Borrowers Responses to Protective Mortgage Regulation

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Abstract

This research examines the seminal heuristic of anchoring and adjustment and its effects on the mortgage market. In recent years, the Israeli central bank has imposed protective regulation on mortgage loans in order to protect the banking system from systemic risk associated with highly leveraged homeowners. Using a unique and detailed dataset on mortgage loans from 2011-2016, we empirically estimate the impact of these restrictions on household choices and the housing market. In particular, we examine borrowers' response to the three following regulatory restrictions: a payment-to-income (PTI) limit of 50%, a 2/3 limit on the adjustable rate component, and a 30-year maturity limit. We found that overall, the regulatory provisions tested served as an anchor to the borrowers. The most unexpected result we obtained was an increase in mortgage loans maturity following the imposed maturity limit. We concluded that the anchoring and adjustment heuristic may have influenced households' decision in such a way that they perceived the maximum maturity limit as a relevant *average* maturity anchor and consequentially increased mortgage maturity.

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1. Introduction

In Israel, as in the rest of the economically developed world, housing remains the most significant asset in most households' portfolios. That is why a rapid change in the prices of residential real estate have severe repercussions for household wellbeing, for the stability of the financial system, and for decisions made by policymakers and regulators. Understanding the effectiveness of actions taken by regulators and policymakers in times of rapid price increases can shed light on their effectiveness in reducing the escalating aggregated financial risk for homeowners on one hand and in shaping household behavior on the other.

The steep rise in residential real estate prices that occurred in Israel from 2007-2016 – more than 100% in real terms – created a complicated socioeconomic problem that engulfed many Israeli families, mostly young households and low- to mid-income earners. Years of slow and inadequate housing starts in the early 2000s, a steep drop in real interest rates following the 2008 financial crisis, and the fact that the Israeli tax system gives investment in real estate an edge over financial assets all combined to create a demand surge. In addition, due to rigid supply-side limitations, the reaction to the rising demand was slow, creating a bottleneck of new homes on which a rising number of investors competed with young households and/or "housing upgraders". The result was a growing number of young households who could not afford a home.

The rapid rise in prices also created a potential systemic risk to the local financial system, which financed the majority of mortgages. As a precautionary measure, and in order to strengthen the resilience of the financial system in the case of shocks in the real estate sector, the Israeli Supervisor of Banks imposed a number of restrictions, regarded as macro prudential tools (MPTs), between 2010 and 2014. The tools were also designed to moderate the impact on real economic activities when financial risks to the sector would be realized.

Applying a combination of several MPTs can have various consequences for the behavior of the average mortgage lender and borrower, and for the stability of the entire financial system. One of the most popular MPTs in the area of mortgages is imposing limitations on the loan-to-value (LTV) ratio. Aggregate cross-country studies find that LTV limits are effective in moderating the increase in house prices, thereby reducing the risks and consequences of bubbles in real estate markets (IMF 2011).

The literature discussing MPTs focuses on their effects on the stability of the financial system as a whole, mostly from the point of view of regulators and financial institutions,[1] rather than on behavior of the individual mortgage borrower. As such, some of the studies find that during downturns in the residential real estate market, LTV limits lower bank losses (Krznar and Morsink 2014; Lim et al. 2011). Thus, further research is needed on the effectiveness of such constraints from the borrowers' perspective.[2]

The IMF (2014) used microdata in order to analyze the real estate market and the housing prices in Israel.[3] The main MPTs tested in this report were LTV and payment-to-income (PTI) ratio limits. The main findings were that both LTV and PTI limits had partial success in lowering the number of transactions, but there was little evidence that neither had any success in lowering the growth rate of housing prices.

Tzur-Ilan (2017) estimated the effect of an LTV limit on loan terms in the Israeli mortgage market and found that this MPT had affected mortgage contract terms by increasing the interest rate, but had not affected credit rationing. The LTV limit induced borrowers to buy cheaper assets and to move farther from high demand locations to lower-graded neighborhoods.

Our paper focuses on three macro-prudential tools implemented from 2010-2014, and examines the affects they had on the typical borrower. Specifically, we concentrate on limits on the PTI ratio, limits on the maturity of new mortgage loans and limits on the ratio between the adjustable and fixed rate parts of the loan.[4] For all three macro prudential tools tested, we find borrowers decisions to have been affected by a seminal heuristic in the field of decision making under uncertainty: anchoring and adjustment.

The anchoring effect is one of the most frequently tested behavioral heuristics. Highly robust, it also has a variety of implications on financial as well as on non-financial decision-making. The heuristics was first introduced in Tversky and Kahneman's (1974) seminal paper. As they explain, decision makers make estimates by starting from an initial value that is adjusted to

[1] Mugerman, Tzur and Jacobi (2018) propose a dynamic model of bank actions in the shadow of LTV ratio regulation.
[2] For another example of testing the borrowers' decision-making in a different loan market – peer-to-peer lending – see Ayal, Bar-Haim and Ofir (2018).
[3]The micro data included in the report are based on a survey of households' plans for housing tenure and expected housing prices.
[4] See Mugerman, Ofir and Wiener (2016) for a psychological explanation of the household choice between adjustable and fixed-rate mortgages, before the regulation.

yield the final answer, but the adjustments are typically insufficient: "different starting points yield different estimates, which are biased toward the initial values" (p. 1128).

Following Tversky and Kahneman, Furnham and Boo's (2011) review indicated a significant number of studies demonstrating the prevalence of the anchoring heuristic (e.g. Plous 1989; Chapman and Johnson 1999; Epley and Gilovich 2001; Mussweiler and Englich 2005; McElroy and Dowd 2007; and more recently Hurwitz, Sade and Winter 2018). Most were conducted with university students in laboratory settings and a list of questions that the participants may not have used in natural situations. Fewer studies had the participants face real-life settings, and also showed the heuristic to be robust (e.g. Ariely et al. 2003; Englich et al. 2005; Critcher and Gilovich 2008).

Regarding to the volume of the anchoring heuristic, the literature shows that the higher the ambiguity, and the lower the familiarity, relevance or personal involvement with the problem, the stronger the anchoring effect (Van Exel et al., 2006). In addition, the literature shows that the informational relevance of values may affect decision makers' susceptibility to the anchoring effect (Hastie et al. 1999; Marti and Wissler 2000; Englich et al. 2005). More specifically, Strack and Musswieler (1997) show that anchor values similar or identical in judgmental dimensions to the estimates yield significant effect on the volume of anchoring.

The remainder of this paper proceeds as follows. Section 2 describes the Israeli housing market, followed by a description of the dataset. Next, Sections 4 and 5 present the design and results, respectively. Finally, Section 6 discusses the findings and conclusions.

