soviet Union, housing construction was again made a national priority. In 1990-1994 housing completions almost doubled from the previous five-year period. 50% of construction during this time was government-initiated, which accounted 11.1% of the budget. However, the increased supply did not keep pace with the rate of immigration. The immigrants received loans at subsidized interest rates and created increased demand in the market which pushed up housing prices throughout the 1990s (Carmon 2001). The an increase in the availability of public housing would decrease demand in the market, and reduce prices. Public housing has been sold off in recent years and not replaced. It is currently at a record low level with a long waiting list (Bosso 2014).

The market is currently characterized by pent-up demand due to years of low-housing starts. Equity market volatility, a new capital gains tax and an income tax exemption for some rental income create incentives to invest in rental property. Property investors compete with young families for the limited

6. Government budget excluding debt repayment.

supply of new apartments and price them out of the market (Gruber 2014). The home ownership rate is falling as people stay with parents and rent for longer periods before they can afford to buy (Swirski and Hoffmann-Dishon 2016). Prices in the housing market vary significantly with geographic factors.

2.3 Housing Wealth Effect

The life-cycle hypothesis is a model that describes current consumption by a household. Under its simplest assumptions, there is no bequest motive, and households attempt stabilize spending throughout their lifetime. Stable consumption is achieved during periods with reduced current income⁷ by spending accumulated wealth (Gourinchas and Parker 2002). Wealth can be divided into housing wealth and non-housing wealth. Consumption in any period is made up of some portion of housing wealth, some portion of non-housing wealth and some portion of income. What isn't spent in the current period is saved for future periods.

$$C = \alpha W_H + \beta W_{NH} + \gamma Y \quad (1)$$

The main predictor of current consumption is current income. In this study I focus on the smaller effect of changes in housing wealth on changes in consumption. Specifically, I focus on the effect of changes in home prices on the consumption of renters who don't even own homes.

Households react to unexpected changes in wealth by making adjustments to their spending. If they suddenly have more wealth, they increase spending so that this wealth can drop to zero over their estimated remaining lifespan. A reduction in wealth produces the opposite effect, a reduction in spending. For renters, unexpected changes in home prices change the present value of their expected future housing liability. Renters will react to unexpected changes in housing prices by increasing their consumption when housing prices fall, and decreasing consumption when housing prices rise (Campbell and Cocco 2007; Carroll 2004; Calomiris, Longhofer, and Miles 2009). Housing is the dominant store of wealth for households. A change in home prices can cause a significant change in household wealth (Gan 2010). The housing wealth effect explains a link between changes in this wealth and consumer spending.

Non-housing wealth is one of the three predictor variables in equation one. Financial or stock market wealth has been used as a proxy for all non-housing wealth. Dynan and Maki had access to a survey question about the value of the household's stock portfolio (Dynan and Maki 2001). Where information

7. Like retirement.

on non-housing wealth is unavailable, it can be estimated by employing a variable such as a stock index. A cross-country comparison on the wealth effect in several OECD countries used IMF data on stock performance in the various countries (Ludwig and Sløk 2004). Previous calculations of the housing wealth effect in Israel have used the Tel-Aviv 100 index for this purpose (Kahn and Ribon 2013).

3 DATA

This study combines two different sources of data available from the Israeli Central Bureau of Statistics. One of these is freely available and redistributable, the other is not. Information on regional home prices is freely available from the CBS website, where it is released as a supplement to the calculation of the consumer price index (CBS 2002-2016). This gives the average prices for homes of differing numbers of rooms, 1.5-2, 2.5-3, 3.5-4 and 4.5-5, and 5+ rooms in nine Residential Areas: Jerusalem, Tel Aviv, Haifa, Gush Dan, Center, South, Sharon, North and Qrayot Haifa.