2. The Israeli Housing Market

The 2008-2009 financial crisis had only a minimal effect on the Israeli economy. Due to prudent financial institutions and a low level of leverage in the household sector, the impact of the crisis on the real economy was limited in time and scope. The Bank of Israel, however, acknowledging the fact that Israel is a rather open economy highly sensitive to fluctuations in exchange rates, lowered interest rates in tandem with other major central banks across the globe. The healthy condition of the local economy, combined with the low rate environment, contributed to a trend of

rising asset prices, mainly residential real estate prices. Thus, as suggested above, from 2008 to 2016, home prices in Israel increased in each year and the total increase was more than 100 percent.

Concurrently, the volume of housing loans increased by 95 percent. This phenomenon raised concerns among banking regulators and policymakers. As widely described in the literature, housing prices and mortgages tend to move together and influence each other in a two-way feedback loop (Crowe et al. 2011). These correlated trends impose high risks on borrowing individuals, financial institutions and the financial system as a whole.

As concern grew, regulators and policymakers enacted a set of MPTs to curb the rapidly growing demands for housing and housing loans. These tools, which included restrictions and guidelines to Israel's commercial banks, were imposed by the Supervisor of Banks, a supervisory division in the Bank of Israel, mainly in order to protect the banking system itself from risks associated with excessively leveraged borrowers.

The first MPT was introduced in May 2010. The Supervisor of Banks set new guidelines requiring banks to maintain an additional allowance of at least 75 basis points for outstanding housing loans with an LTV of over 60% (the LTV was measured on the date the loan was provided). The rationale was that by making the mortgage loans more expensive to the commercial banks themselves, they would be forced to roll over the added cost to borrowers with a higher LTV.

The second MPT was introduced in October 2010. The Supervisor of Banks issued new bank guidelines concerning capital provision for loans with high LTV ratios. The exiting provision required banks to put forward capital provisions ranging from 35% to 75% (depending on the loan’s unique characteristics); the new guidelines required 100% provisions to 100%, for loans with an LTV ratio of more than 60% (on the date of issue) and where the variable interest rate proportion of the loan was 25% and higher. Note that the new guidelines did not apply to housing loans originally amounting to less than 800,000 NIS. Since the limits would force the banks to tie up more capital against these loans, borrowers wanting to take a loan with an LTV ratio higher than 60% faced higher interest rates, which made them choose loans with a lower LTV ratio. Following the second limitation imposed by the Supervisor of Banks, banks began repricing loans with LTV ratios higher than 60%.

An additional restriction was the imposition of a differential LTV limit on housing loans on November 2012. This restriction limited the LTV ratio as follows: first-time buyers would be restricted to an LTV ratio of 75%; housing upgraders (who sell their property and buy a new one at the same time) would be restricted to an LTV of 70%; and investors (who own more than one property) would be restricted to 50%. The rationale behind the restrictions was that limiting the investors' leverage would also limit the demand for housing and the price increase trend would lose some steam.

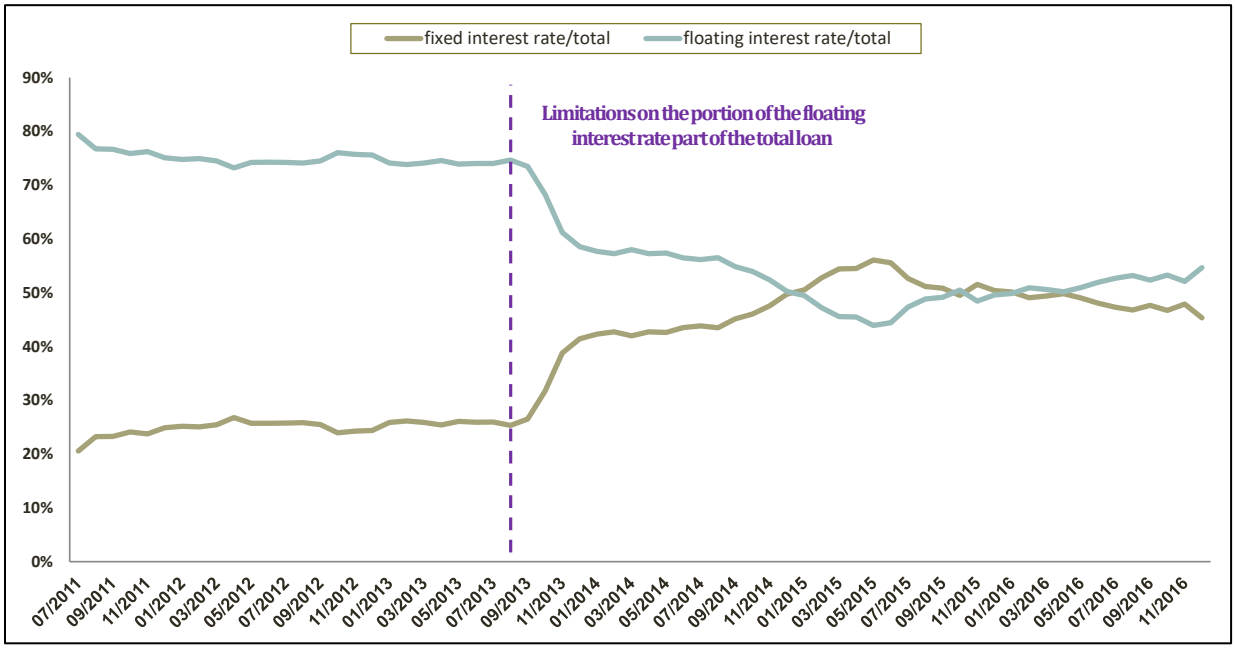
The continuous rise in home prices, forced the regulator to impose new measures in February 2013. These focused on the banking system adequacy ratios. For the purpose of calculating capital adequacy ratios, housing loans with LTV ratios of up to 45% would be weighted at 35% (unchanged from previous weighting). Housing loans with an LTV ratio of between 45% and 60% would be weighted at 50%, and loans with an LTV ratio of 60-75% would be weighted at 75%.

The last restrictions were imposed on August 2013, targeting three different aspects of new mortgage loans. First, the PTI ratio was limited to 50% of the borrower's income. Second, the portion of the loan at a floating interest rate was limited to two thirds for all loan periods. Finally, loan maturity was limited to 30 years. Our paper focuses on this set of three restrictions, examining the effectiveness of each separately.

3. The Dataset

Our main body of data is Bank of Israel data on mortgage loans between July 2011 and December 2016. The sum of mortgages granted (new and renewed) is divided into two main categories: the sum of components that carry an adjustable rate and the sum of components that carry a fixed rate. Graph 1 shows the convergence over time of these two components.

As suggested above, the distinction between the floating (adjustable) and fixed interest rate components of new/renewed mortgage loans was the target of the final restrictions issued by the regulator in August 2013: the floating rate portion of the loan was limited to two thirds of for all loan maturities.



Graph 1: New/renewed mortgages with maturity of over 25 years as a percentage of total new/renewed mortgages.

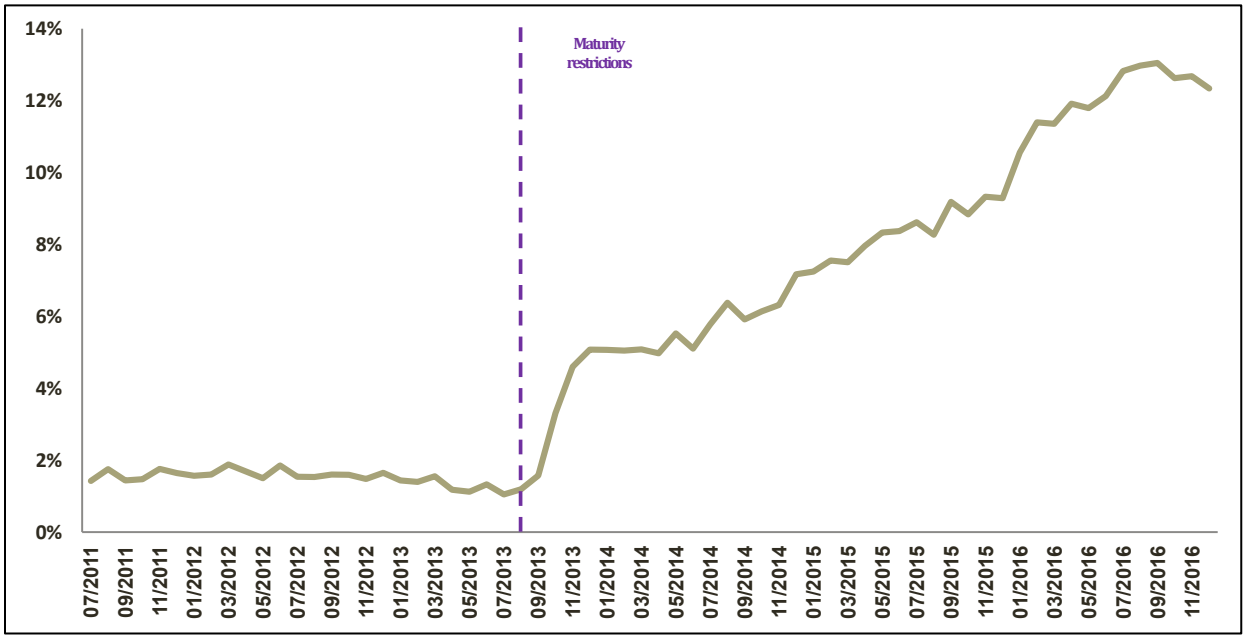
Data Construction: Maturity

The maturity subcategory is divided into eight tranches, all referring to new or renewed mortgages:

1. Up to and not including one year
2. From one to two years
3. From two to five years
4. From five to ten years
5. From ten to fifteen years
6. From fifteen to twenty years
7. From twenty to twenty-five years
8. From and including twenty five years and above

We collapsed the eight tranches into two main tranches in order to examine the effects of the August 2013 regulation: loans with maturity from and including one year to 25 years (tranches 1-

7) and loans with maturity from 25 years and above (tranche 8). Graph 2 depicts the sharp rise of the mean mortgage maturities following the regulation.



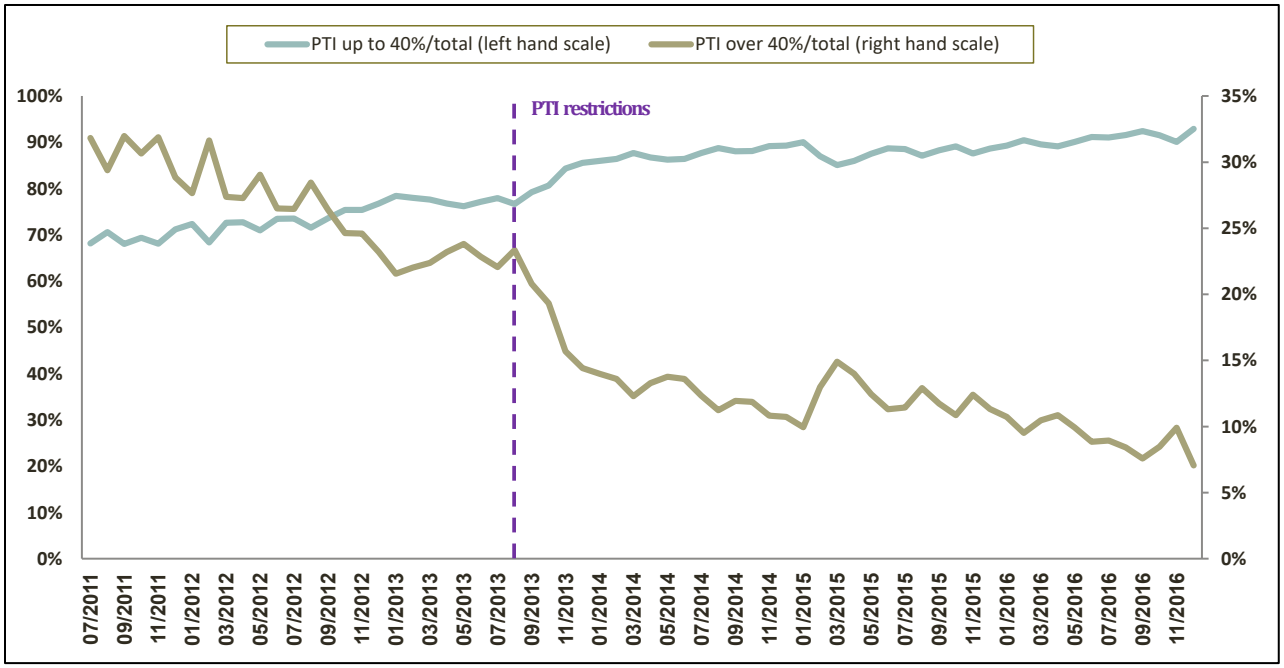
Graph 2: New/renewed mortgages with maturity of over 25 years as a percentage of total new/renewed mortgages.

Data Construction: Payment-to-Income (PTI)

The PTI subcategory is divided into five tranches, all referring to new or renewed mortgages:

1. Up to and not including 20%
2. From 20% to 30%
3. From 30% to 40%
4. From 40% and to 60%
5. From and including 90% and above

We collapsed the five tranches into two main tranches – up to (1-3) and above 40% (4-5).