Summary findings from the household expenditure survey (**HES**) are also freely available, but the complete data sets are a paid product. These data sets are however available for free to academic users through the Israeli Social Sciences Data Center (**ISSDC**) at the Hebrew University of Jerusalem. The full data sets for the HES from 2002 to 2015 were obtained from the ISSDC, but with a non-redistribution clause. HES data sets are distributed as a folder in a zip file. The folder contains the same data in four different formats, for use with statistical packages STATA, SAS, SPSS, or R.

This project is carried out using R due to the facility with which it can be employed as a means of implementing reproducible research (Peng 2014). The code used for this project begins by downloading home price data from its permalink addresses on the CBS servers. Analysis of home prices in my project is thus fully self-documenting and reproducible from the source data. All of my methods can be analyzed and replicated. The code dealing with the HES begins by importing this data into R. This section is reproducible if one obtains the source files from the CBS or the ISSDC.

The data is further divided into four files: “general household details”, “individual”, “household incomes and expenditures” and a “diary”. My calculations do not require the individual file, which provides details about which member of the household is earning or spending money, or the diary file which provides data about the size of packages for purchase goods, and the type of store at which they are purchased. Additional text files provide notes on methodology and the meanings of variable names. The number

and ordering of questions is inconsistent from year to year. The code book text file is consulted to find the questions and columns which are to be extracted from each year. In my current model I collect data from two of the four files for each year. From the general household details file I extract the columns for home ownership, the number of rooms in the house and the region in which the home is located. From the household incomes and expenditures file I extract the total consumption expense, the rent paid and imputed rent. From these I calculate the value for non-housing consumption. I then combine these data for use in my analysis, for example I need a list of the rent paid in Jerusalem for all the years and the total income of owners in each of the regions.

4 METHODOLOGY

The HES does not survey the same households year after year. So how can I test for changes in household consumption if each household only shows up once in the data set? A conventional pseudo-panel estimation approach is used. Survey respondents are aggregated into homogeneous cells on the basis of certain characteristics. These cells are then treated as though they were panel observations. Households are divided into cells on the basis of their geographical location, the age of the head of household and their status as owners or renters of the the dwelling in which they reside. These characteristics are chosen due to the varying home prices and changes in home prices between the regions during the period of study and the expected differences in the wealth effect according to age⁸ and ownership class.

The relationship between housing wealth and household spending will be determined as follows. For each year I take the change in average home prices for each of the forty-five area-size combinations, and subtract the expected change in home prices to determine the unexpected change in home prices. Each of these inputs is applied to four ownership-age groups, renters under forty, renters over forty, owners under forty and owners over forty. The response variable, the one-period change in consumption for each of these one hundred and eighty cells is then taken from the HES and generalized linear regression is used to determine the changes in consumption that are predicted by changes in housing prices.

The measure of consumption used, non-housing consumption (**NHC**), is total consumption less spending on housing services. This is total consumption minus rental expenditure for renting households and total consumption minus imputed rent for homeowners. Imputed rent is equal to the amount of income

8. Older homeowners are predicted to spend gains more quickly.

homeowners could have received for renting their home in the market. It is computed by the CBS on the basis of average rents for comparable homes in the area and included in the HES. I follow the methodology used for the calculation of NHC by Kahn and Ribon (2013) to enable comparability between my results and this earlier study.