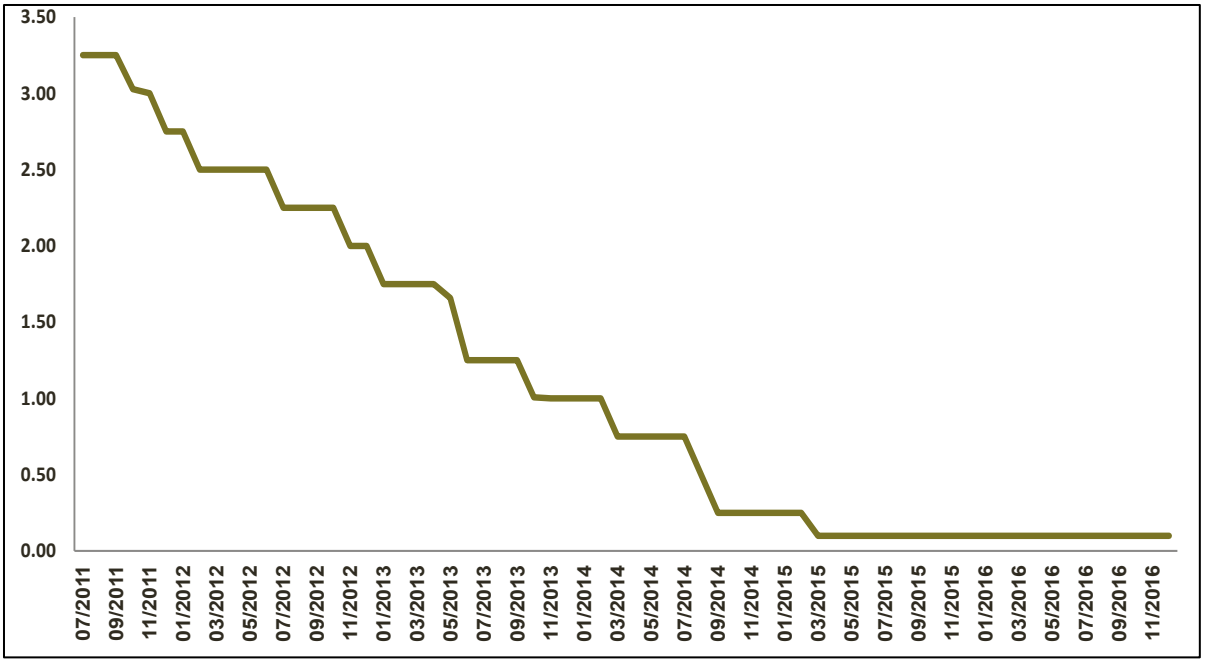


Graph 3: New/renewed mortgages divided by the 40% PTI level.

Control Variables

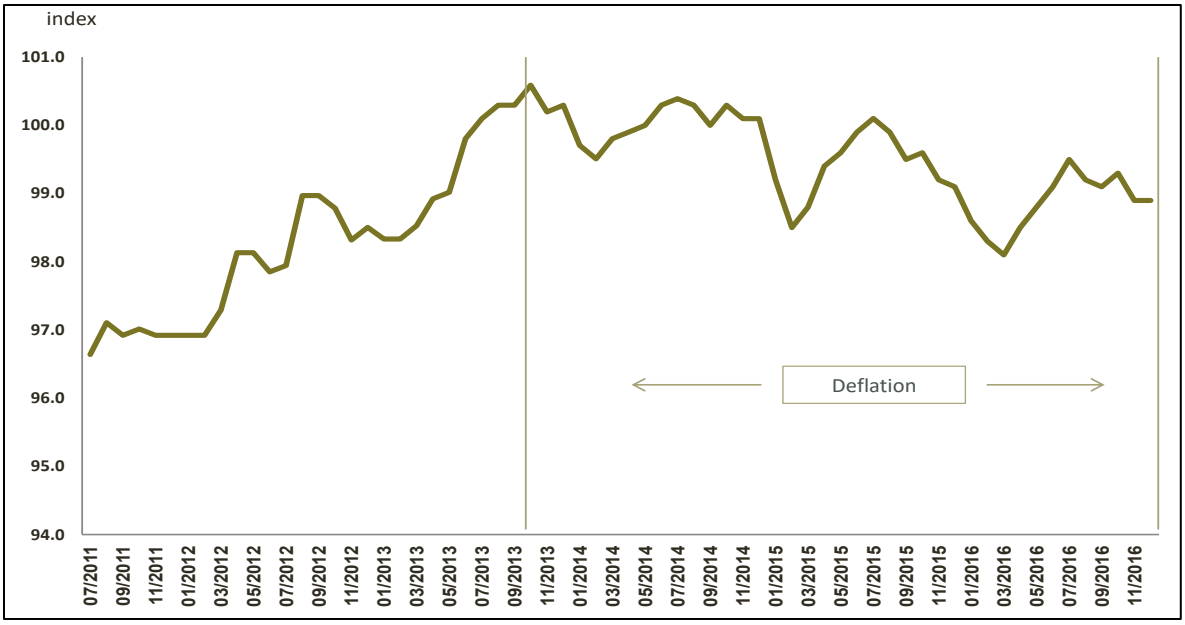
We used nine control variables related to the Israeli economy and residential real estate market.

(1) *Monthly change in the Bank of Israel's interest rate*. In line with the rest of the developed world, the Bank of Israel has progressively cut its key rates since the great financial crisis to the November 2016 and current level of 0.1% (Graph 4).



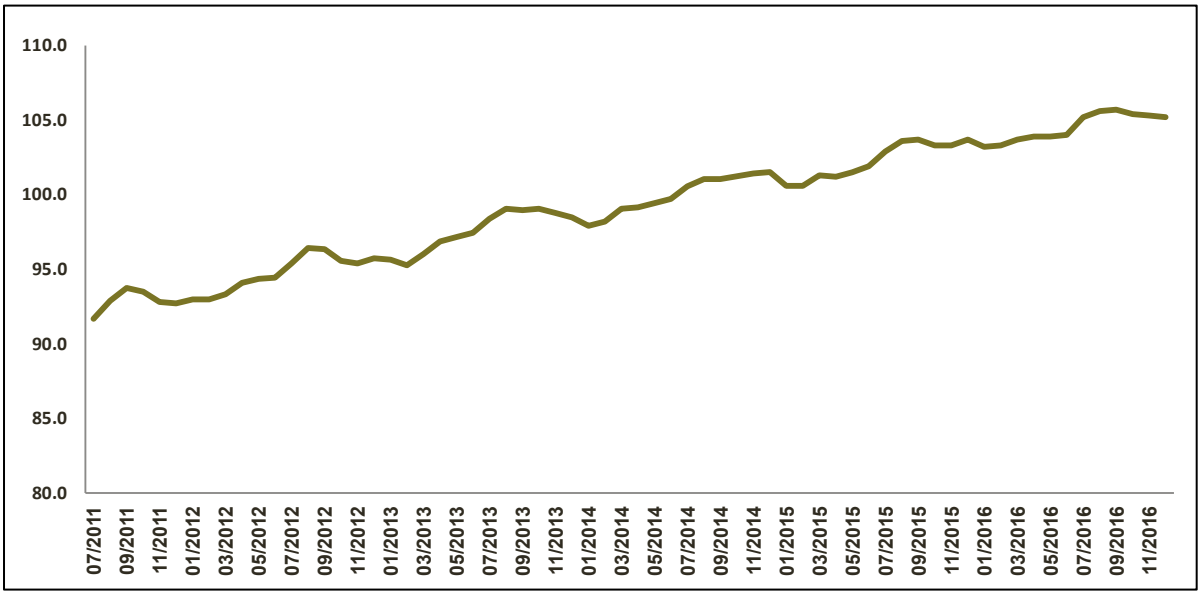
Graph 4: The Bank of Israel's key rates.

(2) *Monthly change in the consumer price index (CPI).* During the research period, Israel's CPI has declined for three years in a row (2014-2016), thus missing the Bank of Israel's annual inflation target (1%-3%). The reasons for this deflation include regulatory interventions aimed to reduce the local cost of living, the global decline in commodity prices and the rapid adoption of e-commerce. Note that the largest component of the Israeli CPI is shelter, measured rent and rent equivalent prices (24.3%, see Control Variable 3). Importantly, residential real estate prices are *not* part of the CPI.



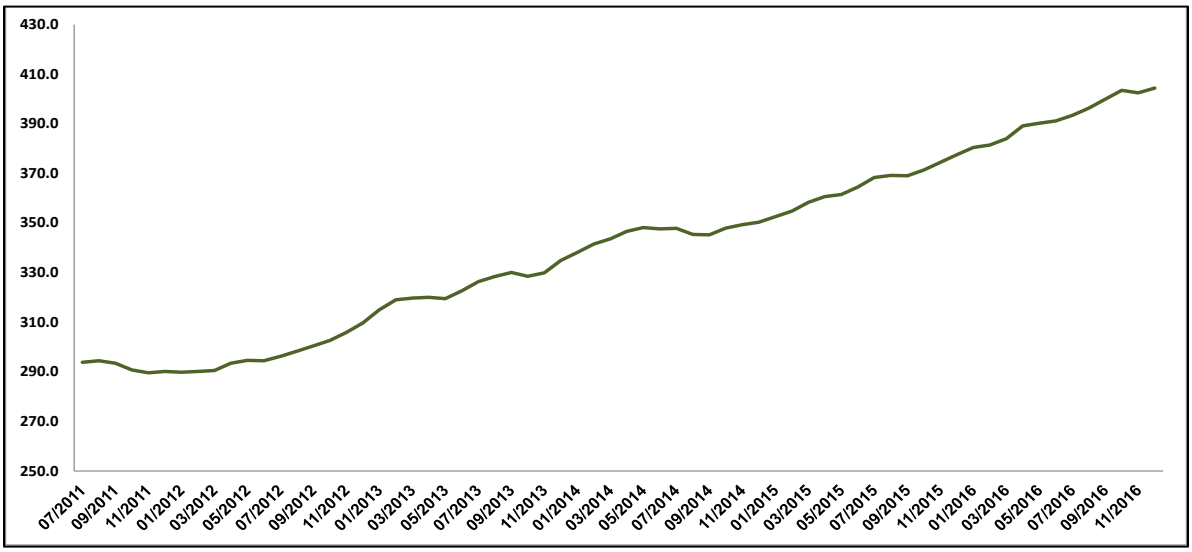
Graph 5: CPI

(3) *Monthly change in the shelter component of the CPI*, which, as mentioned above, accounts for 24.3% of the overall CPI. As stated above, the change in shelter prices as represented by the change in rent prices differs from the change in residential real estate prices. The change in shelter prices was 14.7% over the period studied.



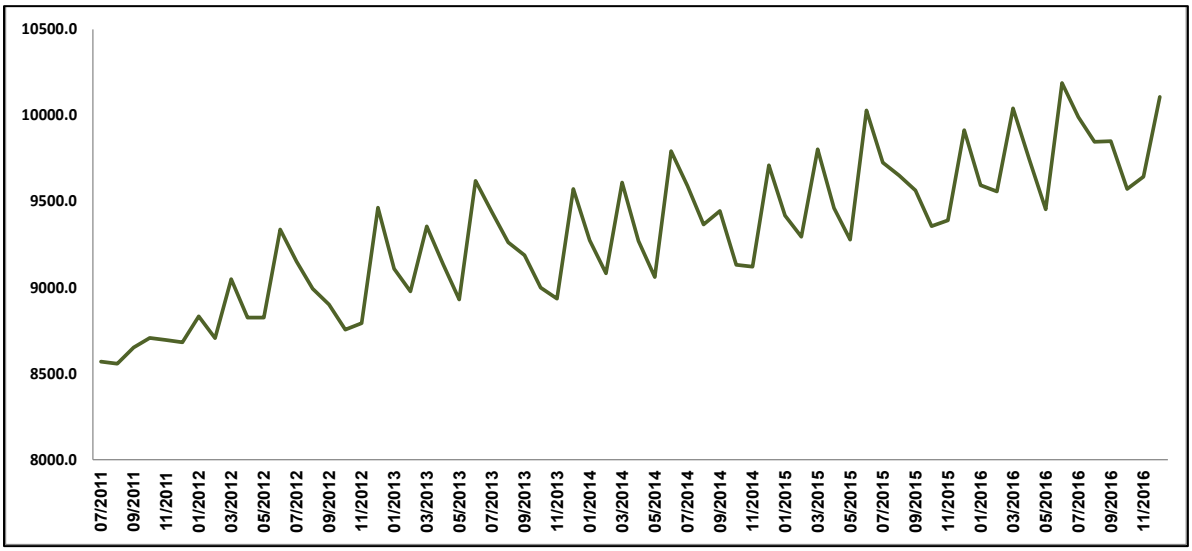
Graph 6: The shelter price index (24.3% of the general CPI)

(4) *Monthly change in residential real estate prices.* During the period examined, residential real estate prices grew by 37.6%, outpacing the change in the CPI's shelter component by 255%.



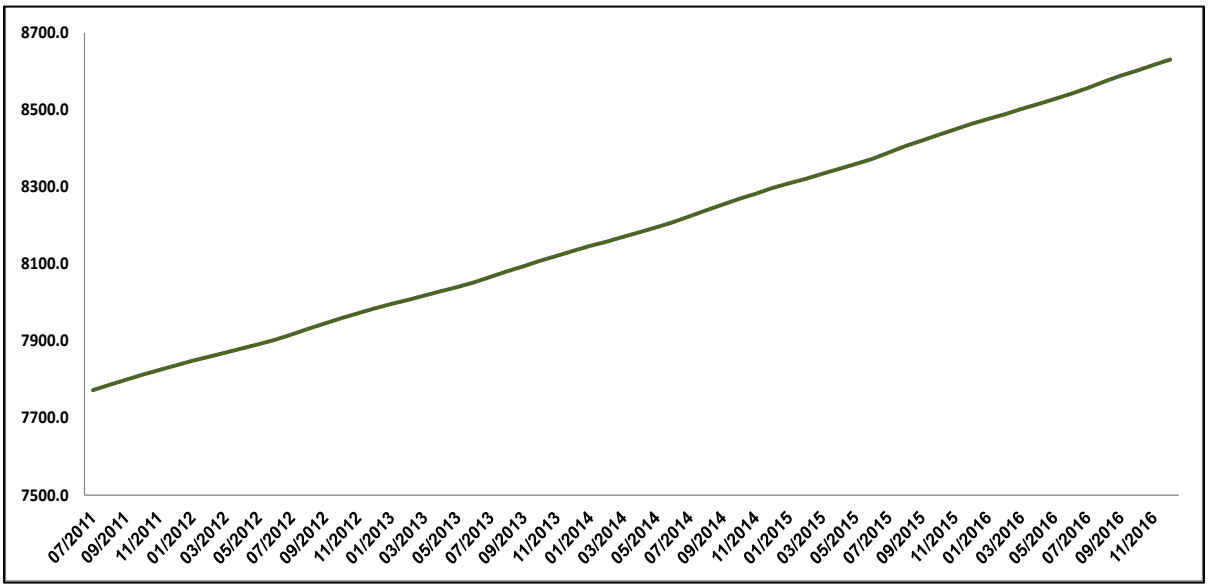
Graph 7: Residential real estate prices (index)