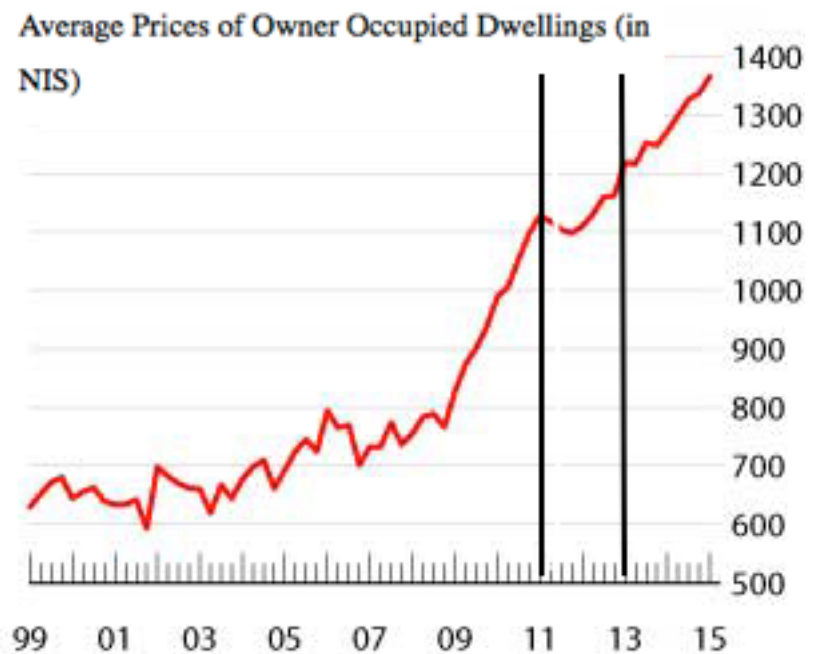
Income for each of the cells is given by the mean for the cell population of the survey question “Total Income.” This leaves the non-housing wealth component of equation one as yet un-calculated. There is no survey question that directly indicates this variable. I apply a socio-economic indicator as a predictor of the amount of non-housing wealth held by households, and a lagged one-period change in the Tel-Aviv 100 as in Kahn and Ribon (Kahn and Ribon 2013) for the performance of these assets.

5 DISCUSSION

5.1 Preliminary Findings

The preliminary findings presented in this section have been calculated using the ten-year period 2004 to 2014, rather than the entire period of study 2002-2015. In my actual study I will be using home prices broken down by region and home size determined by number of rooms. For this preliminary treatment I have not divided the data by region. In lieu of home prices I employ a national home price index (CBS 2016). and show a yearly mean of the monthly index values. I subset the households into owners and renters and graph the yearly means of their non-housing consumption.

Figure 1 is a graph of the average price of an owner-occupied home during the period 1999 to 2015. This captures the price stability in the early 2000s, the moderate growth from 2005 to 2008 and the explosive growth after 2008.



Source: Central Bureau of Statistics

Figure 1: (Delmendo 2016)

The graph in Figure 1 begins after the price appreciation of the 1990s caused by the rapid absorption of an immigration equal to twenty percent of the Israeli population prior to its arrival. This graph, representing only owner-occupied residences, omits price changes in the value of homes held as rental property. The time frame for Figure 1 (1999-2015) is twice as long as the period of study (2002-2015). It frames our study and shows that the Israeli housing market has not always been as hot as in the past few years. It is important for our study to choose the correct benchmark period. Should it be one of flat housing prices (1999-2005), moderate appreciation (2005-2008), explosive growth (2008-present), or some kind of moving average? This will directly impact the amount of the change in housing price that is viewed as unexpected. For example, a homeowner who expects their asset to appreciate at 5% a year, but instead has a 7% appreciation in a given year, will be faced with an unexpected windfall of 2% of the price of their homes. This will have different effects on my model than if I assume that the entire 7% change was unexpected. In practice, I will model the data in all four ways and present the findings for comparison.

Table 1: Changes in renters' non-housing consumption and home prices

year	renters' NHC	change	home price index	change
2004	6164.658	-	183.9917	-0.7%
2005	6468.814	4.93%	184.3917	0.2%
2006	7010.354	8.37%	185.2333	0.5%
2007	7239.748	3.27%	182.3583	-1.6%
2008	7529.259	4.00%	196.1667	7.6%
2009	7865.194	4.46%	223.025	13.7%
2010	7998.755	1.70%	262.275	17.6%
2011	8065.441	0.83%	289.8667	10.5%
2012	8582.79	6.41%	299.25	3.2%
2013	8729.532	1.71%	326.4083	9.1%
2014	8632.841	-1.11%	347.15	6.4%

Table 1 captures the price changes in both owner-occupied and investment property in column four's home price index and in column five's yearly changes to this index. As shown in Table 1, the first shock in home prices comes 2008, when the index jumps by 7.6% from its 2007 value. Prior to that are shown four years of stable home prices. At a one-period lag, this does not have an appreciable effect on renters' spending, which continues its normal increase of around four and a half percent between 2008 and 2009. As home prices, represented by the index continue to rise, by 13.7% in 2009 and 17.6% in 2010, growth in spending by renters begins to fall behind growth in spending by homeowners.