(5) *Monthly change in average* monthly *wage of all employees.* After a modest increase in unemployment following the financial crisis, Israel's unemployment rate fell in recent years. A tight labor market combined with the increase in minimum wage in the last decade were among the main contributors to the steady rise in the average monthly wage, as seen in Graph 8.



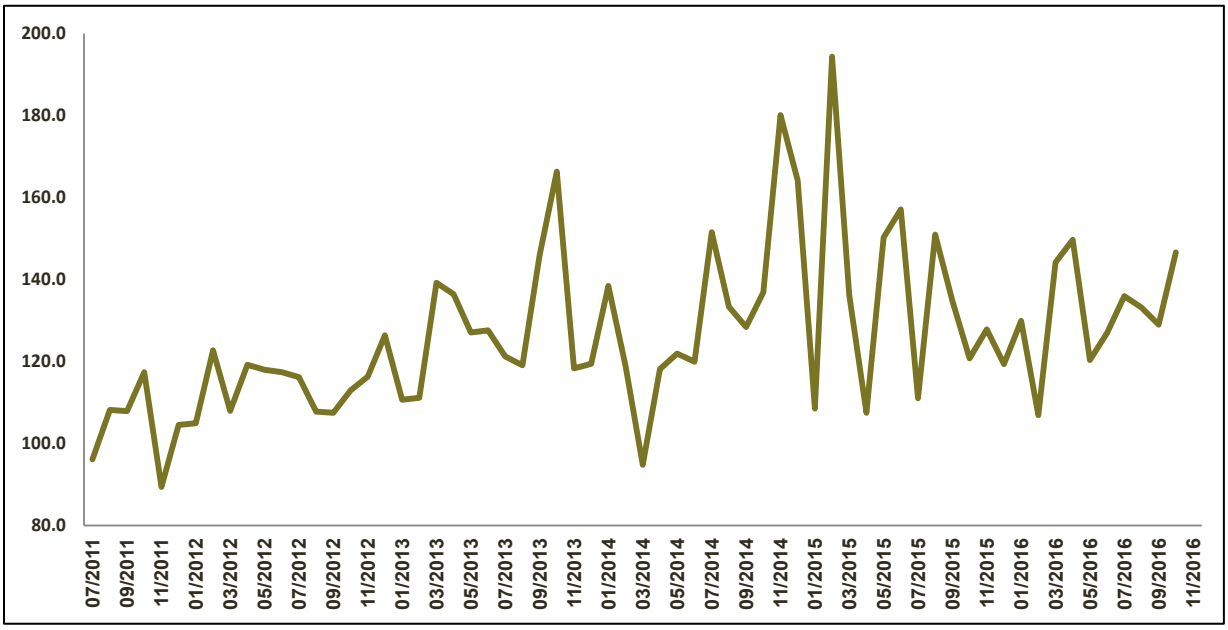
Graph 8: Average monthly wage (NIS)

(6) *Monthly change in population*. The annual growth rate of Israel's population in the examined is 1.8%; this includes Israeli citizens living in Israel and permanent residents.



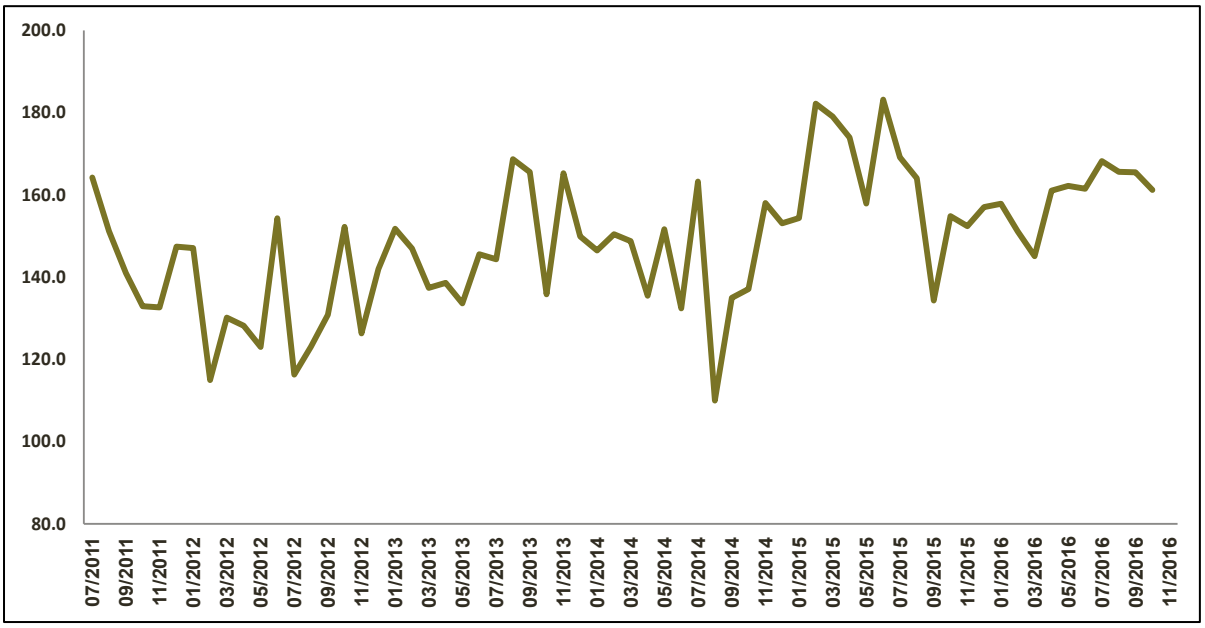
Graph 9: Population (thousands)

(7) *Monthly change in the number of finished houses.* As shown in Graph 10, despite efforts by the different policymakers to increase the supply of finished houses, their number has been erratic during the research period.



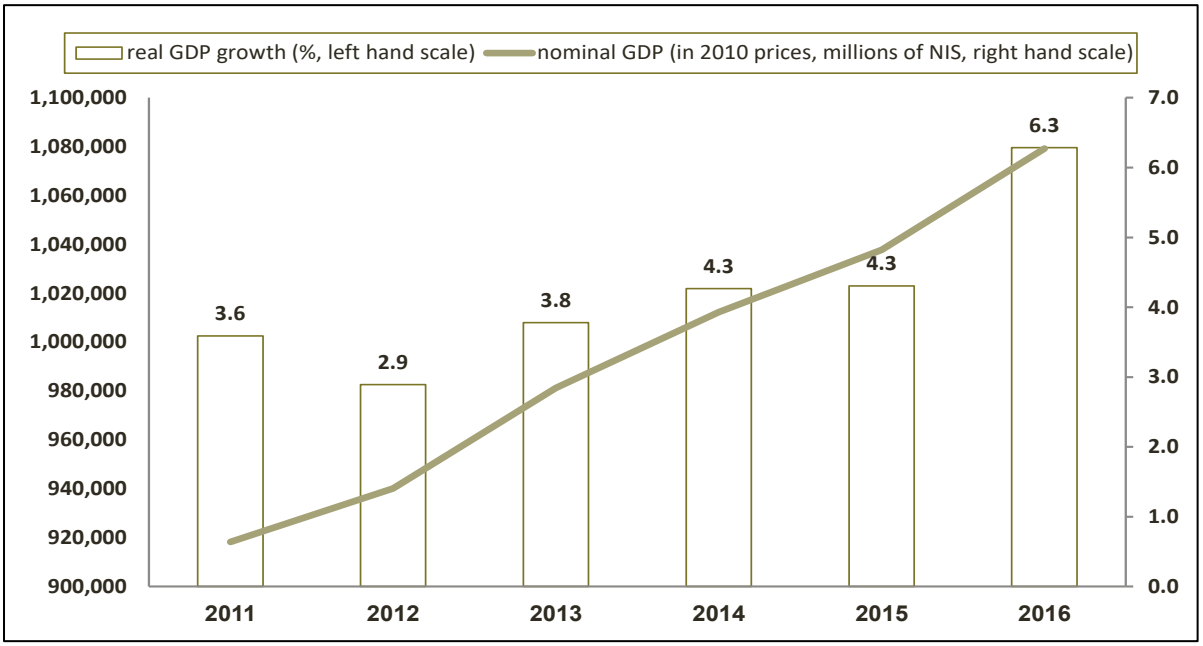
Graph 10: Finished houses index

(8) *Monthly change in number of housing starts.* As with the number of finished houses, the number of housing starts has failed to create a sizable momentum during the examined period, as shown in Graph 11.



Graph 11: Housing starts index

(9) Quarterly change in GDP



Graph 12: Nominal and real GDP growth rate

3. Design

Our identification strategy was based on the differences methodology. We employed this methodology to estimate the impact of regulatory intervention on household decisions vis-à-vis these decisions in the pre-regulation period.

As mentioned, we relied on detailed monthly data on mortgage loans (new and renewed) between July 2011 and December 2016. In addition, we collected data on the specific month in which the regulatory change was implemented (8/2013). We then used this data to construct a regulatory provision dummy variable, which equals 1 for the period following the change, effective from the month of the respective regulatory intervention, and 0 otherwise. We regressed the following proportions (n) of the total mortgages: (1) PTI ratio of over 40%; (2) adjusted interest rate mortgages; and (3) maturities of over 25 years – on the regulatory provision dummy variable as well as on various macroeconomic factors detailed below:

$$(1)\ \text{Houshold Decisions}_{n,t} = \alpha + \beta * \text{regulatory\_provision}_t + \lambda_t + \mathcal{E}_t,$$

where $\text{Houshold Decisions}_{n,t}$ denotes the specific (n) households' decisions; $\text{regulatory\_provision}_t$ is a dummy variable that equals 1 for the period following the change and 0 otherwise; λ_t is the vector of the macroeconomic variables (monthly change in the shelter component of the CPI - ln; monthly change in home prices index - ln; monthly change in the average monthly wage of all employees - ln; monthly change in the finished houses index - ln; monthly change in the housing starts index - ln; monthly change in the nominal GDP - ln; and monthly change in population size – ln).

We examined robust standard errors (clustering on the temporal dimension). Our main interest was in the estimation of β, which captures the differences effect of the regulatory provisions on mortgage choices, *above and beyond* macroeconomic changes over time.

4. Results

Table 1 below presents Equation 1's estimation results of the three regulatory interventions. Each column represents a different regression.

Table 1: Borrowers' responses to protective mortgage regulation

	PTI ratio of over 40% (1)	Adjusted interest rate (2)	Maturity of over 25 years (3)
Indicator of respective regulation	**.1407682***** **(.007927)**	**-.2199048***** **(.0136459)**	**.0666015***** **(.0070019)**
Monthly change - Interest rate Bank of Israel (ln)	.0277565 (.0331794)	-.022126 (.0571168)	.0573099** (.0293072)
Monthly change – CPI (ln)	-1.747677 (1.265049)	1.442525 (2.17772)	-.3547887 (1.11741)
Monthly change - CPI shelter (ln)	.9465333 (.9430258)	-2.008387 (1.623373)	.2364322 (.832969)
Monthly change - Housing prices index (ln)	1.840387** (.728544)	-1.542723 (1.254153)	.2331187 (.6435185)
Monthly change - Average monthly wage (ln)	.181859 (.1175657)	-.0510427 (.2023837)	.0890298 (.1038451)
Monthly change – Finished houses index (ln)	-.0171757 (.0196252)	.0161128 (.0337838)	-.0119869 (.0173348)
Monthly change - Housing starts index (ln)	.0197108 (.0327009)	-.0295401 (.0562931)	-.0091231 (.0288845)
Monthly change - GDP (ln)	1.622726* (.9166388)	.3057967 (1.577949)	.5845754 (.8096615)
Other Controls	Yes	Yes	Yes
Observations	65	65	65
R^2	0.8847	0.8522	0.6834

In parentheses: robust standard errors. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

The OLS regression model's dependent variables are as follows. In Column 1 – *proportion of PTI ratio of over 40%*, defined as new/renewed mortgages with a PTI ratio of over 40% divided by the total of new/renewed mortgages. In Column 2 – *proportion of adjusted interest rate mortgages*, defined as the new/renewed mortgages with adjusted interest rate divided by the total of new/renewed mortgages. Finally, in Column 3 – *proportion of maturities over 25 years*, defined as new/renewed mortgages with maturity of over 25 years divided by the total of new/renewed mortgages.

The independent variables are as follows: indicator of the respective regulation, equals 1 if the regulation was passed and 0 otherwise; monthly change in the key interest rate of the Bank of Israel (ln); monthly change in the CPI (ln); monthly change in the shelter component of the CPI (ln); monthly change in house prices index (ln); monthly change in the average monthly wage of all employees (ln); monthly change in the finished houses index (ln); monthly change in the housing starts index (ln); monthly change in the nominal GDP (ln); and monthly change in population (ln) – not presented.