Figure 2 illustrates the relative decline in renters' spending that motivates this inquiry. Prior to 2009,

NHC by both owners and renters each had an annual rate of increase of around four and a half percent.

After 2009, while spending by owners (green line) continued to increase at the same rate, spending by renters (purple line) grew by only two and a half percent a year during the five-year period 2009 to 2014. A shaded region, covering the area between actual consumption by renters and a theoretical path predicted by its previous growth rate of 4.5%, represents an estimation of the lost consumption by renters due to rising home

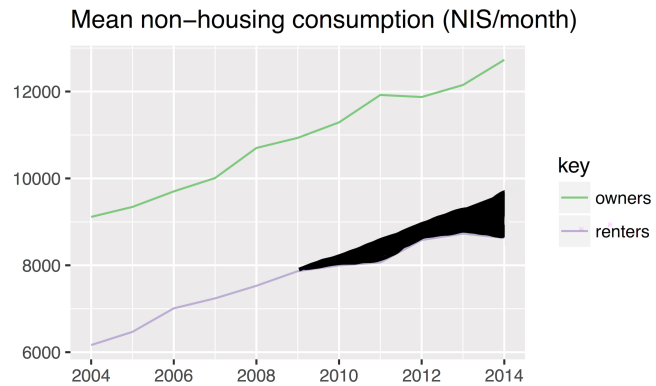


Figure 2: (calculated from HES 2004-2014)

prices, and how much is attributable to changes in the income and non-housing wealth held by the renters surveyed. This preliminary investigation has not yet examined the variables of income and non-housing wealth. It remains for the proposed study to expose the actual relationship between home prices and consumption in Israel by a calculation that includes these missing variables.

5.2 Expected Findings

Inline with earlier calculations from Israeli data, I expect to find an overall average consumption elasticity with respect to housing wealth of around 0.18 for home owners, and -0.13 for renters (Kahn and Ribon 2013). A study of 14 of the 34 OECD countries (not including Israel) found a range of 0.11 to 0.17, placing Israel just above the top end of this range. This means that when home prices go up, Israeli homeowners spend 18% of their paper-gains in the first year. Let's use some of the most recent numbers for a concrete example. For the year ending in Q1-2016 the Gush Dan region had the largest average home price appreciation, 11.7% (Delmendo 2016). A moderately priced \$358,000 home in Gush Dan on March 1, 2015 might have appreciated to a \$400,000 USD home by March 1, 2016. This home owner would have contributed around an additional \$7200 ($\$42k * 18\%$) to GDP over the year. Let's look at implications for the economy should housing prices fall in Israel under two different assumptions. Some evidence shows that increased consumption by home owners due to rising prices is not matched by equally large decreases in consumption as prices fall (Case 2005). This means that my calculations of the large gains to GDP due to increases in

consumption by home owners during periods of rising home prices, should not be blindly applied as cautionary evidence warning against policies which would result in increased construction, increased housing supply, falling housing prices and falling wealth for current owners.

6 CONCLUSION

This proposed study can aid in an understanding of 21st Century Israeli society by an examination of a key portion of its economy, the housing market. The housing wealth effect provides a key link that can connect observed increases in home prices and decreases in consumer spending by renters. Consumer spending is both an important factor in and leading indicator of a modern capitalist economy, Through the use of linear regression on the basis of pseudo-panels composed of young and old, owners and renters in the geographic regions for which the most granular data is available on price changes in the housing market, I can estimate a model that shows the effect of changes in home prices on consumer spending and determine if reduced spending by renters since 2009 can be accounted for by the housing wealth effect.

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