The results show that the regulatory intervention is associated with a statistically significant change in the households' behavior.[5] This possibly suggests that households' decisions may have been influenced by the regulator-induced anchor. The economic magnitude of this change is fairly high, and ranges from 1.6 standard deviations of the depended variable in Column 3 to 1.9 SDs in Column 2. The coefficients of the other control variables are mostly insignificant.

Nevertheless, borrowers did not always shift in the indented direction. By setting *maximum* limits to PTI and mortgage maturities, the regulator created anchors that were perceived by households as suggested figures in their specific cases.

5. Conclusions

This paper examines a seminal heuristic employed in decision making under uncertainty – anchoring and adjustment – and its effects on the Israeli mortgage market. We focus on the households' choice following the enactment of three main macro prudential tools by the Bank of

[5] Note, however, that a positive estimate of β in Equation 1 might not be an accurate measure of such a causal effect.

Israel. The three tools are limitation on the payment-to-income (PTI) ratio, limitation on maturity, and limitation on the proportions of fixed and adjustable rate mortgages.

We find that the regulatory provisions tested influenced the borrowers' response not always as expected by the central bank. For all three regulations tested, the regulatory limit served as an anchor for the borrowers and influenced their decisions. Specifically, we find an increase in mortgage loans maturity following the regulation that imposed maturity limits, an increase in PTI ratio following the regulation that imposed PTI limits, and a decrease in the proportion of adjustable rate mortgages following the regulation that imposed limitation on the proportions of fixed and adjustable rate mortgages.

Since housing is the most important asset in the portfolio of most households, the effect of each individual heuristic may lead decision makers to systematic errors that, in turn, can cause a substantive loss of economic value. A better understanding of the effect of these heuristics on mortgage borrowers' decisions can improve the design of market reforms in this area in order to maximize market efficiency and minimize households' economic loss. Specifically, the anchoring heuristic has proven to be extremely powerful and influential on people decisions. Our research suggests that this heuristic should be carefully considered, before making regulatory interventions, to avoid possible unintended consequences.

By examining the influence of regulatory restrictions on decision makers' behavior, we believe that our paper can contribute significantly to the understanding of market functioning beyond the theoretical predictions. Our findings concerning this functioning should be further investigated, especially in light of the implications of the recent macro prudential tools adopted by the Bank of Israel.

References

Ariely, D., Loewenstein, G., Prelec, D., 2003. "Coherent Arbitrariness": Stable Demand Curves without Stable Preferences. *The Quarterly Journal of Economics* 118, 73-105.

Ayal, S., Bar-Haim, D. and Ofir, M. 2018. Behavioral Biases in Peer-to-Peer (P2P) Lending, Behavioral Finance: The Coming of Age (Venezia I. ed., World Scientific Publishers), forthcoming.

Chapman, G.B., Johnson, E.J., 1999. Anchoring, Activation, and the Construction of Values. *Organizational Behavior and Human Decision Process* 79, 1-39.

Critcher, C.R., Gilovich, T., 2008. Incidental Environmental Anchors. *Journal of Behavioral Decision Making* 21, 241-251.

Crowe, C., G. Dell'Ariccia, D. Igan, and P. Rabanal, 2011. Policies for Macrofinancial Stability: Options to Deal with Real Estate Booms, IMF Staff Discussion Note 11/02.

Englich, B., Mussweiler, T., Strack, F., 2005. The Last Word in Court- A Hidden Disadvantage for the Defense. *Law and Human Behavior* 29, 705-722.

Epley, N., Gilovich, T., 2001. Putting Adjustment Back into the Anchoring and Adjustment Heuristic: Differential Processing of Self-generated and Experimenter-provided Anchors, *Psychological Science* 12, 391-396.

Furnham, A., Boo, H.C., 2011. A Literature Review of the Anchoring Effect. *The Journal of Socio-Economics* 40, 35-42.

Hastie, R., Schkade, D.A., Payne, J.W., 1999. Juror Judgment in Civil Cases: Effects of Plaintiff's Requests and Plaintiff's Identity on Punitive Damages Awards. *Law and Human Behavior* 23, 445-470.

Hurwitz, A., Sade, O., and Winter, E., 2018. Can Mandatory Minimum Annuity Laws Have Unintended Consequences? An Experimental Study. *Hebrew University Working Paper*.

International Monetary Fund 2011. Macro prudential Policy: An Organizing Framework, IMF Policy Paper SM/11/54

International Monetary Fund 2014. Israel: Selected Issues, IMF Country Report 14/48.

Krznar, I. and J. Morsink 2014. With Great Power Comes Great Responsibility: Macro prudential Tools at Work in Canada, IMF Working Paper WP/14/83

Lim, Cheng H., F. Columba, A. Costa, P. Kongsamut, A. Otani, M. Saiyid, T. Wezel, X. Wu 2011. Macro prudential Policy: What Instruments and How Are They Used? Lessons from Country Experiences, IMF Working Paper WP/11/238

Marti, M.W., Wissler, R.L., 2000. Be Careful what You Ask for: The Effect of Anchors on Personal Injury Damages Awards. *Journal of Experimental Psychology: Applied* 6, 91-103.

McElroy, T., Dowd, K., 2007. Susceptibility to Anchoring Effects: How Openness-to-experience Influences Responses to Anchoring Cues. *Judgement and Decision Making* 2, 48-53.

Mugerman, Y., M. Ofir and Z. Wiener, 2016. How do Homeowners Choose between Fixed and Adjustable Rate Mortgages, *Quarterly Journal of Finance* 6 (4), pp 1-21.

Mugerman, Y., J. Tzur, and A. Jacobi, 2018, "Mortgage Loans and Bank Risk Taking: Finding the Risk Sweet Spot", *Quarterly Journal of Finance*, forthcoming

Mussweiler, T., Englich, B., 2005. Subliminal Anchoring: Judgmental Consequences and Underlying Mechanisms. *Organizational Behavior and Human Decision Processes* 98, 133-143.

Plous, S., 1989. Thinking the Unthinkable: The Effects of Anchoring on Likelihood Estimates of Nuclear War. *Journal of Applied Social Psychology* 19, 67-91.

Strack, F., Mussweiler, T., 1997. Explaining the Enigmatic Anchoring Effect: Mechanisms of Selective Accessibility. *Journal of Personality and Social Psychology* 73, 437-446.

Tzur-Ilan N., 2017. The Effect of Credit Constraints on Housing Choices: The Case of LTV Limit, Bank of Israel discussion paper 2017.03

Tversky A, Kahneman D., 1974. Judgment under Uncertainty: Heuristics and Biases, *Science* 185(4157), 1124-1131.

Van Exel, N., Brouwer, W., van den Berg, B., Koopmanschap, M., 2006. With Little Help from an Anchor. Discussion and Evidence of Anchoring Effects in Contingent Valuation. *Journal of Socio-Economics* 35, 836-853.